

# **Cookstoves and health, a view from the foot of the energy ladder: a qualitative study of a cookstove intervention in rural Malawi**

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## Abstract

**Title: Cookstoves and health, a view from the foot of the energy ladder: a qualitative study of a cookstove intervention in rural Malawi**

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Globally there are over 3 billion people who are exposed to toxic pollution and associated morbidity and mortality, through cooking on open fires or inefficient cookstoves using biomass fuels. Cleaner more efficient cookstoves are available and proposed benefits include improved health, climate change mitigation and the economic emancipation of women. However, despite a dominant assumption of movement up the “energy ladder” towards cleaner cooking, adoption of cookstove technology is challenging. This thesis explores the societal factors that influence cookstove adoption in the context of the Cooking and Pneumonia Study (CAPS) carried out in rural Malawi at the Malawi-Liverpool-Wellcome (MLW) research site of Chikwawa. The aim was to gain a deeper understanding of the social context of CAPS, and the implications of this for future implementation of clean cooking and research.

This research was informed by critiques of a top-down approach to cookstove interventions and existing hierarchies of knowledge in cookstove and other technological interventions. Development discourses, the syncretic model of health and street-level bureaucracy theory were introduced to explore the centrality of issues of power and trust within the trial. Qualitative methods (focus groups, interviews and observation) and the participatory methodology Photovoice were used in an in-depth examination of perceptions and understandings of CAPS trial participants and workers through three research questions: 1) how and why do families in CAPS villages use the intervention stove and how is this shaped by insecure livelihoods and being part of a ‘research community’; 2) how do CAPS participants experience the trial and how is this linked with understandings of health, technology and the research process; 3) what are the challenges and opportunities from an ethical perspective, of using the participatory methodology Photovoice in the context of a large-scale clinical trial of a cookstove intervention in a low-resource setting?

The results showed that concern about equitable access to nutritious food in the household was prioritised over other potential longer-term benefits of

cookstove use. However, CAPS participants did value the cookstoves as less energy was needed to light and tend them and because quick cooking enabled family members to be on time for activities and helped maintain family harmony. The data also showed a disconnect between the locally situated understanding of health and the research-focused biomedical model. This resulted in the development of unhelpful syncretic understandings such as that pneumonia was no longer a threat and led to rumours of “blood-taking” by researchers. A detailed exploration of household roles and local understandings of gender showed that although ascribed gendered household responsibilities were generally well defined these were also actively contested. The introduction of cookstoves may have opened a new space for contestation. Time saving through use of cookstoves did not however result in the economic “empowerment” of women. The results also demonstrated the key role of CAPS workers (the street-level bureaucrats), in the comprehension and interpretation of health messages and their “front-line” role in the negotiation of resistance (expressed through rumours). The power inequity inherent in the relationship between CAPS participants and MLW was shown to have a direct impact on participant understandings of health and trial “compliance”.

The use of Photovoice methodology was limited by time and resources but encouraged a deeper exploration of how participatory methodologies can contribute to more ethical research, that elicits rich contextual insights on clean cooking. This study provides a novel view from the foot of the energy ladder that adds to existing knowledge of clean cooking technology adoption and promotes the priorities and expertise of cooks.

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## Abbreviations

BCT	Behaviour change theory
BREATHE	Biomass Reduction and Environmental Air Towards Health Effects
CAG	Community Advisory Group
CAPS	Cooking and Pneumonia Study
CCA	Clean Cooking Alliance
CoLT	Community Liaison Team
COMREC	College of Medicine Research Ethics Committee
COPD	Chronic obstructive lung disease
CRA	Comparative Risk Assessment
GACC	Global Alliance for Clean Cookstoves
GBD	Global Burden of Disease
HAP	Household Air Pollution
HSA	Health Surveillance Assistant
IAP	Indoor Air Pollution
ICS	Improved (biomass) cookstove
LMIC	Low and middle-income country
MLW	Malawi-Liverpool-Wellcome Trust Clinical Research Programme
MOH	Ministry of Health
MK	Currency code for Malawian Kwacha
QRA	Qualitative Research Assistant
SDG	Sustainable Development Goal
SLB	Street-level bureaucrat
SSA	Sub-Saharan Africa
SUM	Stove use monitor
T&T	Translation and Transcription
UN	United Nations
WHO	World Health Organisation



# Chapter 1 - Introduction

## 1.1. Introduction

Air pollution is a 'universal problem' [1], we all need to breathe clean air for optimum health and wellbeing. It has been suggested that air pollution represents the greatest environmental risk to global health [2]. In addition to directly impacting on the respiratory system, it is now accepted that polluted air can systematically damage other organs and exposure to air pollution has been linked with a range of health problems including stroke, cardiovascular disease and reduced cognitive function [3]. Children are particularly vulnerable due to their biological immaturity and through spending more active time outdoors; prenatal and childhood exposure can cause irreversible harm [2].

As with many other health issues, exposure to air pollution is intrinsically linked to poverty and in growing urban populations, exposure to dangerous levels of air pollution from sources including energy generation, industry and traffic is a significant health threat, particularly in low-and-middle income countries [4, 5]. In addition, one in three of the worldwide population, 2.45 billion people, are also exposed to household air pollution (HAP) through the use of solid fuels in the home, primarily for cooking [6]. Those who already have health challenges or have limited access to social and medical support are most at risk [1]. There is also a well-established link between air pollution and climate change in that fossil and biomass burning contributes to global heating and impacts negatively on 'planetary health' [7].

The necessity to provide clean energy has been recognised by the United Nations in the Sustainable Development Goal 7, 'Affordable clean energy', and 'clean cooking solutions' have been proposed to counter HAP [8]. These 'solutions' include biomass burning cookstoves which are more efficient than cooking on open fire or basic cookstoves. The Cooking and Pneumonia Study (CAPS) was a health-based trial of such an efficient cookstove carried out in rural Malawi between 2013 and 2016 [9] and provided the basis for this research study.

In this introductory chapter I will begin by providing further background on HAP and efforts to counter this source of air pollution by international organisations such as the United Nations and the Global Alliance for Clean Cooking. I will also expand on the aim, objectives, design and results of CAPS. In the next section the local context will be described, beginning with Malawi and then focusing on one of the two CAPS

sites. This will lead to a justification of the research problem and statement of aims and objectives.

The overall aim of this introductory chapter is to provide a sound basis for the chapters that follow, to explain why this study was initiated. That is, to outline how the “problem” of HAP has led to cookstove interventions and more specifically to the Cooking and Pneumonia Study, and to the qualitative research presented in this thesis.

## 1.2. Background to the research

### 1.2.1. Overview

This section will begin with further discussion of HAP as this is a key concept in the clean cooking literature and within this thesis. The wider arena of clean cooking is also important and will also be explored; that is, how has the problem of HAP been encapsulated and linked with cookstoves in the global arena. A brief description of the CAPS trial is also included.

### 1.2.2. Definition of HAP

A straightforward definition of household air pollution (HAP) is given by Gordon et al. as usually being measured indoors and arising ‘from domestic activities of cooking, heating, and lighting, particularly in low-and-middle income countries’ [4].

In their description of work carried out on the Comparative Risk Assessment (CRA) as part of the Global Burden of Disease (GBD) 2010 process, Smith et al. usefully delineate why the previous risk factor ‘indoor air pollution from household use of solid fuel’ (IAP) was no longer adequate and should be replaced with household air pollution from solid cookfuels (HAP) [10]. The reasons for this are listed as follows: a large part ‘of the health-relevant air pollution exposure from cookfuel occurs in the near household environment, not just indoors’; the pollution that results ‘is sufficiently polluting and widespread to appreciably affect widespread ambient (outdoor) air pollution levels and, thus, cause ill-health far from the source’; use of the term indoor suggests that the problem could be resolved through venting via an effective chimney ‘when the basic problem is dirty combustion’; ‘incompletely combusted fuel’ may also be used ‘for space heating and/or lighting, as well as for cooking, thus confusing the attribution of risk and assessment of appropriate interventions unless it is specified which household uses are being considered’[10].

In this thesis the term HAP will be used as reframed by these authors, to mean ‘household air pollution from solid cookfuels’ with the understanding that this

pollution comes from the household but is not confined to it and emanates from cooking and not from lighting or space heating use [10] .

### 1.2.3. Clean Cooking Alliance and Sustainable Energy for All

The Clean Cooking Alliance (the Alliance) is an international advocacy organisation set up in 2010 to promote the use of ‘clean’ cookstoves and fuels. This initiative was prompted by the growing body of research that linked air pollution from cooking on open fires and inefficient cookstoves with negative environmental and health impacts. This public-private partnership, (then called the Global Alliance for Clean Cookstoves), was created by the US government, the UN Foundation and various non-governmental organisations (NGOs) [4]. The Alliance initially aimed for the adoption of 100 million clean cookstoves by 2020 (the 100x20 goal) but more recently have aligned their efforts with the international Sustainable Energy for All (SEforALL) initiative, linked with Sustainable Development Goal (SDG) 7, and their target of universal access to clean cooking by 2030 [11]. According to the United Nations (UN), the achievement of SDG7 is ‘inextricably linked’ to almost all of the other SDGs ‘poverty eradication; food security; clean water and sanitation; health; education; prosperity; job creation; and the empowerment of youth and women’, and is a key factor in development and climate change mitigation initiatives [8].

However in a review of the outlook for world energy carried out in 2016 it was estimated that by 2030 there would still be 2.3 billion people in Africa and Asia reliant on biomass fuel for cooking, for reasons including lack of natural resources and/or political will [12]. That is, this group will not have access to “clean cooking” mechanisms such as bottled or biomass gas, or electricity by that date. Therefore, the need for cookstoves that limit fuel use and toxic emissions will almost certainly extend to 2030 and beyond in certain contexts and scenarios.

This is relevant to countries such as Malawi with limited natural and economic resources but also to growing urban populations in low income countries. While there has been an overall decline in the total of the worldwide population using biomass fuels, these advances are not universal. In some countries the population is growing and reduction in the use of biomass fuels is limited. For example, ‘ Nigeria, Ethiopia, the Democratic Republic of Congo, and Tanzania have all seen net increases in populations exposed to household air pollution’ [6]. In addition other factors are important; people moving to cities are also exposed to ambient air pollution, for example from traffic and industry, and there are increasing numbers of

older people who are more likely to become ill from combined household and ambient air pollution [6].

As the Chief Executive Officer of the Alliance has said ‘progress on clean cooking remains painfully slow’ and while her organisation may have shifted their emphasis somewhat away from cookstoves to ‘scaling access to a whole range of cooking approaches’ [11], reliance on cooking on open fires or inefficient cookstoves is likely to remain a daily reality for a large proportion of the global population, for some time to come.

#### 1.2.4. BREATHE-Africa

This PhD study is one of four such research investigations carried out under the aegis of the Biomass Reduction and Environmental Air Towards Health Effects in Africa (BREATHE-Africa) Partnership. The Partnership was established in 2014 with the aim of bringing together African researchers, both leaders and trainees, together with experts in all key aspects of HAP research, in order to maximise the opportunities presented by ongoing HAP trials, both for measured health impact in all ages, capacity development in health-related research and policy change in most affected countries. Annual Scientific Meetings were held, and high-quality research facilitated through mentored trainee projects and trial site collaborations.

BREATHE-Africa had a wide reach and linked with clinical trials and studies including the Cooking and Pneumonia Study (CAPS). The Partnership had four themes: Mechanisms, Exposure and Biomarkers, Health Effects and Interventions and Policy. The Themes were interlinked; the key issues for the Interventions and Policy Theme were to link the emerging health evidence with a better understanding of the performance (acceptance and use, efficiency, exposure levels, and safety) of candidate interventions for future studies and implementation at scale. Within CAPS, research activities have been carried out across all four themes; this PhD thesis reports on research carried out within CAPS as well as under the BREATHE-Africa Partnership Interventions and Policy Theme. The BREATHE Partnership existed until the end of 2018 and was then absorbed into the International Multidisciplinary Programme to Address Lung Health and TB in Africa “IMPALA”. From 2014 – 2018 I was the Programme Manager for the BREATHE-Africa partnership and this PhD research was carried out concurrently with that role.



## 1.2.5. The Cooking and Pneumonia Study

### 1.2.5.1. *Overview*

CAPS was a 'community-level open cluster randomised trial to compare the effects of a cleaner burning biomass-fuelled cookstove intervention to continuation of open fire cooking on pneumonia in children' [9]. The trial was carried out at two sites in rural Malawi, Chilumba in the North and Chikwawa in the South. In total, 10,750 children under 4.5 years and 8626 households were enrolled between December 2013 and February 2016 and monitored at 3- month intervals for up to two years and for a minimum of six months. Control and intervention groups were the same size, there were 150 village clusters across the two districts and each cluster was randomly allocated to either the control or the intervention group.

### 1.2.5.2. *The intervention*

Each intervention household was given two cookstoves manufactured by Philips. This cookstove has an integral battery powered fan which is charged by a solar panel which was also provided to participants. A community consultation and training process was incorporated into the trial process [13]. The control group continued with the usual mode of cooking using open fires or locally available cookstoves and at the end of the trial they also received two stoves and a solar panel. By this point the Philips cookstove was no longer being manufactured so this group received similar new cookstoves but with improved features now being produced by African Clean Energy Stoves. See Figure 1.1 for cookstove images and Table 1.1 for comparison of cookstove types.

### 1.2.5.3. *Types of cookstoves*



Figure 1. 1: Images of CAPS and locally made cookstoves

The Philips and ACE cookstoves used in CAPS are fan-driven draught gasifiers and defined as advanced cookstoves; that is, cookstoves ‘that achieve significant particulate emission reductions and approach’ and reaching the top level of standards for biomass cookstoves for both efficiency and indoor emissions (International Workshop Agreement standards 2012) [14]. These cookstoves were selected for the CAPS trial as at that time they were the “cleanest” available. It should be noted that although suitability for use in the rural Malawian context was considered and the cookstoves had been user tested in Lesotho, the primary selection criteria was reduction in emissions, as CAPS was a health based clinical trial.

Table 1. 1: Different types of cookstoves

	Improved cookstoves (ICS)		Clean cookstoves	
	Basic cookstoves	Intermediate ICS	Advanced ICS	Modern Fuel
Key features	Small functional improvements in fuel efficiency over open fire; usually produced by local artisans	Rocket-style designs with focus on improved fuel efficiency, can be portable or built-in	Fan or natural draught gasifiers with high fuel and combustion efficiency	Stoves that rely on fossil fuels or electricity; have high fuel efficiency and low emissions
Technologies	Basic efficient wood  Basic efficient charcoal	Portable rocket stoves  Fixed chimney rocket stoves	Natural-draught gasifier  <b>Fan-driven draught gasifier</b>	LPG  Electric  Natural gas

Table 1.1 is adapted from Figure 1: Overview of improved and clean cooking solutions [15].

An example of a basic improved cookstove (as defined in Table 1.1) available in Chikwawa and sometimes distributed by “relief” organisations is the *chitetzo mbaula*, (see Figure 1.1) a locally made clay cookstove usually produced by women’s groups which is estimated to reduce fuel consumption by 40% [16]. This cookstove was used in a feasibility study of a cookstove intervention held prior to CAPS and the authors found that the \$2 cost of this cookstove was a barrier to uptake [16]. The CAPS cookstove “package” of two cookstoves and solar panel had a cost closer to \$200 and this technology was not available locally. In the context of CAPS, the affordability and availability of the technology was not a primary consideration as proof of concept was needed first. Table 1.1 could be said to represent a continuum of “dirty” to “clean” cookstove, improved cookstoves as defined here do not reduce emissions sufficiently to have an impact on health.

#### 1.2.2. Research questions and outcomes

The primary aim of CAPS was to measure any reduction in the incidence of pneumonia in under-5s arising from the provision of an advanced cookstove [13]. The study also provided the opportunity for ancillary studies including an exploration of costs and benefits of the intervention cookstove [17] and air monitoring of children [18]. The focus of this qualitative study arose from the fifth CAPS research question ‘What can be learned from trial participants and non-participants about adoption of the intervention that could inform effective implementation of the trial findings in the future?’ [13].

The CAPS trial followed two others in which effects of cookstove interventions on health outcomes was assessed. These both used stoves in which chimneys vented smoke outside of participant homes. The first trial in Mexico found that respiratory symptoms and lung function were improved in 552 female cooks during the trial [19]. The second, the RESPIRE trial, took place in Guatemala (in 534 households) and reported that while the chimney stove intervention did not result in a significant reduction in physician diagnosed pneumonia in children under 19 months, it did result in a significant reduction of severe pneumonia [20].

CAPS was considerably larger than both these trials and used an advanced cookstove intervention that does not just vent air pollution outside participant homes but burns more cleanly removing toxic pollution through gasification during the combustion process. However, at the end of the trial it was found that pneumonia in

under-5s was not reduced in the intervention group. Mortimer et al. hypothesised that this result may be due to the effect of other sources of air pollution such as from rubbish burning, or that the cookstoves may not have reduced emissions enough. The authors concluded that cookstoves alone may not be sufficient to improve health and that other sources of air pollution would need to be reduced. Also, that any cleaner cooking interventions, whether cookstoves or fuels would need to 'achieve a high level of acceptance' in order for health benefits to be realised [9]. They also discuss the difficulty of achieving exclusive use of the cleaner cookstoves. The authors report that while the study participants reported using the cookstoves for all meals for the first three months, this reduced to half after two years and suggest that, 'as is true in kitchens around the world there is no single cooking device suitable for every task' [9]. As Gordon et al. describe, a reduction in or ceasing use of clean cookstoves over time, and the concurrent use of old and new technology (so called "stacking") is a significant challenge to clean cooking interventions generally [4].

The problems with achieving long term sustained adoption of clean cooking technology has been compared to similar issues with bed net use (for malaria prevention) and clean water/sanitation initiatives. (for diarrhoea prevention). Thurber suggests that what is needed is a 'deep exploration' of the priorities and perceptions of cookstove users that extend 'beyond health' in order to gain insights into how to develop technologies that users want to obtain and use [21].

### 1.2.3. Summary

In summary, while the cookstove used as the intervention within CAPS was not found to be effective in reducing the incidence of pneumonia in under-5s, it did not lead to the abandonment of cookstove interventions. CAPS has clarified that cleaner-burning cookstoves alone are not sufficient to improve lung health but they remain an important part of the short and middle strategy to reduce HAP [22]. The acceptability of cookstove interventions is an important part of implementation and depends on gaining deeper understanding of user experience.

In the absence of other options, many people will continue to depend on cooking using biomass fuels for some time to come. Progress towards providing cleaner cooking options is challenging in many contexts, including in rural Malawi. This context will be explored in more detail in the following section.

### 1.3. The local context

While CAPS had two trial sites, the qualitative research described in this thesis was carried out in the southern Chikwawa site only. (The reasons for this are described in section 4.2.1.) The base in this area was the Malawi Liverpool Wellcome Trust Clinical Research Centre (MLW) site office. In this section, background will be provided on Malawi in general, Chikwawa in particular, and the MLW operation in both contexts.

#### 1.3.1. Malawi

Malawi had an estimated population of 17.5 million people in 2018 (expected to double by 2038) and is a landlocked country with limited resources. It was estimated that in 2018, over 50% of the population were living in poverty and over 20% in extreme poverty [23]. Nearly 80% of the population is employed in agriculture which is subject to 'external' and 'particularly climatic shocks' [23]. The high levels of poverty are linked with dependence on and low-productivity in the agricultural sector and the limited availability of other economic opportunities [23].

The map and information below has been extracted from the Malawi 2015-6 Demographic and Health Survey [24] to provide relevant details of the geographical and socio-economic context of the study.

# MALAWI

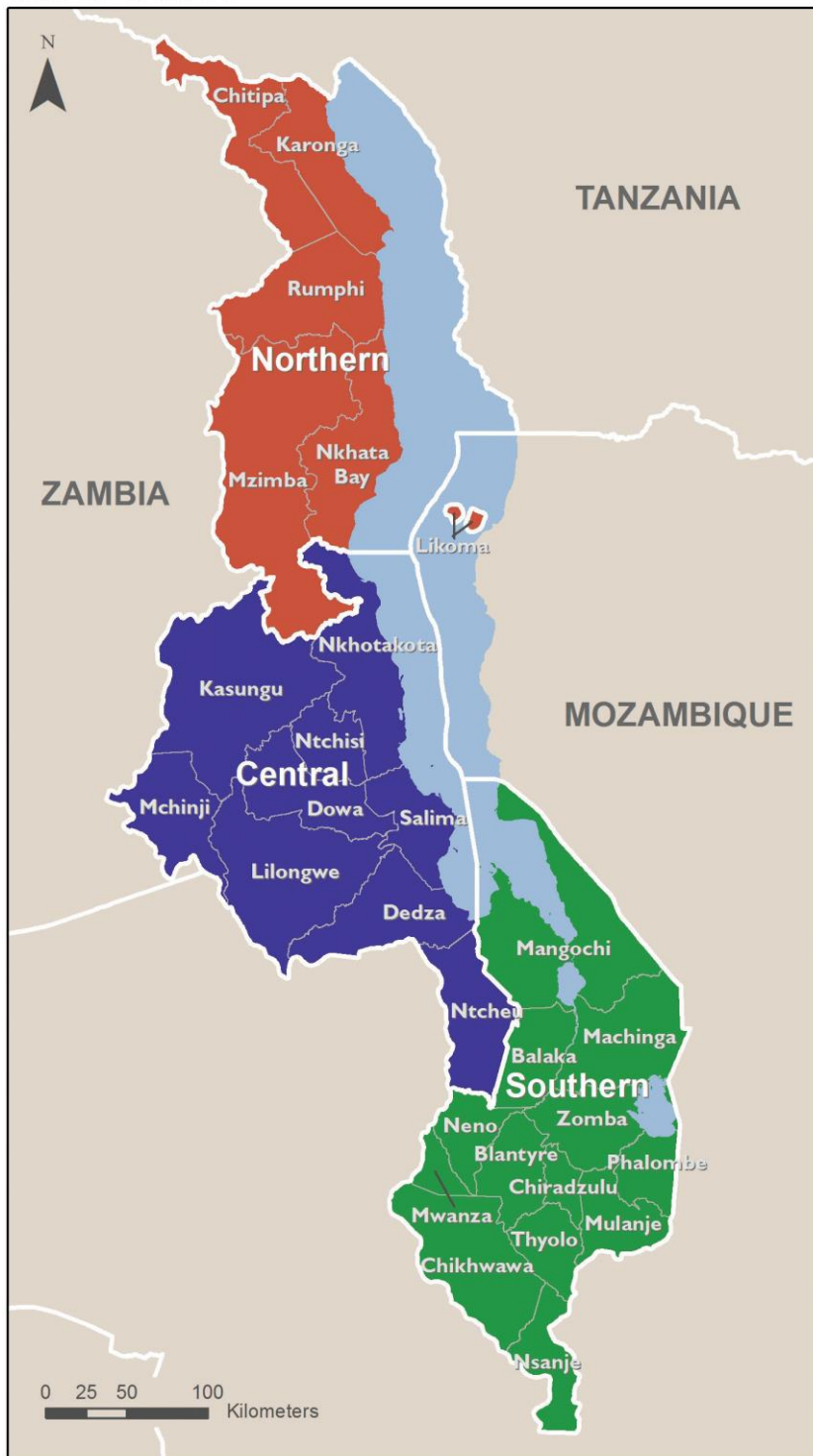


Figure 1. 2: Map showing Chikwawa in southern Malawi [24]

A large proportion of the Malawian population live in rural areas and are generally less well off than their urban counterparts. They also have less access to facilities such as clean drinking water and improved sanitation. Of relevance to this study is the fact that while 11% of the total population have electricity, half of urban

households have access while only 4% of rural households do [24]. There are also differences between genders in levels of education: 12% of women have never attended school as opposed to 5% of men and this is reflected in the literacy rates in that more men (83%) are literate than women (75%). (Percent distribution of women and men aged 15-49) [24].

Families also differ between rural and urban areas. Women in wealthier urban Blantyre have an average of 3.4 children whereas in rural Chikwawa the average is 5.6 [24]. Although great advances have been made with regard to under-5 mortality (overall decrease from 135 deaths per 1,000 live births in 1992 to 42 in 2016), the rates are higher in poorer areas and differ markedly between districts with children 'in more rural areas more likely to die young' [24].

Regarding household decision-making, the DHS survey assessed the ability of women to make decisions in three areas: visiting family or friends; major household purchases; and healthcare. The majority of women reported sole or joint decision making power about visiting family and friends (66%) and decisions about their own health care (55%) but only 30% were able to participate in decisions about major household purchases [24].

There are no data included in the survey about the health impacts of air pollution; just the simple statement that '(E)xposure to smoke inside the home, either from cooking with solid fuels or smoking tobacco, has potentially harmful health effects'. However, it is reported that solid fuel is used for cooking by 98% of the Malawian population and that this has not changed since the previous survey in 2010 [24]. A breakdown of fuels and cooking location is listed in Table 1.2 below. This shows that most rural residents cook in a separate building from the house, but it should be noted that such structures are usually open-topped local brick structures immediately adjacent to the main house. It is also clear that almost all rural residents are reliant on burning biomass fuel in the form of wood or charcoal with only 0.3% having access to electricity and none to gas [25].

Table 1. 2: Household cooking in Malawi

<b>Housing characteristic</b>	<b>Households</b>		
	<i>Urban</i>	<i>Rural</i>	<i>Total</i>
<b>Place for cooking</b>			
In the house	27.8	4.8	8.3
In a separate building	22.7	67.3	60.4
Outdoors	49.4	27.7	31.0
No food cooked in household	0.2	0.2	0.2
Total	100.0	100.0	100.0
<b>Cooking fuel</b>			
Electricity	11.9	0.3	2.1
LPG/natural gas/biogas	0.2	0.0	0.1
Coal/lignite	0.1	0.0	0.1
Charcoal	64.4	6.9	15.7
Wood	23.0	91.4	80.9
Straw/shrubs/grass	0.0	1.1	0.9
Agricultural crop	0.1	0.1	0.1
No food cooked in household	0.2	0.2	0.2
Total	100.0	100.0	100.0

**1.3.2. Malawi Liverpool Wellcome Trust Clinical Research Centre**  
 The Malawi-Liverpool-Wellcome Trust Clinical Research centre (MLW) 'was established in 1995 and initially focused on conducting research on malaria'. By 2015 research activities had grown with over 50 studies carried out covering 'a broad range of research topics including: HIV/AIDS, TB, malaria, non-communicable diseases and vaccines' [26].

There are now 8 research groups at MLW including Lung Health, and Behaviour and Health Groups. The Science and Communication Team (part of the Behaviour and Health Group) was set up in 2008 to manage all aspects of public engagement including study specific activities [26]. A key part of these activities are community volunteers and in 2009 two Community Advisory Groups (CAGs) were formed of 26 members from six townships in urban Blantyre and 48 members from 39 rural villages. The role of CAG members was to 'identify community concerns or potential harms and to feed these back to MLW researchers' [26].



By 2015 the role of these community volunteers had expanded and changed and Community Liaison Teams (CoLTs) were set-up with the following roles defined for CoLT members: assisting with field team activities including introducing study team members to the community; “sensitizing” households about particular studies; reporting any concerns of participants to the study team (Guide for Managing a Community Liaison Team 2015).

Chikwawa is one of two administrative districts in the Shire Valley and is just 30 metres above sea-level, often hot and humid, ‘mosquito-infested’ and prone to periods of drought and flooding [27]. MLW has carried out research in Chikwawa since 2002 and initially the emphasis was on child survival initiatives related to malaria and schistosomiasis. From one study in 2002, activities have grown leading to six studies in 2016 and the employment of 80 staff members; the Chikwawa site was identified as key to the MLW 2016-2026 vision [28]. This site is important to MLW as it is often useful to carry out research across urban (Blantyre) and rural (Chikwawa) sites. There is also a high disease burden in Chikwawa, which leads to the area being prioritised by the Malawi Ministry of Health (MOH). MLW’s strategy is to align their research with MOH priority areas. The site is approximately 50 minutes-drive from the MLW Blantyre base which allows for the easy transport of personnel, equipment and samples [28].

#### 1.4. Justification of the research problem

As described above, the implementation of cleaner cookstoves is challenging in common with other such technological interventions aimed at improving health. However, there remains a global impetus to introduce cookstoves in contexts where other solutions that can militate against HAP, are not currently available. For example, in countries where access to electricity is severely limited by lack of resources. The main CAPS trial showed that an advanced cookstove intervention did not have the expected health effect; discontinued and intermittent use (including “stacking”) were identified as possible reasons for this result. As the largest cookstove trial to date, CAPS provided an exceptional opportunity to explore the social and cultural context that impacted on the trial implementation. Chatti et al. refer to the concept of ‘mundane bioenergy’ as the neglected type of energy categorised by the use of biomass fuels for cooking [29]. The authors suggest that this neglect occurs because such energy use is seen as ‘technologically un-exciting’ despite the negative impact on marginalised people. They argue that ‘understanding the perspectives and values of the users’ of such energy is important but often overlooked and is a matter of “energy ethics” [29]. Qualitative research methods

are the most effective way to explore the everyday but complex arena of cooking and the context of cookstove interventions. This is important to determine whether and how possible future cookstove implementation processes may be enacted and has wider relevance to the uptake of technological interventions in low resource settings.

### 1.5. Aims and Objectives

One of the research questions in the main CAPS was ‘What can be learnt from trial participants and non-participants about adoption of the intervention that could inform effective implementation of the trial findings in the future?’ [13]. This question led to the aim of this PhD research study which is:

To explore the societal factors that influence adoption of a cookstove intervention in the context of a research trial in rural Malawi, and the implications for future implementation of clean cooking technology and research.

This is explored through the following questions:

1. How and why do families in CAPS villages use the intervention stove and how is this shaped by gendered insecure livelihoods and being part of a ‘research community’?
2. How do CAPS participants experience the trial and how is this linked with understandings of health, technology and the research process?
3. What are the challenges and opportunities from an ethical perspective, of using the participatory methodology Photovoice in the context of a large-scale clinical trial of a cookstove intervention in a low-resource setting?

### 1.6. Structure

This thesis is presented in eight chapters. Chapter 2 is a review of the literature, which provides an in-depth description of the drivers of improved cookstove interventions, a critique of proposed benefits of such initiatives and an exploration of how “cookstove adoption” has been defined and conceptualised. The chapter also includes an overview of gendered household decision making and behaviour change literature. In Chapter 3, theoretical concepts that underpin the study design and analysis will be outlined with the aim of strengthening and enhancing discussion of the study results. Methodology, both in the context of the background to the methods used and how they were used will be described and discussed in some detail in Chapter 4, particularly the use of the participatory methodology Photovoice.

Chapters 5, 6 and 7 are the results chapters and findings are presented in line with the three research questions. In Chapter 5, I explore change and innovation in the context of gendered insecure livelihoods, firstly through findings related to poverty and recurrent hunger in the trial community and secondly related to gendered household roles and decision making. The findings presented in Chapter 6 concern understandings and perceptions of health and how these were modified through the trial process and include exploration of narratives of satanic intent of researchers. Chapter 7 focuses on the ethical implications of using the participatory methodology Photovoice and the potential of the methodology to shift power relations in the context of the research environment. The main findings of the study will be summarised in Chapter 8 as related to the research objectives and with reference to the literature discussed in Chapter 2 and the theoretical concepts in Chapter 3. This chapter will also include a discussion of the limitations of the study and a summary of the ways in which it makes an important and original research contribution.



## Chapter 2 – Literature Review

### 2.1 Introduction

#### 2.1.1 Overview

The question of who adopts clean cooking technology and why this happens has been analysed by many researchers. More pertinently, the reasons for non-adoption in the face of apparent advantages are difficult to pinpoint and a clear pathway to adoption is elusive. In a report commissioned by the World Bank in 1994 this was summarised through two questions:

‘Why in the face of all the benefits, have so many potential beneficiaries of improved stoves decided not to purchase or use the stoves when given the opportunity?’

How can stove programmes be better organized and targeted to increase the likelihood of bringing these benefits to more people?’ [30]

In the literature review that follows, I will explore why over 20 years later these questions are still vitally important, to summarise significant research in the field and to outline how this fed into the epistemological and methodological approach taken in this research study.

#### 2.1.2 Structure of Chapter

This chapter will begin with a brief summary of how relevant literature was identified. The remaining content will be presented thematically beginning with a description of the rationale for promoting the adoption of improved cookstoves. The proposed benefits of adoption will then be critically examined. The next section will begin with scrutiny of the term “adoption” leading to an examination of theories about how adoption occurs. Key reviews of factors influencing adoption will then be discussed. As the purchase and use of cookstoves is closely linked with gendered and household roles, decision making in this context will also be examined. There will then be a section on behaviour change, namely how has this been implemented in cookstove interventions and what can be learnt from these approaches. Finally, the review will be discussed and summarised with an overview of how this critical examination of the literature shaped the study design and methodological approach.

#### 2.1.3 Strategy

Due to my dual role as BREATHE Programme Manager and PhD student, I had been exposed to a wide range of literature relating to household air pollution and clean cooking prior to beginning this research study, I already had a large collection of relevant literature amassed during the production of a Lancet Commission on

'Respiratory risks from household air pollution in low and middle income countries' [4], which was informed by knowledge from global opinion leaders who attended the launch of the Collaboration for Applied Health Research & Delivery (CAHRD) in Liverpool 2014. To supplement this I took a snowballing approach to identify new literature [31]. I also carried out targeted database searches using the University of Liverpool Discover tool which contains tens of millions of records from over 22,000 publishers and access to databases such as Scopus, JSTOR and Web of Science [32]. I examined the research aim to determine words or phrases for search terms for use with Boolean operators, for example: cookstove\* OR cook stove\* AND adoption. I did not limit these searches by date or location although I paid particular attention to material related to the African context. The Discover tool provided a very wide range of material including on-line access to many books and the option to request books from other libraries; through this I was able to access a rare volume from the British Library. I also used other databases such as PubMed and the Google Scholar search engine.

I also made extensive use of grey literature and of email updates, newsletters and publication databases. Many organisations relevant to the cookstove and clean energy fields make their research freely available on their websites including the CCA and the World Health Organisation. I also used reports, policy briefs and other materials from Practical Action, ENERGIA, Oxfam and the Stockholm Institute, all of whom provide searchable databases of publications. I kept up to date by subscribing to regular newsletters, alerts and updates which highlighted new research in the field including from journals such as PLOSONE and Energy Research and Social Science. All references were stored and catalogued using Endnote.

The starting point of this literature review was to examine and problematise the reasons why cookstoves are promoted, as described in the next section.

## 2.2 Why are improved cookstoves needed?

One of the 17 SDGs defined by the United Nations (UN) in 'Transforming Our World: Agenda for Sustainable Development' is 'Goal 7: Ensure access to affordable, reliable, sustainable modern energy for all'. The UN call this agenda a 'plan of action for people, planet and prosperity' [33] and plan to deliver on the SDGs by 2030. Following on from Goal 7, the UN and the World Bank have partnered on the 'Sustainable Energy for All' initiative which has 'Clean Cooking Solutions' as one of 11 Action Areas. This process is facilitated through 'The Universal Adoption of Clean Cooking Solutions High Impact Opportunity' and partners such as the Global

Alliance for Clean Cookstoves (GACC) [34]. As described in Chapter 1, the GACC changed their name to the Clean Cooking Alliance (CCA) in October 2018.

Improved cookstoves are needed as in many parts of the world clean cooking is not available through natural gas and electricity supply. The Energy Access Outlook Report for 2017 shows that some progress has been made, for example, in 2016 it is estimated that there were 1.1 billion people worldwide (mainly in Asia and Sub-Saharan Africa) without access to electricity whereas in 2000 the figure was 1.7 billion. However, as the authors state, while in sub-Saharan Africa (SSA) ‘there are signs of promise as accelerating electrification efforts outpaced population growth for the first time since 2014’, the electrification rate is currently only 43%’ [35]. Many SSA countries have no access to natural resources such as oil or gas and where these do exist significant investment in infrastructure is needed to get power to communities, particularly the rural poor. There are great advances being made in SSA particularly with the roll-out of mini-grids powered by clean fuels such as solar or biogas [36] but a large proportion, sometimes called the ‘bottom billion’ by Collier [37] and others, could potentially benefit from improved cookstoves as an interim measure. In Malawi only 4% of the rural population have access to electricity at home and 98% of Malawian households use some type of biomass fuel for cooking [24].

At the time when this study was initiated, GACC described itself as ‘a public-private partnership hosted by the UN Foundation to save lives, improve livelihoods, empower women, and protect the environment by creating a thriving global market for clean and efficient household cooking solutions.’ The organisation summarised the benefits of clean cooking under five headings: Environment, Health, Humanitarian, Livelihoods and Women and Gender [38]. These headings and the brief description of each impact area (from the webpage) will be used at the start of sections 2.2.1 – 2.2.4 that follow, which explore how the benefits are conceptualised and the evidence base for these.

### 2.2.1 Environment

<b>Environment</b>	The use of solid fuels and rudimentary cookstoves can cause environmental problems such as air pollution, climate change, deforestation, and loss of biodiversity. Clean cookstoves and fuels can lower
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emissions of greenhouse gases, pollutants, and black carbon and help protect the environment
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The literature about the environmental impact of collecting and burning biomass fuel for cooking illustrates how cookstove use as well as development and policy has emerged and changing in response to shifting social and economic challenges and discourses.

Barnes describes how in the 1970s, a significant rise in oil prices led to a 'spate of cookstove programs' and how this was also linked with contemporary concerns about deforestation and loss of soil fertility (through use of crop residues for fuel) [30]. However by the 1990s there was general agreement that household use of biomass fuel for cooking had much less impact than large scale forestry and agricultural clearance [30] [39] [40].

In the decade that followed there was an increased emphasis on the links between the use of biomass fuel for cooking and the rise of greenhouse gases in the atmosphere [41]. In addition, it became increasingly clear that emissions from open fires and inefficient cookstoves, contain not just CO<sub>2</sub> but other more damaging gases as well as particulate matter. More recently there has been a renewed drive to roll out improved cookstoves due to concerns about climate change including the impact of black carbon emissions [42-45] .

In addition, the concept of planetary health has been posited in a Lancet Commission by the Rockefeller Institution, that is, that the 'health of human civilisation' is intrinsically linked with the 'state of the natural systems on which it depends'. The authors summarise current thinking on climate change as below.

'Clear evidence now exists that climate change has occurred because of human activity. Climate change is caused by increases in the atmospheric concentrations of the greenhouse gases, particularly carbon dioxide, methane, and nitrous oxide, together with black carbon. The burning of fossil fuels to provide power for transport, domestic use, agriculture, and industry, and the conversion of areas of natural habitat to land used for agriculture and human settlement cause most of these emissions.' [7]

The use of advanced cookstoves can result in substantially reduced emissions [46] [42] and fuel savings are possible from improved and advanced cookstoves [47, 48]. However, while there has been a worldwide reduction in the proportion of people



using biomass fuel for household energy, the absolute number of users has remained stable due to population rise [49].

In Malawi over 90% of the population rely on biomass fuels for cooking [50] and advanced cookstoves are very difficult to obtain. Concerns about deforestation are long-standing and ongoing [40, 51-53] and climate change is having a particularly negative effect on the population as over 90% rely on 'rain-fed subsistence farming to survive' [54].

In summary, there is evidence of links between cooking on open fires using biomass and environmental damage, whether from loss of habitat or climate change. It is also clear that the impact of the latter is felt most keenly by the poor who have precarious livelihoods and limited resilience when faced with natural disasters such as floods or crop failure. As with other health impacts such as malaria, any links between household air pollution related ill-health and climate change are 'mediated through complex ecological and social processes' [7].

### 2.2.2 Health

<b>Health</b>	Exposure to smoke from traditional cookstoves and open fires causes 4.3 million premature deaths annually and contributes to a range of chronic illnesses and acute health impacts such as pneumonia, lung cancer, heart disease, low birthweight, and burns. The adoption of clean cookstoves and fuels can save lives and reduce illness
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When cooking is carried out on open fires or inefficient cookstoves using biomass fuel those nearby are exposed to a toxic mix of gases and particulate matter. This type of cooking is the major contributor to household air pollution (HAP) which it is estimated affects 3 billion people worldwide and results in 4.3 million premature deaths [55]. The detrimental health impacts of HAP include respiratory infections and chronic disease but also cancers and cardiovascular problems [56].

Research into the impact of HAP pre-birth is not well developed but indications are that vulnerability to pollutants when in the womb will follow a similar pattern to that observed in previous smoking and fossil fuel studies and may result in preterm birth and reduced birthweight [4]. There are now clear indications that air pollution may

be linked with a wide range of health issues, for example, cervical cancer [57] and dementia [58]. As with other health problems thought to be associated with HAP further research is ongoing to establish the evidence for causal links and the mechanisms of impact.

However, there is now good evidence to link HAP and chronic but common respiratory conditions such as asthma and chronic obstructive pulmonary disease (COPD) [4]. It is estimated that worldwide around 235 million people have asthma and 80 million COPD [59]. These conditions have a considerable negative impact on quality of life and there is a dearth of research being carried out in low resource settings. A recent publication by Meghji et al. reports that over 40% of adults in an urban Malawian sample had abnormal lung function and links this with HAP exposure [60].

The collection and carrying of fuel have also been implicated in muscular-skeletal problems, increased risk of snakebite and injury from wood-cutting implements [61-63]. Burns and scalds are a particular risk to children and may cause long term scarring and disability [64] [4]. Open fires are a common source of such injuries but cookstoves use can also expose cooks and their families to a risk of burns [65].

In general, it is women and children who are primarily impacted by the negative health impacts of the use of open fires and inefficient cookstoves. In most low-and middle-income countries (LMICs), the economic and social role of women means that they are the primary cooks and fuel gatherers; this is particularly true in Sub-Saharan Africa (SSA). In addition, women in resource poor environments are usually responsible for childcare. This means that infants carried on their mother's backs and young children nearby are exposed to frequent episodes of toxic air pollution. There is evidence that such early childhood exposure is 'particularly detrimental' to health [4].

As described in Chapter 1, CAPS is the largest randomised controlled trial of a cookstove intervention that has been carried out to date and it is important to note that the study found that the risk of pneumonia in under-5s was the same in the intervention and the control group. There was however 'a borderline statistically significant increased risk of malaria in the intervention versus the control group' [9]. In addition, although the rate of serious burns reported was spread evenly across both study arms, there was a 'substantial 42% reduction in risk of non-serious burns in the intervention group, suggesting the intervention offers considerable safety advantages over the open fire' [9]. The authors report issues with cookstove

equipment maintenance that could have contributed to the lack of impact and also point out that the reduction of emissions observed in the lab environment may not have been reproduced in the field. Moreover they conclude that CAPS participants were exposed to other sources of air pollution and that ‘an integrated approach to achieving clean air that tackles rubbish disposal, tobacco smoking, and other exposures, as well as robust cleaner cooking solutions (e.g. cleaner stoves and fuels) that achieve a high rate of acceptance is probably needed to deliver health benefits’ [9].

Research into any possible benefits of cooking on open fires or inefficient cookstoves is sparse. Biran et al. report anecdotal evidence of smoke providing protection from biting insects and therefore malaria. However in their review of the literature they could not find any evidence of such a link [66]. In a study of the socio-cultural acceptability of improved cookstoves in rural Malawi, Matinga found that ‘soot is considered useful and is used for over 10 ailments’ including toothache and stomach upset [67]. However, this was a small-scale study in a specific environment and therefore wider applicability is limited.

Enarson et al. outline a more holistic view of the links between HAP and health in a guide for low-income countries. The authors suggest that lung diseases ‘are symptoms of poverty, of inequality, of dysfunctional environments’ and that ‘while narrowly focused approaches can go a long way towards reducing the extent of the problems caused by lung diseases, ultimately they are not sufficient to finally overcome them’ [68].

To sum-up, there is clear evidence that exposure to pollutants from burning biomass fuels has a detrimental impact on the health of many of the poorest people in the world. These impacts occur across the life-course and are linked with chronic and life-limiting conditions such as asthma and pneumonia. While much useful research has been carried out into specific health impacts, the complexity of factors that link HAP and overall health impedes effective solutions. Two intractable problems also remain: firstly so far it has not been established how low exposures must go before there are ‘substantial health effects’; secondly ‘reducing emissions of cooking sources in isolation is unlikely to have major health effects unless this forms part of a comprehensive, affordable, and sustainable clean air strategy’ [22].

2.2.3 Humanitarian

<b>Humanitarian</b>	Refugees, internally displaced people, and other crisis-affected populations lack access to clean cookstoves and fuels for cooking. Clean and efficient cooking solutions can help reduce the need for long and often dangerous trips in search of fuel, and improve outcomes in humanitarian settings
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The idea that cookstoves could protect women in refugee camps from sexual assault has been promulgated widely, including by influential bodies such as the UN and GACC. For example in the results of a study carried out in Darfur it was stated that ‘international aid organisations have estimated that 82 per cent of all attacks against women and girls occur when the victims are outside the camps, often collecting firewood’ [69]. This link was largely untested until the publication of a ‘systematic review’ of the literature by GACC in 2016 [70]. In this it was stated that ‘while there is evidence of the connection between firewood collection and the risk of GBV, a review of the existing literature and project data reveals that there is a dearth of evidence on if and how clean cooking interventions have a significant protection impact’. In the Executive Summary of the report the reason given for the review is that establishing an evidence-based link between GBV and cookstove interventions ‘is crucial to ensuring continued funding and implementation of effective cooking solutions in humanitarian settings’ [70], suggesting that effective cooking solutions are available and could be implemented in such settings with the right backing.

However, in a publication in 2014 (not included in the review above), Abdelnour and Saeed question the usefulness of the ‘rape-stove panacea’. They agree that the logic that links less trips outside camps to collect wood with a reduction in sexual violence is ‘relatively straightforward’ but describe how this developed, largely through events in Darfur, into a ‘rhetoric that establishes stoves as capable of reducing the risk of sexual violence’ [71]. They suggest that this occurred as the US organisations working in Darfur at that time ‘were particularly energized by instrumental, normative, moral and religious motivation’. They link the emergence of the issue with the ‘concept of ‘problematization’, the process of linking problems with

actionable solutions’ [71]. That is that this emphasis on technical solutions can be reductive and obscure the social and political complexity of such interventions. Cookstoves become part of humanitarian discourse that promotes complex multi-faceted issues as manageable and universal.

In addition, the authors of a Lancet Series paper published in 2016 report that, ‘it is troubling that rigorous data for what works to prevent violence’ against women and girls ‘are still scarce’, with existing intervention research mainly being carried out in high income countries and with an emphasis on post violence response [72]. The supposition that there is a link between wood collection and increased risk of sexual assault therefore seems plausible but largely anecdotal. Making a further link between improved cookstove interventions and a reduction of such a risk is more problematic and as yet unproven.

#### 2.2.4 Women’s livelihoods

<b>Livelihoods</b>	Reliance on inefficient stoves and solid fuels places economic burdens on families, as time spent collecting fuel or cooking for their families, means less time for women and girls to work in the paid economy or remain in school. Clean cooking solutions expand economic opportunities for women and girls
<b>Women and Gender</b>	While women are disproportionately impacted by the health and economic impacts of traditional cooking, they play a crucial role in the widespread adoption and use of clean household cooking solutions because of their central responsibility for managing household energy

The links between gender and health are outlined in the Health section above. The discussion that follows will examine the literature related to the reported benefits of improved cookstoves on women’s lives and household livelihoods. This will be supplemented by a further, more detailed discussion of the links between improved cookstoves, gender, and household roles and decision making, in section 2.4.

The ENERGIA Network was founded in 1995 and is a key body in the gender and energy sector. This organisation disseminates information and conducts and facilitates research through a series of national networks. The aim of ENERGIA is to promote 'gender-responsive policy and operational frameworks' in order to improve 'energy project design and policy-making.' [73]. On the ENERGIA website the 'case for a gender perspective on energy access' is summarised under 3 headings: Poverty Reduction, Energy Access, and Effectiveness [74].

The suggestion is that **poverty is reduced** through: improving access to energy for women resulting in time saving; improvements in educational attainment through facilitating study in the evenings; and through the creation of new economic opportunities. In addition, it is proposed that improved **energy access** is achieved through targeting female headed households and including women in the development of 'appliances' including cookstoves. The authors suggest that 'women in energy jobs' can also improve the **effectiveness** of the energy supply chain as they have different social networks than men and can reach 'hard-to reach households'. Further that this in turn can then lead to the employment of women in 'non-traditional jobs' resulting in improved 'income generation and empowerment' [74].

Simply put, the suggestion by ENERGIA and CCA amongst others is that clean energy (which includes improved cookstoves) can free up women's time that can then be used to improve household income and lead to female "empowerment". In an addition of the Hedon regular publication Boiling Point ('Women, Energy and Economic Empowerment') the negative aspects of women's links with energy (such as time spent gathering fuel and cooking) are juxtaposed with the idea of energy as 'a critical enabler' that results in significant benefits for women. That is women are 'game changers' in the energy development field, using energy and profits from energy-based entrepreneurship to benefit their families and communities [75].

In a report published by Oxfam in 2017, Rewald tests this assumption; that is that improved access to energy has a beneficial impact on women's lives, through an analysis of existing (and particularly grey) literature [76]. She finds strong evidence that the burdens of limited access to energy, particularly ill-health and time burden of biomass cooking, impact disproportionately on women. However, she concludes that information about whether women gain from improved access to energy 'is mostly mixed, minimal or unclear'. She finds some evidence of improved employment opportunities through better energy access but finds the literature in this area to be

'minimal and context specific'. Rewald suggests that the ubiquity of stacking and the limited decision-making power of women in the household, act against the realisation of benefits from improved access to energy. Further, that to ensure success, projects to improve energy access need to 'be coupled with other development initiatives that focus on women's agency and access to resources' [76].

The agency of women to effect change is intrinsically linked with their productive role in the household and this will be explored in more detail in section 2.4. The idea of a "virtuous circle", that is, that through saved time women are freed to promote clean energy products, and that they in turn gain substantially from doing so, is however attractive and pervasive. For example, in the narrative presented on the Solar Sister website, of this social enterprise as one that improves lives not only through distribution of solar lamps but also through the creation of the female entrepreneurs who distribute their products.

In a paper examining the links between improved energy access, poverty and gender equity, Clancy et al. caution against linking energy access with empowerment suggesting that the term has 'no standard definition' and further that there is no 'consensus on the best way to empower women'. The authors also conclude that there is little evaluation of the links between 'modern energy' and the generation of income by women in the literature but instead a focus by organisations and researchers, on entrepreneurial opportunities and 'enterprise' [77].

A key question in relation to any links between adoption of clean cookstoves and improved livelihoods seems to be: if time is saved (through less frequent wood collection and quicker cooking), then what is it used for? Rewald concludes that time saving does not lead to increased leisure time for women and girls but rather gives more flexibility to carry out household duties [76].

The evidence for a direct trajectory from saved time using a cookstove, to ability and desire to gain paid work therefore seems subject to question. Time saving is possible but what women use this time for is not clear. If we assume that women are "empowered" through the introduction of modern energy initiatives, it may also be the case that they choose to use their time in non-income generating activities such as resting, household tasks or spending time with their families [77]. Clearly targeted initiatives can improve women's livelihoods but this is currently on a small scale; furthermore the concept of empowerment is complex, is used in a rather limited sense and not measured widely in the clean cooking sector [78].

### 2.2.5 Summary

In conclusion, the adoption and sustained use of clean cooking technology may have benefits for individuals, communities and the environment. However, there are many challenges to changing behaviour; cooking on open fires is an activity embedded in the social, cultural and economic mores of many resource poor communities.

The ubiquity and persistence of “stacking” is a significant challenge to the idea that the introduction of improved cookstoves can “solve” the problems associated with HAP, particularly health impacts. Claims for the beneficial impact of cookstoves particularly those related to gender are also sometimes subject to an emphasis on reductive causality and “soundbites”. For example, through making a linear projection from the introduction of cookstoves to improved livelihoods for women and reduced gender-based violence, and the use of terms such as “empowerment”.

If we accept that there are positive aspects of improved cookstove interventions, then it is important to consider the time scale over which these will be realised. Health benefits are often not realised over the short term and other benefits, such as improved livelihoods are both difficult to measure and often not realised in the short term. These aspects appear to be neglected in the literature and would require large scale **and** long- term studies which would be difficult and expensive to carry out.

The use of improved cookstoves over time and how this linked with benefits raises the question of cookstove adoption. If benefits are to be achieved, then cookstoves need to not just be used but “adopted” as part of everyday practice. The concept of adoption and how it may be achieved will be explored in the next section.

## 2.3 Cookstove adoption

### 2.3.1 What is adoption?

Although the term adoption is used extensively in the literature about cookstoves there is no agreed definition. This is an issue that the CCA attempted to resolve through collaborative discussion; at a working session held at the Clean Cooking Forum in Ghana 2015, participants agreed on 5 ‘core areas of adoption to measure’.

That is:

‘the clean cooking technology meets the user’s needs, user is willing to pay/invest in maintenance and repair, the intensity of the use of the clean cooking technology, the degree of traditional stove replacement and the user is willing to pay/invest in the sustained use of the clean cooking technology over time’ [79].



In a measurement framework developed from these discussions there is still some ambiguity, for example it is stated that an indicator of adoption ‘may be “daily use of stoves”’ and a definition of sustained adoption is given as the ‘degree to which clean cooking is integrated in daily behaviour of users with no intention of reverting to traditional stove/fuel use’ [79].

In a systematic review about cookstove adoption, the authors state that ‘adoption within this article represents some use’ of improved cookstoves [80]. Often authors do not define what they mean by adoption at all and others, for example, Bensch et al. use terms such as ‘take-up’, ‘uptake’ and ‘penetration’ as well as adoption [81]. Some, for example, Masera et al. differentiate between adoption and use, suggesting that adoption is merely the acquisition of the cookstove [82]. Pine et al. also see adoption and use as separate but linked and suggest that the ‘study of adoption’ should be extended to ‘include intensity and variety of use’ [83].

Adoption cannot be discussed without introducing the concept of “stacking”, that is, concurrent use of open fire with improved or advanced cookstoves. Many researchers have shown that this is a common occurrence. This also occurs in Western kitchens, where ‘use of an oven, cooker, toaster and microwave is now usual’ [4]. However, in this scenario while there may be a mix of fuels used, for example a gas hob and an electric toaster, the fuel used is “clean” at least at the point of use. In low income environments where biomass fuels are used for cooking ‘stacking’ can negate the benefits of improved cookstove interventions particularly potential health benefits [4] [9].

Masera et al. have also introduced the idea of “fuel-stacking” suggesting that stacking of stoves may be driven by availability and/or affordability of fuel [82]. For example, in the absence of wood fuel for an advanced cookstove with low emissions, a cook may use a basic charcoal stove. The concepts of fuel and stove stacking are key to gaining a more nuanced understanding of how adoption occurs; this will be explored in more detail in the section that follows.

## 2.3.2 How does adoption occur?

### 2.3.2.1 Introduction

If adoption can be defined as use of improved cookstoves over time ultimately leading to discontinuing use of open fires or basic cookstoves, then how can this be realised? The following sections will introduce a range of models and theories concerning adoption of new energy sources and other technologies and discuss key

critiques of these. Finally, the findings of some key reviews of factors empirically associated with improved cookstove adoption will be presented.

### **2.3.2.2 The Energy Ladder and Critiques**

#### **2.3.2.2.1 The Energy Ladder**

The concept of the energy ladder has been established for some time; that is that with increasing income people move from using biomass fuels for cooking to charcoal or kerosene, then on to liquefied petroleum gas (LPG), and ultimately to natural gas or electricity. Barnes et al. writing in 1994 outlined how the development of cooking technology in industrialised countries of the West was seen as a suitable model for similar development in LMICs [30]. The authors state that there are 'obvious' social, environmental and economic benefits of moving to 'modern' fuels. However, for the millions that have access to low cost biomass fuel and are too poor to buy more expensive fuels (and associated equipment), improved biomass cookstoves provide a "bridge" between open fire cooking and more technologically advanced methods [30]. In this publication by the World Bank the authors say that there is a 'natural tendency' to move up the energy ladder [30], situating this concept in normative ideas of development. In addition, it is clear that the energy ladder model observed in Europe and North America is seen as the "answer" to the "problem" of continued use of biomass fuel in LMICs despite differing historical, sociocultural and economic contexts.

In the same decade Leach examined the energy transition from 'traditional biomass fuels' to 'modern energy sources' in developing countries, noting that the process is much more advanced in urban areas as opposed to rural and is closely linked with household income [39]. He concludes that the main barriers to moving to modern fuel use are access to those fuels and the ability to afford the appropriate equipment to use it. Interestingly he also describes how fuel price changes can result in shifts between the types of fuels used in multi-use households (for example kerosene and wood) but not necessarily the transition to modern fuels [39]. Using the ladder analogy, "snakes" (for example price increase of kerosene) can result in greater use of biomass fuels whether in the short or longer term. Leach indicates that these transitions are driven not by an 'emerging desire for modern fuels' but 'socio-economic' changes, suggesting a structural and not an individualistic impetus. In his conclusion he refers to the "'natural" pace of the energy transition which occurs during the normal development process' [39]. Like Barnes, Leach's analysis suggests that this energy transition is certain to happen eventually and is an integral part of the linear progression of "developing" countries.

#### 2.3.2.2.2 Multi-fuel model/stacking

The energy ladder model has been critiqued by Masera et al. who suggest that a “multiple fuel” model more accurately represents the ‘accumulation of energy options’ observed in rural households [82]. The authors describe four factors they suggest are implicated in household decision making in resource poor families: cost and access to alternative fuels; technical challenges of cookstoves and required changes to cooking practices; cultural preferences; and health impacts. This perspective is summarised as follows:

‘household fuel, rather than pertaining to a ladder of preference with one fuel clearly better than the other, possess both desirable and undesirable characteristics which need to be understood within a specific historic and cultural context’ [82].

This work is based on a 4-year case-study of a Mexican village and a large-scale survey carried out in 4 Mexican states and the cultural context is illustrated by a preference for the taste of tortillas (the staple food) cooked on an open fire. The authors also usefully point out that the application of a straightforward economic model is limited in communities where fuel can be collected for free and household incomes are difficult to assess due to a reliance on informal income generation activities [82].

Reporting on a study looking at household energy use in Maun (urban Botswana), Hiemstra-van de Horst and Hovorka add to the body of evidence with their analysis that multiple concurrent fuel use or “stacking” is the norm in LMICs [84]. They suggest that the energy ladder model is ‘flawed’ and question the ‘belief that fuel preferences are both universal and well known’ [84]. They find that Maun residents largely continue to use wood fuel despite the availability of cleaner cooking methods and that this decision is made on an economic basis. However, this preference is displayed at all income levels, it is not the cost of the fuel or equipment that is a barrier, rather that the ‘majority of respondents’ saved money by using certain types of fuels for cooking certain foods. For example, 68% of those using wood for cooking, used this method for cooking local dishes requiring long, slow cooking and 63% of those cooking with gas used this method for cooking dishes that could be cooked quickly [84].

An interesting perspective on the non-linear multiple cookstove/fuel model is presented by Wang and Bailis in their study in Himachel Pradesh, India [85]. In this context, multiple stoves were used including LPG and tandoor (a commercially

available improved cookstove) but the emphasis here is on the ‘social processes’ that result in the ‘permanent removal of the traditional cookstove made of mud called the *chulla*’. The authors describe how in the state of Himachal Pradesh, the caste system is significant and in this case study they compare if and how ‘scheduled castes (SCs)’ and ‘other castes (OCs), reject the *chulla*, using mixed methods including surveys, interviews, focus groups and participant observation [85]. The caste system, like the energy ladder, includes ideas of ‘cleanliness and social ascendancy’ with OCs being at the “bottom” and SCs at the “top”. They find that it appears that while ‘economic and social elites lead diffusion’ by readily adopting both LPG and the tandoor, the ‘traditionally marginalized’ are more likely to reject the *chulla* and discontinue use altogether. This is linked with ideas of cleanliness, with the OCs wanting to dissociate themselves from the smokiness of the *chulla* and the impacts of this on their clothing and homes; through ‘removing the *chulla*, simultaneously purifying and modernizing’, OCs ‘are actively positioning themselves on the social and “energy” ladder’ [85]. While this study was carried out in India, social hierarchies exist in all societies including in Africa and as Wang and Bailis have shown, moving beyond the economic to include social processes can shed light on the complexity of the move to cleaner cooking.

#### 2.3.2.3.3 Summary

The energy ladder model has a long history and many critics. Despite many researchers questioning its usefulness and applicability to the uptake of improved cookstoves in LMICs, the concept is pervasive in its simplicity. This can be useful if a critical approach is taken and it is accepted that there is often a movement up and down the ladder and that concurrent use of stoves and fuels frequently occurs, see Lewis and Pattanayak [80]. Other models [82, 84, 86-88] take into account that factors besides economic ones are also relevant and therefore more accurately reflect the multi-factorial complexity of changes in fuel use and cooking technology that can occur over time. Through extending the scope of their enquiry beyond the economic and through the use of mixed methods Wang and Bailis have shown that complex social processes drive both the adoption of cleaner cooking and the discontinuation of “traditional” stove use. Their research is a useful example of how moving beyond universalist ideas of the “energy ladder” can improve understanding of how households may start to exclusively use cleaner cooking methods and therefore realise potential health and other benefits.

### 2.3.2.3 Diffusion of Innovation Theory

This theory is often referred to by researchers reporting on and researching improved cookstove interventions [85, 89-91] and is important in the field of technology implementation and adoption.

Rogers defines diffusion 'as the process by which an *innovation* is *communicated* through certain *channels* over time among the members of a *social system*' [92]. In this context, an innovation is not necessarily new but is perceived to be so by the individual concerned; Rogers also makes the point that innovations are not always positive for adoptees.

He delineates different characteristics of innovations that may help explain why they are adopted at different rates: relative advantage (as in better than what went before); compatibility (fit with previous experience and current needs); complexity (how difficult is it to understand and use); trialability (can the innovation be tried out); observability (are the results observable). Rogers argues that these five factors are all important but that 'it is relative advantage and compatibility that are most closely linked with the rate of adoption of innovations' [92].

Rogers gives a powerful example of an unsuccessful diffusion of an innovation, namely the introduction of clean water pumps into Egyptian villages. The provision of clean drinking water to a community that previously relied on river water seemingly had many straightforward benefits but was 'poorly planned, without an adequate consideration of human behaviour and Egyptian culture', the solution 'lacked compatibility' [92]. Women missed meeting at the canal bank to collect water, pumps were broken by users dissatisfied with their mode of operation and mixing of clean and unclean water, that is, "stacking" also took place negating any health benefit.

To avoid such situations, Rogers argues that we need to improve the understanding of what motivates adoption of innovations but suggests that using questionnaires is not usually very helpful in this regard. He also questions the assumption that economic factors are the primary motivating factor as other factors such as 'prestige' are also important. He sees gaining an understanding of user perception as key to innovation diffusion [92].

Another common problem he identifies is the frequent over-stress of 'individual-blame' as opposed to 'system-blame' using the analogy, "if the shoe does not fit there's something wrong with your foot". Transferring this to the realm of clean cooking interventions, we might say, "If the stove does not fit, then there is

something wrong with the cook". He suggests that late adopters are often considered set in their ways and not rational but although there are many beneficial innovations, in some cases diffusion can be disastrous for some or all, of the targeted group and resistance to adoption may be 'entirely rational' [92].

Roger's theory, while not specifically about the "diffusion" of clean cooking technology provides a more nuanced model for understanding barriers to and enablers of adoption of improved cookstoves. The discourse that "blames" users for incorrect or insufficient use of the "innovation" is long-standing and difficult to eradicate and although users are often involved in the design and field testing of improved cookstoves, technological factors may be given precedence over others such as compatibility and prestige.

#### ***2.3.2.4 Alternative theories relevant to cookstove adoption***

An alternative view of how technology is adopted is posited by Slaski and Thurber [93]. As the authors state comparisons are often made between the adoption of cookstoves and other technologies such as mobile phones. Throughout Africa there has been a technological "leapfrog" from little use of phone communication to extensive and growing use of mobile phones including for activities such as banking and internet access [94]. The authors suggest that adoption of cookstoves is more challenging than for mobile phones and other innovations because of three important determinants. First and most significant 'is inherent motivation'; users need to see specific and clear benefits from use. Secondly, cookstoves must be affordable or subsidised in an effective way. Thirdly the scale of the change required can be a barrier to adoption. Cooking is not a one-off or intermittent commitment like a vaccination but entails continual engagement with the new technology. Importantly health risks are not seen by the authors as a significant factor in adoption of cookstoves and the changes required require 'deep motivation' by potential users [93].

These ideas are further developed by the same authors (and others) in a review published in 2013 [21]. They looked at 'medical and public-health literature published between 1985 and 2010' on the adoption of three 'household technologies' that are 'deeply integrated into daily life', namely: insecticide-treated nets (ITNs), water treatments and improved stoves, with the aim of assessing the importance of non-health adoption factors [21]. Factors were grouped into four categories: 'health, comfort, convenience and sociocultural'. Although the authors recognise that cost can also affect adoption, they consider that it is 'not an intrinsic

motivation for use' as 'even an affordable technology will not be put into use unless it serves some valued function'. This review showed that even when health was identified as an important motivating factor, it was not the most frequently reported. For all three technologies, comfort and convenience were the dominant motivating factors and for improved cookstoves none of the seven reviewed studies 'cited health considerations as playing an important role' [21].

An alternative theory in the context of the "bottom billion" is posited by Mani et al. [95], who argue that the link between poverty and 'counterproductive behaviour' is well established and this can 'further deepen poverty'. In the context of cookstoves, investment in improved cooking technology may result in considerable cost savings through less fuel use over the longer term and saved time could potentially result in increased economic opportunity. However, they suggest that for the very poor, the need to constantly balance finances is all encompassing and limits mental capacity for long term planning; that is, 'when attending to monetary concerns' this group 'lose their capacity to give other problems their full consideration'. The poor must cope not just with limited economic resources but with decreased 'cognitive capacity'. They suggest that policy makers should take this 'cognitive tax' into consideration when designing interventions [95].

The article was subject to some criticism on publication [96, 97]. However, two of the authors went on to publish a popular science version of the same hypothesis 'Scarcity: Why having too little means so much', using examples from rural India and introducing the idea of 'bandwidth' as follows: poverty 'reduces a person's cognitive capacity more than going one full night without sleep. It is not that the poor have less bandwidth as individuals. Rather, it is that the experience of poverty reduces anyone's bandwidth' [98]. In the context of exploring the reasons why low-income households may forgo long term gain for short term expediency this is a theory worthy of consideration. In the context of adoption of improved cookstoves, it may be assumed that potential purchaser would weigh the initial cost of the cookstove against the reduced cost of fuel over the life of the stove. Mani et al. argue that there are barriers to "rational" behaviour in low-income environments where cookstoves are promoted [95].

### 2.3.3 Key reviews of adoption

In a key systematic review of the literature of the adoption of improved cookstoves and fuels, Lewis et al. focused on the question: 'What factors are associated with household adoption of clean energy in poor countries?'. They searched literature for 'empirical studies' of adoption of improved cookstoves (ICS) or movement to 'clean fuel choice', identifying a total of 1911 papers. Only 32 of these matched the following inclusion criteria: 'a) considered the use of ICSs and/or clean fuels as an outcome, b) used multivariate regression analysis, c) included at least two determinants from socioeconomic, physiographic, market, or institutional domains, d) treated the household as the unit of analysis, and e) sampled populations from a developing country' [80].

Overall the authors 'found evidence of a systematic and theoretically consistent relationship between adoption of clean energy products and socioeconomic status (including income, education, and social marginalization) and urban location' and that 'evidence of a positive influence of education and location suggests that strengthening the information and communication aspects of social marketing and extending the supply-chain into rural areas could increase adoption.' However, they also conclude that 'the 'empirical (quantitative) literature base of adoption studies remains narrow, thin and scattered' and that the relationship between determinant factors and their relative importance is unclear. They call for further research and in particular, for 'deeper examinations of various aspects of the complex social system (e.g. intrahousehold bargaining and gender politics)' [80]. As the authors conclude, this review is a useful resource for implementers and researchers to build on in the future and it also indicates the complexity, interaction and relationship between multi-factorial determinants of cookstove adoption.

A wider ranging mixed-method systematic review published in 2013 aimed to 'describe and assess the importance of different enabling and/or limiting factors that have been found to influence the large-scale uptake by households of cleaner and more efficient household energy technologies' i.e. 'liquefied petroleum gas (LPG), biogas, solar cookers and alcohol fuels' and improved solid fuel stoves (ICS) [99]. A total of 14,000 records were identified (date range 1980 – 2012) from standard databases and also website and grey literature sources; experts in the field were also consulted. Quantitative, policy and case, and qualitative studies were included, and findings were categorised 'according to seven a priori defined domains relevant to household energy uptake and equity' [99]. An article was also published specifically about factors related to ICS adoption and in this Rehfuess et al. reported



that there were 57 studies identified that met the inclusion criteria and that 13 of these were in Africa (none in Malawi) [89].

These reviews did not include any studies looking at adoption of fan assisted cookstoves such as those in the CAPS intervention but the authors concluded that it is 'reasonable' that the findings would also apply to that technology [99]. In the analysis of factors influencing the adoption of ICS 31 factors were identified and mapped on the D1-D7 domains as indicated in Figure 2.1 and Table 2.1.

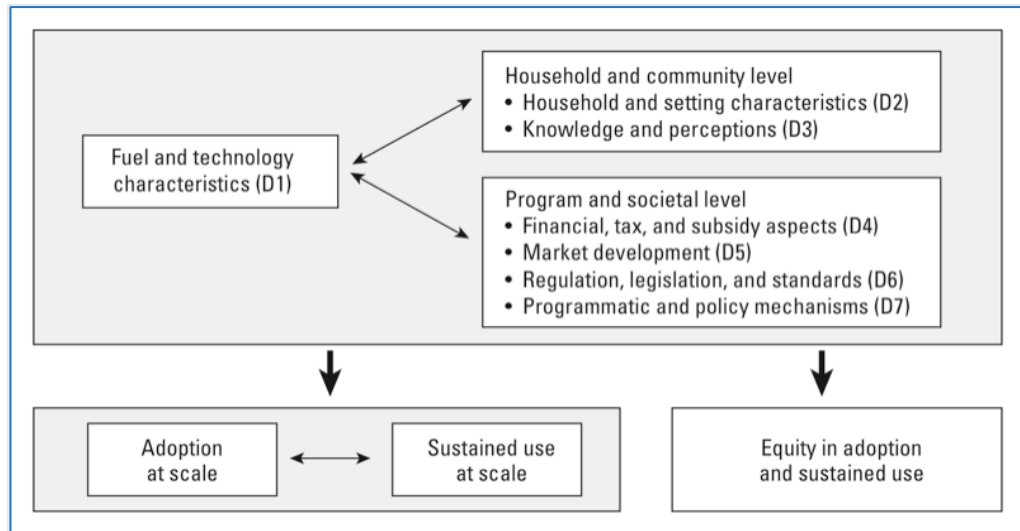


Figure 2. 1: D1 - D7 Domains

The authors suggest that rather than viewing these factors as 'discrete enablers and barriers' they should be 'seen as operating on a spectrum, so that when present or satisfactory they are enabling and vice versa' [99]. However, some factors are identified as being more critical than others. Eight examples of these factors are given but as it is made clear that this is not a full list and 'that there is no standard approach for identifying setting specific "necessary and sufficient" factors' [99] these are not included here.

Table 2. 1: Examples of factors for D1 - D7 domains

<i>Domain</i>	<i>Domain description</i>	<i>Factors</i>
D1	Fuel and technology characteristics	Fuel savings Impacts on time General design requirements Durability/specific design requirements Fuel requirements
D2	Household and setting characteristics	Socio-economic status Education House ownership and structure Multiple fuel and stove use Geography and climate
D3	Knowledge and perceptions	Smoke, health and safety Cleanliness and home improvement Total perceived benefit Social influence Tradition and culture
D4	Financial, tax and subsidy aspects	Stove cost and subsidies Payment modalities Programme subsidies
D5	Market development	Demand creation Supply chains Business and sales approach
D6	Regulation, legislation and standards	Regulation, certification and standardization Enforcement mechanisms
D7	Programmatic and policy mechanisms	Construction and installation Institutional arrangements Community involvement Creation of competition User training Post-acquisition support Monitoring and quality control

It seems that the authors were able to successfully describe factors implicated in the adoption of ICS but that assessing the relative importance of these was more problematic. They report that evidence available to do this at the time of the report was limited and suggest two 'general' recommendations. Firstly, that future clean cooking interventions should assess the efficacy both of fuels and stoves implemented, to assess the level of exposure, ensure that emissions are reduced, and the intervention is safe. Secondly that such interventions should include comprehensive monitoring and evaluation and 'in selected cases', should include studies of limiting and enabling factors. The development of a 'policy planning tool to assess all domains and constituent factors' is also proposed but to my knowledge this has not yet been developed [99].

Stanistreet et al. carried out a linked qualitative systematic review into the factors influencing uptake of improved 'solid fuel stoves' in households, that is, only qualitative studies were included, and qualitative methodology was used. The aim was to provide 'in-depth insights of the perceptions of actual users of improved stoves and other stakeholders involved in building, marketing or selling improved stoves' [91]. This embedded review identified fourteen relevant qualitative studies with two of these in Africa, specifically Kenya.

These findings are summarised as follows: it is important to incorporate the perspectives of users in IS interventions; users must value and use the cookstoves and be able to prepare 'traditional' dishes; cost is important but being able to afford a cookstove does not mean it will be used; time and fuel savings are also considered by users but restricting size types of fuel has a negative impact; less smoke and improved cleanliness is welcomed by women. The authors call for more incorporation of user views into interventions but also for the use of qualitative methods beyond 'small-scale projects' to 'explore factors impacting at regional, national or even international level including market development and policy mechanisms' as this 'would be useful in terms of understanding the impact and interplay of different factors across all domains and levels [91].

Overall the top-level systematic review [99] and associated sub-studies [89, 91, 100] are important, not just because they provide a review of relevant literature and provide useful information about determinants of cookstove use, but also because they identify significant gaps in research. In addition, the complexity of cookstove adoption is evident, whether at the household level or at community or national levels. These publications clarify that a "one size fits all" solution is elusive and that a greater understanding of socio-cultural constructs is key to effective cookstove interventions. Cookstove use is embedded in everyday practice and as such a greater understanding of decision making in that context is important. Stanistreet et al. point out that qualitative research can be useful in this regard and complements quantitative work in the field [91]. Finally, these reviews found few relevant studies in Africa despite the extent of cookstove use on that continent.

## 2.4 Gendered Household Roles and Decision-Making

As reflected in much of the literature about improved cookstoves, a straightforward link between cooking and gender can be stated as: women and girls spend a large part of their time cooking on unhealthy open fires or basic cookstoves but men primarily have the "power" to purchase improved cookstoves [101-104].

According to the Malawi 2015-16 Demographic and Health Survey, although since 2000 the participation of married women in household decision-making has improved, only 55% are involved in decisions about major household purchases [24]. This statistic however obscures the more nuanced negotiations that take place in all households and the dynamic nature of how power is exercised.

As discussed earlier “adoption” of cookstoves depends on more than purchasing a cookstove or agreeing to accept a donated item. Decisions are negotiated and made at other stages, for example: whether the stove will be used once obtained; who will use it, and whether it will be used in conjunction with other cooking devices; and whether funds will be made available for maintenance. This situation is further complicated because the decision to use an intervention cookstove occurs every day, several times each day and the cooking of food is key not just to daily nutrition but also to the dynamics of everyday family life.

Worldwide, household cooking is generally a role carried out by females and more particularly wives and mothers. Males are often designated as household “breadwinners” responsible for financial support of the family and with more limited household duties. In relation to cookstove interventions these “traditional” gendered household roles have shaped the implementation of cookstove interventions and gaining more understanding of this complex area is key to understanding enablers and barriers to adoption.

It is also important to consider the country context while recognising that there can be substantial variation within and between specific settings. Henn describes how historically men and women’s work in sub-Saharan Africa was clearly defined with the latter including: the preparation, storage and processing of food; pottery and other small-scale manufacture; caring for children and the sick. She concludes that one of the main legacies of this is the ‘widespread belief that women are responsible for feeding their families’ and that this ‘responsibility sets the parameters and the constraints of women’s economic life’ [105]. Potash cautions against considering the African family in the context of the ‘independent nuclear family idealized in contemporary Western society’ [106]. She outlines the difference between conjugal relationships where marriage is the focus and the consanguineal family structures common in African countries ‘where domestic groups are based on descent’ which may be patrilineal or matrilineal. In this type of arrangement, it is usual for women to be ‘responsible for their own economic support and that of their children’. She concludes that adaptation over time has occurred but not generally a change to

nuclear arrangement, rather 'a variety of new and old arrangements exist side by side' [106].

Further to close links between gendered roles and cooking are the complex and varied household dynamics that shape food purchase and preparation and also cookstove use and purchase. It is significant that within CAPS, households and not individuals were recruited to the study. It was the "head of household" who formally agreed to the participation of the household members although in most cases this was an adult male and not the usually female cook.

In a highly influential publication on household economics in 1987, Sen challenges the 'unitary' economic model of the household, suggesting that 'households face two types of problems simultaneously', namely co-operation and conflict between members [107]. In response to this, 'social arrangements' are formulated with gendered divisions of labour being part of this but not the whole. He uses cooking by women as an example of a social arrangement that is resistant to change in many contexts. He highlights how unpaid household work has a lower status than that outside the home and how this type of intra-household arrangement impacts on and is shaped by wider societal norms. When household co-operation fails, the strength of individuals' 'breakdown positions' determines the outcome of conflicts, which will by definition be more favourable for one party than the other [107]. He concludes that engaging in paid work outside the home can improve women's breakdown position, in part by increasing her "perceived contribution" to the family's economic position' and by deepening her family's and her own perception of her individuality and well-being [107].

In the context of the adoption of clean cooking environments and the association between cooking on open fires and poverty it is clear that gaining a better understanding of the complexity of household decision making is key. Many of the households using biomass fuels for cooking have very limited resources and there may therefore be conflicting demands on constrained incomes. As Sen says:

'Technology is not only about equipment and its operational characteristics, but also about social arrangements that permit the equipment to be used and the so-called productive processes to be carried on' [107].

Agarwal, like Sen, is critical of the 'unitary' model used by many policy makers which targets male heads of household with resources, on the assumption that these will be equitably distributed within the household [108]. She expands Sen's 'co-operative conflict' model suggesting a widening of focus to include: other possible

determinants of household bargaining including 'qualitative aspects of power'; the 'role of social norms' in determining bargaining power; an examination of 'differences in individual perceptions' and 'pursuit of self-interest', particularly regarding whether women are more altruistic or lacking in self-interest. Agarwal makes a strong case for using qualitative analysis to explore these issues, in particular for examining the 'role of social perceptions' in the gendered dimension of the needs and contributions of household members and the 'complexity of social norms' that impact on household decision making [108].

Ghertner analyses a specific cookstove implementation programme in rural India to show how gendered norms and household decision making processes are key considerations in such interventions. She argues that cookstove programmes are 'a particular type of intra-household technology' that focus on the delivery of an asset, but largely ignore how this can be used to enhance women's bargaining power and help them gain 'strategic power' [109]. Ghertner agrees that a move away from the unitary household model to the 'non co-operative bargaining models that emerged in the 1990s' was a useful development but suggests that 'the role of strategic gain' needs to be given more consideration in cookstove and other technology interventions. These types of interventions need to be considered carefully, as they are not just material interventions but also embedded in 'existing configurations of power and practice'. She finds that the way that the technology is implemented is key, as 'different approaches to delivering the same technology to a household have drastically different implications for women's ability to negotiate' and that such programmes can potentially reinforce or deepen gender inequality [109].

Clearly gendered decision making in the household is multifaceted, difficult to explore and context specific. This is illustrated in Muneer and Mohamed's examination of improved cookstoves within a patriarchal context in Sudanese households [104]. These authors agree that decisions are often gendered but suggest that, 'there are different decision-makers regarding different issues'. In this case, interviews were carried out with husbands and wives in 300 households (150 rural and 150 urban) and it was found that in the case of improved cookstoves, female household members were the primary decision makers [104]. This was however not recognised by implementers; men were assumed to be the decision makers in all cases and were therefore the target of improved cookstove communication and dissemination activities, negatively impacting on adoption. The authors conclude by emphasising 'the importance of analysing each social system in

terms of decision-making process, division of labor and gender relations and not relying on generalizations in the literature' [104].

Successful implementation of improved cookstoves must therefore take into account “social systems” at the household level and beyond. Taking gender into account is important but making assumptions about decision-making in households is not helpful. Power dynamics exist in this context (as well as in the wider community and society) but are not immutable. Successful implementation of improved cookstoves and the adoption of interventions depends on deeper understanding of how household decisions are negotiated in a particular context. In addition, it must also be recognised that such interventions and the manner in which they are implemented impacts on gendered household roles and can shift household power relationships both negatively and positively. In-depth qualitative enquiry and analysis is a useful way of exploring such complex issues.

## 2.5 Behaviour Change

### 2.5.1 Overview

In the context of the CAPS trial, it is clear that behaviour change of the participants was a necessary part of the trial process. Participants consented to be enrolled in the trial and those in the intervention arm agreed to use the cookstoves for the period of their enrolment. In the control arm, participants were given cookstoves at the end of the study and therefore introduced to this new technology. Both groups were exposed to community consultation activities prior to and during the trial. In simple terms there was anticipated behaviour change, from cooking on open fires to using the cookstoves, at least for the period of the trial, but also the possibility of unexpected behaviour change, for example, a change to cooking habits or diet.

In cookstove interventions studies more generally, whether behaviour change is an explicit or implicit aim of the study, a consideration of behaviour changes and implications is important. The behaviour change literature is extensive and wide-ranging and will not be covered in depth in this review. What follows is an overview of the field, an examination of literature relating to behaviour and cookstoves specifically. The use of behaviour change in health promotion activities has been subject to considerable criticism and a brief overview of this will be included. The section will conclude with a more detailed description of a more ethical form of behaviour change which is linked with the discussion on Chapter 3 of development discourses.

### 2.5.2 Behaviour change theories

The scale of behaviour change theories is described by Davis et al. in a scoping review of behaviour change theories relevant to the design and evaluation of public health interventions, ‘informed by the disciplines of psychology, sociology, anthropology and economics’ [110]. The authors identified eighty-two theories and suggest that ‘there are a large number of theories that are of potential use in the designing public health interventions’ but that few ‘have been subjected to wide–scale rigorous empirical evaluations’ [110]. There is some evidence of successful implementation of behaviour change theories in smoking cessation, and healthy and physical activity [111] but in general the aim of developing a ‘behaviour change ontology’ is ongoing [112].

In a systematic review, Michie et al. carried out a review of existing behaviour change frameworks and evaluated them against three criteria, that is, ‘comprehensiveness, coherence, and (with) a clear link to an overarching model of behaviour’ [113]. They found that no existing studies fully met these criteria and therefore developed a new ‘behaviour wheel’ framework with a ‘behaviour system at the core ‘involving three essential conditions: capability, opportunity, and motivation’. The authors concluded that further research is needed to test their behaviour change wheel to assess whether this approach leads to ‘more efficient design of effective interventions’ [113].

### 2.5.3 Implementation research

The design of interventions with reference to behaviour change theories is however strongly encouraged as is clear from the detailed document ‘Developing and evaluating complex interventions: new guidance’ produced by the UK Medical Research Council [114]. In addition, there is a move towards implementation research in health based interventions, that is, studies of how evidence based interventions are put into practice in the “real world” [115]. Directly related to clean cooking research, GACC, the National Institutes of Health in the United States (US) and other US government agencies set up a Clean Cooking Implementation Science Network in 2017 that with the aim of developing ‘powerful tools for understanding barriers to and enablers of adoption’ [116].

### 2.5.4 Behaviour change and improved cookstoves

A supplement to the Journal of Health Communication specifically related to behaviour change strategies for clean cooking, provides an overview of the use and efficacy of behaviour change theories and models in the context of cookstove interventions. Rosenthal and Borrazzo introduce the volume by outlining how



reducing exposures to cookstove pollutants in the “real world” through the introduction of clean cooking technology environments is particularly challenging. The authors call for clean cooking implementers to build on the behaviour change experience of those involved in projects for delivery of vaccines, sanitation and bed-nets. They also emphasise that ‘individuals and households may not view long-term health benefits as a major motivator for health change’; instead other factors such as ‘status, comfort, convenience and time and cost savings’ may have more impact on behaviour change [117].

Barnes et al. agree that few cookstove intervention programmes have ‘explicitly used behavior change theories or frameworks to guide their initiatives’. Further when these have been implemented this has been done ‘simplistically’ with an emphasis on education of the ‘poor’ about ‘health and economic effects of household air pollution’ [118]. These authors suggest that more rigorous use of behavior change methodologies would result in improved study design and implementation and that it is important to look at drivers of behaviour change over time. In addition, that behaviour beyond the household needs to be considered as:

‘...clean cooking requires many interrelated actors to practice complex behaviors consistently and correctly over time. This includes behaviors of cooks, husbands, mothers-in-law, health providers, wood sellers, stove sellers, stove distributors, stove producers, public health professionals, governments, NGOs, microfinance institutions, and medical researchers, among others’ [118].

The volume also includes articles describing behaviour change methodologies used in cookstove interventions. For example, the potential use of social marketing is explored by Lewis et al. ‘specifically, the 4Ps of “marketing mix”: promotion, product, price, and place’ as this approach has proved to be effective in the promotion of healthy behaviour in water and sanitation projects [119]. The authors report on the results of 3 pilot studies using different variants of the ‘4P’ approach and conclude that ‘combined door-to-door personalized demonstrations with information pamphlets was effective’ and suggest that ‘collectively, these pilots point to the importance of continued and extensive testing of messages, pricing models, and responses to different stove types before scale-up’. They suggest that innovative methods are needed in cookstove interventions as stoves are a ‘push’ product as compared to mobile phones which are a ‘pull’ product [119].

These articles illustrate some of the tensions in the use of behavioural change techniques in health promotion activities which have been criticized for being 'ineffective and even unethical' [120]. Van Den Broucke outlines three main critiques: an under appreciation of the complexity of interdependent health behaviours and neglect of the 'social and cultural context'; a focus on individual blame which discounts how behaviour is shaped by 'social and physical conditions' including poverty; behaviour change models leading to greater health inequalities as they do not 'sufficiently empower people' [120]. Behaviour change framings can be contrasted with a rights-based approach that in the context of cookstoves acknowledges that 'reaching those living in rural poverty requires significant state investment and resources in order to fulfil the universal right to clean air' [121].

It appears therefore that although there are many behaviour change theories, they are commonly under-pinned by certain assumptions and framings that focus more on individual than structural constraints to behaviour change. Another potential problem area is the lack of consistency between how these theories are applied.

In a summary of a comprehensive report commissioned by the U.K. Department for International Development [122]. The authors reviewed the use of behaviour change theories (BCTs) as they consider that these could be a useful way to address barriers to the adoption of cookstoves. A literature search resulted in the identification of '48 articles documenting 55 cleaner cooking interventions' where BCTs were used and seven illustrative case studies. The table below shows a list of BCTs and the number and percentage of studies these were in making clear that a wide variety of techniques were used and in combination.

Table 2. 2: List of behaviour change theories and interventions

<b>BCT</b>	<b>No. of interventions</b>	<b>% of interventions</b>
<b>Shaping knowledge</b>	47	86
<b>Reward and threat</b>	35	64
<b>Social support</b>	35	64
<b>Comparisons</b>	16	29
<b>Identity and self-belief</b>	15	28
<b>Regulation</b>	15	28
<b>Changing the physical environment</b>	10	18
<b>Goals, planning and monitoring</b>	3	6

The authors found that although the use of BCTs 'was common, their implementation as part of an established behavior change model or framework appeared to be rare' with the 'Shell Foundation Room to Breathe project' [123] being one of few interventions utilising a 'leading' BCT model [124]. In addition, there was a lack of evidence in the studies about the impact of the BCTs used with authors making 'best guess' of which were most effective. They concluded that in comparison with other sectors 'there is a relative absence of specific strategies, plans and activities based on behavior theory, models and research', therefore the authors were not able draw any conclusions about the best BCTs to use in cookstove interventions.

Their recommendations are that a 'theory of change' is developed for each intervention that shows what the aim of the BCTs is and with measurable outcomes. Interventions should have a clear hypothesis and implementers 'are strongly encouraged to consider incorporating strategies, plans and activities based on behavioural theory, models, experience and research' [124]. It seems clear that in many cookstove interventions various BCTs are being implemented but if this is not done in a structured way then it is difficult to know what works where and how transferable successful intervention strategies are. However, the question of whether behaviour change approaches are appropriate in cookstove initiatives remains.

### 2.5.5 The ethics of behaviour change and cookstove intervention programmes

Tengland examines this issue in the context of general health promotion [125]; much of the discussion is also relevant to improved cookstove promotion and implementation. The author argues that 'plausible ultimate goals for public health and public policy are equality, happiness and quality of life' with the latter being particularly important. He is critical of the 'macro fashion' of much health policy implementation and suggest that these are often unsuccessful because the type of problems they target cannot be fully tackled by a top-down approach. Tengland proposes an 'empowerment approach' as opposed to a 'behavior-change approach' suggesting that not only is this more effective it is more ethical [125].

With particular relevance to cookstove programmes the author states that 'lifestyle appears harder to change, since it seems to be more related to self, or group, identity, and to quality of life' and further that 'indirect' behaviour change goals that

are related to the reduction of risk of ill-health and disease sometime in the future are challenging. Even if behaviour change techniques are effective and leads to improved health, Tengland proposes that this approach is problematic. This is outlined in this quote below which has been included in full as it provides a succinct but comprehensive overview of why this may be the case.

‘Should we be fully satisfied if people changed towards a more healthy behaviour? The attainment of reduced smoking, reduced alcohol intake, increased condom use, increased vaccination rates, and more exercise, seems to describe successful interventions since they lead to better individual, group, and public health. Despite this, there are several difficulties with this approach, namely, it is overly paternalistic, and disregards the individual’s or group’s own perception of what their problems are, and what they want to achieve – something that also increases the risk of failed interventions. It, furthermore, risks leading to (harm through) “victim blaming” and stigmatization, and to increased inequalities in health. And finally, it puts focus on the “wrong” problems, i.e., behaviour, instead of the “causes of the causes”.’ [125]

The author explains that: paternalism is intentional interference which acts against an individual’s autonomy; that by focusing on individual behaviour there is an implication that ‘people themselves are to blame for their problems’; a focus on the “risk behaviour” of an individual or group can lead to ‘stigmatization’. Further that both victim blaming and stigmatization can lead to a shift of focus away from ‘the greater social, economic, and environmental factors influencing behavior’ [125].

The alternative approach suggested in this article is the ‘empowerment approach’ with an emphasis on passing as much control as possible over to individuals and groups and on quality of life. The author advocates that this approach avoids many of the pitfalls of the paternalist approach and also provides more benefits for those with lower incomes by reducing the risk of increased health inequalities. This is achieved by ‘promoting the *ability* for autonomy’ and having an explicit goal of empowerment leading to improved quality of life through addressing ‘the most important issues for people, such as powerlessness, lack of control, or lack of hope’ [125].

### 2.5.6 Summary

Behaviour change theories are therefore already used by improved cookstove implementers and researchers in various ways but clarity about objectives, methods

used, and measures of success are sometimes difficult to determine. The range of theories that can be used is very wide; there are also many theories associated with public health and changing health behaviour that it is not possible to include here.

Although the aim of many improved cookstove programmes is to realise one or more of the benefits discussed earlier, that is to improve the environment, health and the status of women, it is clear that outcomes may not be as expected. When “interventions” of this type are made, anticipated behaviour change must be made explicit and critically interrogated. Behaviour change theories may provide ways to more effectively manage and measure this change but it is also important to consider the impact of the intervention on individuals, households and communities, and the ethical basis of the use of these.

Underlying much of the preceding discussion has been the issue of poverty and as Tengland has indicated this is linked with lack of autonomy and health inequalities. I would suggest that taking an “empowerment” human-rights based approach as opposed to behavioural change approach provides a more ethical and effective way forward. A successful cookstove intervention should therefore not just lead to substantial adoption of improved cookstoves but have an ultimate aim of improving the quality of life of participants and of reducing health and other inequities. Chapter 3 that follows will build on this discussion to explore alternative conceptualisations of the “problem” of cookstove adoption that are intrinsically linked with power dynamics.

## 2.6 Summary of main findings

This literature review has described the many stated benefits of cookstoves which are promulgated widely including by the CCA and other influential organisations. The evidence gaps and assumptions made about these benefits have been critically examined including the idea that cookstoves lead to the “empowerment” of women. The limited success of cookstove interventions has been described which is linked with the common issue of concurrent use (stacking). However, there do appear to be health benefits of sustained cookstove use and in the absence of alternative clean cooking solutions, it seems likely that cookstove interventions will continue to be implemented.

The use of the term “cookstove adoption” has been explored; it is widely used but with limited clarity about definitive definitions and measurement approaches. In particular there is a lack of studies showing adoption over time and research and in Africa. From the genesis of cookstove interventions, models of energy adoption

were shown to be rooted in universalistic models of development with narrow economics-focused assumptions. These “energy-ladder” concepts persist today and obscure the complexity of adoption of clean cooking technology. A range of varied factors implicated in adoption have been identified but assessment of the relative importance of these remains elusive, reflecting the importance of the local social context to cookstove use.

Linked with the suggested “empowerment” potential of cookstoves for women, the role of gender in household decision making about cookstoves was shown to be often superficially described. It was suggested that a deeper consideration of the complexity of power relations within the household is needed to fully explore this difficult area.

The use of behaviour change models in cookstove initiatives was explored and it was concluded that such approaches are used but in a way that makes it difficult to assess their efficacy. More fundamentally the conceptualisation of such models suggests (as with the energy ladder model) that unexamined assumptions about linear and information-based behaviour change, underpin many cookstove initiatives.

## Chapter 3 – Theoretical Foundations

### 3.1 Introduction

In the preceding chapter, some of the issues of taking a top-down approach to the adoption of cookstoves were described. The proposed benefits of introducing cookstoves were critically examined and it was argued that ideas about technology uptake are often rooted in a universalist, linear idea of progress that can lead to insufficient attention being paid to social relationships and power dynamics. This leads to the conclusion that alternative bottom-up approaches need to be considered when introducing new technology such as advanced cookstoves.

In this chapter the scope of enquiry will be widened and deepened to examine in detail some of the theoretical foundations of concepts that help us to understand interventions to introduce new technology. That is, not simply to add to the critique of such interventions but to introduce new approaches that extend our understanding of these and may ultimately suggest alternative ways forward.

This exploration is informed by Crewe and Axelby's recommendation to challenge existing hierarchies of knowledge and recognise that while technological interventions shape human action, the agency of human actors also shapes those interventions [126]. The implementation of cookstove projects and the adoption of the technology is situated within 'larger cultural and political value systems' and involves different groups who may have conflicting aims [126]. The overall aim in this chapter is to demonstrate the hybrid nature of knowledge that is intrinsically linked with power, in order to provide useful theoretical context for discussion of methodology in Chapter 4 and findings in Chapters 5-7.

The structure of the chapter will be in two parts that have in common a concern with power and in particular the invisible form of power described by Lukes and Gaventa [127, 128].

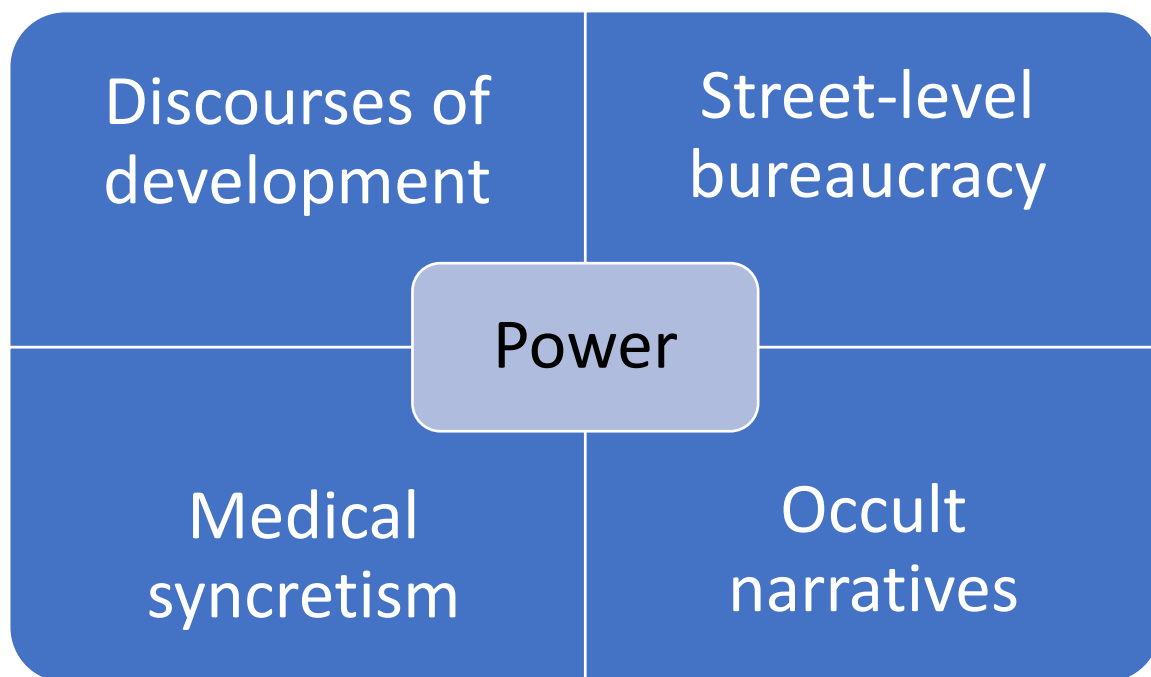


Figure 3. 1: Useful theoretical concepts that deepen understanding of cookstove interventions

The first section is underpinned by the concept of ‘discourses of development’ as espoused by Grillo [129]. He utilises the Foucauldian term discourse which ‘includes language, but also what is represented through language’, that is, which is concerned with the ways that development is practiced as well as the way in which it is discussed, to develop the idea of a ‘development discourse’. While he argues that there is a “‘development gaze’” which ‘constructs problems and their solution by reference to *a priori* criteria’, he is critical of the idea of development as a ‘monolithic enterprise’ and suggests instead that several discourses of development co-exist [129]. This discussion will include critiques of development narratives by Ferguson [130, 131] and Englund [132]. In both cases the author’s research is situated within Africa, in Ferguson’s case Lesotho. Englund’s account relates to his experience in Malawi so adds clarity to the national development context. The work of Crewe will also be examined as she suggests that the taken-for-granted nature of development in the field of improved cookstoves impacts negatively on such interventions [133].

The second section is an exploration of theories pertinent to clinical trials and “research environments”. Montgomery and Pool suggest that research participants ‘are not located in the social vacuum which the randomized controlled trial idealizes; they are situated at the intersection of other forms of inclusion and exclusion, both locally and globally’ [134]. These authors are critical of the use of the term ‘community’ to describe research participants and suggest that ‘clinical trials create publics’ through ‘the bureaucratic and enumerative practices’ they entail. They make



two important points: firstly that ‘publics do not pre-exist research activities’. Rather the research process leads to the development of new kinds of ‘collectives,’ leading to the conclusion that recruiting of groups is not just a scientific activity but also has ‘deep social implications’. This is indicated by the presence of Satanic rumours in the HIV prevention trial they describe. ‘Secondly, publics are dynamic and transient’. They are not developed in a linear way but are cyclical, ‘resources come and go and with them, the infrastructures and instruments of governmentality’ [134].

This exploration begins in section 3.4.1 with an overview of the literature related to “street-level bureaucrats (SLBs)”, a concept first formulated by Lipsky [135]. Within CAPS this term relates to the intermediaries between researchers and trial participants including fieldworkers, community liaison members and health workers. In the wider context, when “cookstove development” is promoted through government policy or aid programmes, there are intermediaries on the ground who implement the policy or programme aims. This overview is followed by a more focused discussion of SLB related research in Malawi and other LMIs and the section will conclude with a discussion of how the SLB role depends on the building of trust.

Section 3.4.2 focuses on understandings of health, and in particular the relevance of medical syncretism to conceptions of the health impacts of cookstoves. It begins with a brief discussion of the pre-dominant biomedical model of health. The discussion of medical syncretism that follows elucidates why this theory is particularly relevant to the CAPS trial.

Religious and occult beliefs are important in Malawi and there are links between these and the development of syncretic understandings of health and technology. It is therefore vital to discuss how such beliefs have been theorised and the relevance of these concepts to this research study. In section 3.4.3 the occult narratives relevant to the CAPS context, that is, situated in rural Malawi and under the aegis of a large-scale international research organisation are described and considered. A brief historiography is included, that is an overview of the different terms and ideas encapsulated by these narratives over time. This is followed by an exploration of the literature specific to occult narratives within clinical trials in Africa. The section concludes with a discussion of how these narratives fit with wider discourses of power and social relationships.

To deepen the theoretical basis of the overall discussion in this chapter, it begins with a brief overview of relevant theories of power.

### 3.2 An overview of power and resistance

As described by Gaventa, a commonly recognised form of power is *power over* which indicates coercion and that power is taken and used to ensure that others do not gain it. In this way, power over could be seen to perpetuate 'inequality, injustice, and poverty' [136]. In looking for alternative models, researchers have formulated more collaborative approaches such as *power with*, *power to* and *power within*. Power with is based on collaboration and mutual support and advocates seeking out allies and building coalitions. Power to 'refers to the unique potential of every person to shape his or her life and world' and the idea that everyone has the potential to make a difference. Power within 'has to do with a person's sense of self-worth and self-knowledge' and 'affirms the common human search for dignity and fulfilment' [136].

The many ways that power has been approached includes views that it is: held by powerful actors and exercised on the powerless; pervasive and situated within widespread relationships and discourses; 'a zero-sum concept' where gaining power by some means others lose it which can lead to conflict; 'fluid and accumulative' and can be shared between actors and networks in various ways [136]. It can also be seen as negative, as something that enables control over others, or conversely as a positive enabling element.

The latter view is shared by Foucault who is considered by some to be the most influential theorist of power [127]. Foucault wrote extensively about power and in his later work rejected the widespread 'wholly, negative, narrow, skeletal conception of power' and concluded that power is not just repressive but also a 'productive network' [137]. Overall his work on power emphasises three important points. Firstly, in relation to agency he suggests that power is 'dispersed and subject-less'. The actions of subjects may add to the processes of power, but this is through overall approaches and not directly. 'Secondly, power is ubiquitous, and appears in every moment of social relations'. The exercise of power is part of the everyday. Thirdly power can also be positive and it is an integral part of reality and is found throughout society [127].

Foucault also considers power and knowledge to be intrinsically connected and uses the term power/knowledge. That is knowledge cannot be accumulated without power and power cannot be exercised without the accumulation of knowledge [127]. At the core of power/knowledge is the concept of 'discourse' through which power is exercised, as it is the means by which 'knowledge and subjects are constituted'.

Discourse is also related to resistance; both are ‘diffused throughout society’ and like power, resistance can be found everywhere there is power and when people seek to ‘evade, subvert or contest strategies of power’ [127].

In addition to Foucault and Gaventa’s approach to power as being ‘dynamic and relational’ [136] the three forms of power proposed by Lukes, that is, visible, hidden and invisible, can also be used to enhance understanding of why change occurs and is resisted [128]. **Visible power** is that which is observable, that is the rules, institutions and procedures involved in decision-making. **Hidden power** relates to the setting of the political agenda and involves the control by powerful people of access to and the agenda for, decision making processes. In these dynamics the concerns of less powerful groups are devalued. **Invisible power** involves how meaning is shaped and how what is acceptable is defined. This is described as the ‘most insidious’ of the three dimensions and ‘shapes the psychological and ideological boundaries of participation’ [136]. This not only leads to interests being overlooked but leads to beliefs about what can be done. For example, to acceptance of the status quo and views about the inferiority or superiority of individuals and groups [136].

The emphasis in the next section will be on development discourses relevant to the exercise of hidden and invisible power, and the power/knowledge nexus in development discourses, in the Malawian context and in “cookstove development” initiatives.

### 3.3 Section 1

#### 3.3.1 Discourses of cookstove development

##### 3.3.1.1 Introduction

Information on the Clean Cooking Alliance website can be used to illustrate how current development paradigms dominate the cookstove sector [11]. The Alliance is described as having a large and growing list of partners ‘from the private sector, NGO, philanthropic, donor, humanitarian, multilateral, and academic fields’ and of being an ‘innovative public-private partnership’ [138]. Partners are asked to ‘ascribe to the Alliance’s market-based and collaborative approach in support of developing a thriving global market for clean cookstoves and fuels’ [138]. The organisation is ‘hosted’ by the United Nations Foundation and has recently aligned its aims with the sustainable development goal of universal energy for all by 2030.

As described in Chapter 2 it is universally agreed that access to cleaner cooking is difficult for people living in poverty and there is also research associating the introduction of cookstoves with reductions in household poverty. Within the energy sector, the post-Enlightenment idea of progressing up the energy ladder is ubiquitous, as is the problematic assumed link between adoption of cookstoves and economic empowerment of women. The market-based approach as advocated by the Clean Cooking Alliance is pervasive. Balanced against this was the suggestion (in Chapter 2), that it is helpful to bring the perspectives of cookstove users to the fore and to recognise that these are embedded within historical, cultural, and social frameworks. In the section that follows, the approaches to cookstove adoption already described are situated within wider discourses and theories of development.

### *3.3.1.2 A dominant model of development*

Ferguson prefaces his book 'The Anti-Politics Machine' (1994) by highlighting how posing the question "What is development?" seems nonsensical as it has become 'central to so much of our thinking about so much of the world' [130]. He suggests that large parts of the world are viewed through a prism of development, that it has become a 'dominant problematic' and that it is important to think about the effects of this discourse in practice. Ferguson explores this through a case-study of Lesotho based on research carried out from 1975 – 1984. His aim is not simply to critique the idea of development but to show the 'real social effects' of this approach, which he describes as an "anti-politics machine", depoliticizing everything it touches...all the while performing, almost unnoticed, its own pre-eminently political expansion of expanding bureaucratic state power' [130]. Grillo usefully summarises Ferguson's 'anti-politics machine' as referring to the 'way in which development projects take over the role of government and attempt to provide "technical solutions"' [129].

Ferguson and Lohmann describe how Lesotho has received considerable development "investment" from many different countries and at considerable expense (in 1979 around \$49 for every member of the population) but with little evidence that development objectives were achieved or that the 'economic or strategic importance' of the country was enhanced [131]. The question this leads the authors to ask could also apply to the drive to introduce cleaner cookstoves:

'What, then, is this massive and persistent internationalist intervention all about?'

They suggest that organisations such as the World Bank describe countries in ways that mean they are suitable for "development" interventions. In the case of Lesotho

this led to a definition of an isolated country with a subsistence-based economy that Ferguson and Lohmann argue is 'incorrect and outlandish' [131]. An example used is the emphasis of the World Bank on introducing in-country agricultural projects as opposed to becoming involved in the work-based issues more pertinent to the large number of migrant workers employed out of the country in South Africa [131].

Ferguson expands on these ideas further by proposing that even though such development projects may result in the expansion of state power and may have stated aims of reducing poverty, this is not framed within a political discourse. Rather, poverty is formulated a 'technical problem' and 'by promising technical solutions to the sufferings of powerless and oppressed people, the hegemonic problematic of "development" is the principal means through which the question of poverty is de-politicized in the world today' [130]. In addition when technical solutions are offered to non-technical problems and these solutions fail or falter, then 'opposition to the official system' may be 'taken to mean ignorance or lack of understanding' [139].

Ferguson uses his machine metaphor to unpick how the "unintended outcomes" of development, the side-effects, occur. He suggests that there may be intent and also elements of conspiracy within a 'structured discourse...but only as part of a larger "machine", an anonymous set of interrelations that only ends up having a kind of retrospective coherence'. His view is that the intentions and plans of actors (even powerful ones) are only 'part of a larger mechanism' [130].

Rew suggests that Ferguson's work is 'a benchmark analysis of development programming in action' [139] but its limited practical applicability has been criticised. As Grillo describes Ferguson does pose the question 'What is to be done?' but answers this with 'an appeal for a rather feeble and restricted form of politically correct anthropology' [129]. In the context of this research however Ferguson's work provides valuable insight into how "development" works in practice. He shows that development projects and processes lead to effects that may be different from those that were intended. With direct relevance to Malawi, he demonstrates that the representation of countries such as Lesotho as "under-developed" leads to assumptions that technical solutions will resolve this "problem" and acts against tackling the "political". Clean cooking interventions are inherently technical and particularly with cookstoves implementers may concentrate on imparting knowledge about their use and benefits, under the assumption that this will automatically lead to adoption. When this does not happen, the cause can be assigned to insufficient

knowledge or understanding of cookstove recipients, essentially to “ignorance”. His emphasis on the problematic assumption that change comes from “outside” but conversely depends on the active involvement of those on the “inside” is also very relevant to the CAPS trial and to cookstove interventions in general. Finally, he draws attention to the potential of “empowerment” in the change process and the importance of involving actors at all levels, particularly those that are most directly impacted by “development” initiatives.

He suggests that there are other approaches to tackling issues in low income countries beyond that eschewed under “development”. His supposition is that ‘it is powerlessness that ultimately underlies the surface conditions of poverty, ill-health, and hunger’, so ‘the larger goal ought therefore to be empowerment’ [130]. The dominant development paradigm sees change as coming from outside but he says that ‘the most important transformations, the changes that really matter, are not simply “introduced” by benevolent technocrats, but fought for and made through a complex process that involves not only states and their agents but all those with something at stake, all the diverse categories of people who craft their everyday tactics of coping with, adapting to, and in their various ways, resisting the established social order’ [130].

### ***3.3.1.3 A human rights discourse in Malawi***

The idea that a development discourse can be used to justify and promote ‘very real interventions and practices with real (though invariably unintended) consequences’ [140] is also explored by Englund [132]. He argues that a universal concept of “human rights” became defined in a particular way in Malawi and describes how this resulted in “disempowerment” for the majority of Malawians. As with Ferguson he took an in-depth ethnographic approach but with a particular emphasis on immersion in the main Malawian language Chichewa.

He describes how Malawian human rights activists, working in a straitened economic environment seek to distance themselves from the “poor” and how expatriate elites avoid “rocking the boat” with politicians and business leaders [132]. Englund concludes that ‘elitism maintains the status quo’ through a focus on ‘freedom, democracy and human rights as universal as abstract values’ and by excluding ‘the actual concerns and aspirations of the people’. His argument is that the concept of empowerment ‘has become vacuous’ and that the mechanisms of the democratic process obscure the voice of those calling for social and economic development and particularly the alleviation of poverty [132].

Of general applicability, particularly in Malawi but also more widely is the focus that Englund found within civic education on the importance of literacy. He found that illiteracy was seen 'as one of the most obvious indices of backwardness and ignorance'. It was linked with economic and social disadvantage but 'also equals ignorance, underdeveloped intellectual facilities that frequently result in mistaken beliefs and understandings' [132]. Linking with his critique of the lack of emphasis given to translation, he explains that the Chichewa word for ignorance is used synonymously for illiteracy. This then leads to the idea that 'illiterate Malawians are incapable of thinking for themselves' whereas he is clear that whether illiterate or not they 'have insights into their own life situations and cogent reasons for acting on those insights' [132].

Englund also provides useful insight into problems that can occur when the voices of the marginalised are not listened to, suggesting that this can lead to 'moral panics' [132]. He describes events in Malawi in 2003 when rumours of child abduction were linked with cabinet minister's wealth and frequent trips abroad and parents rushed to remove their children from school. He suggests that these type of rumours 'open up an alternative perspective on democracy and human rights' and that in this case apparent 'docility' masked 'the many contentious discourses and subversive practices that actually informed the everyday experiences of being poor'. He uses the phrase 'bombs of the poor' (from the work of Achille Mbembe [141]) to vividly indicate how rumours can be powerful and destructive [132]. Through his discussion of rumours, Englund illustrates how representations of the local populace are a core part of development practice [142] but also how this is resisted. As Scott has detailed, resistance can also be 'everyday', that is through actions such as 'foot-dragging, evasion, false compliance, pilfering, feigned ignorance, slander and sabotage' [143]. Foucault suggests that where there is power there is resistance and that by paying attention to resistance we can 'bring to light power relations' [144].

#### **3.3.1.4 A cookstove development discourse**

There seems to be wide scope for exercise of power and resistance in cookstove developments. As detailed in Chapter 2, non-use or "mis-use" of cookstoves is a common challenge to implementation and to adoption. The only successful large-scale cookstove implementation to date took place in China where centralised bureaucratic control was an important factor [145]. Meah proposes that in contradiction with the 'Global North' idea that the kitchen is a space of subjection, 'the negotiation and distribution of foodwork' which includes cooking, can 'also afford opportunities to exercise agency and resistance for women' [146]. Crewe explores

these ideas in her formulation of a specific cookstove development discourse, suggesting that 'European developers' have struggled to formulate cookstove interventions that help cooks due to the 'unspoken ideologies' that underlie their interventions [133].

She bases her analysis on Bourdieu's concept of silent traditions and develops an argument that assumptions made by cookstove developers result from 'complex historical forces in their own countries' [133]. She traces the historical development of cookstove research from the involvement of international organisations from the 1970s when cookstoves combined 'several "sexy" subjects' including working with women, promoting the role of local artisans, environmental conservation (particularly preventing deforestation) and pollution reduction [133]. Crewe describes how even though the initial impetus for cookstove development deforestation was discredited, (when it became clear that industry and agriculture were the main drivers), cookstove interventions continued to proliferate during the 1980s. Her supposition is that during this period an influential cookstove development discourse was formulated that had two main results, firstly that engineers displaced cooks as 'technical innovators' and secondly that 'European expatriates' came to be recognised as experts in the field [133].

She describes how the groups that participate in cookstove interventions come from different backgrounds including incoming experts, and engineers who are sometimes from the target community. She suggests however that cookstove users, the cooks, are universally 'indigenous'. She explains that although from the outset there were problems with take-up of cookstoves but that the cause of this was generally assigned to incorrect use by and the conservatism of, cooks. She suggests that 'technical and scientific parameters' came to be seen as more important than the 'needs and aspirations' of cookstove users because external experts 'were apparently the only rational judges of technology' [133].

Crewe argues that this 'social transformation' was accompanied by a move towards male technicians taking control of cookstove development. She suggests that female cooks came to be seen as having "'backward" views', that were distorted by exotic traditional beliefs' and that this led to the dismissal of their obvious expertise which is rooted in everyday practice. In addition, she highlights how these different roles of engineers and cooks 'reveal that value attached to knowledge has little to do with intrinsic value or function' but instead is an expression of the power of the former [133].



Crewe also describes how unequal power is at the core of the discourse that cookstove expertise is within the remit of 'expatriate' planners as opposed to local people. Her analysis is that while the superior expertise of planners does not in reality exist, this discourse is maintained through 'constant reiteration and renewal of development language, methods and rules'. Also, that the rationale for employing outsiders from the "West" is 'partly informed by the evolutionist idea' that people in countries where cookstove projects are implemented, lag behind in terms of education and knowledge and are not able to manage without the assistance of more powerful incomers [133]. These ideas have been challenged by Paulo Freire (and others) with the suggestion that education is used in low-income countries to oppress and limit the critical consciousness of poor people [147] (see further discussion in section 4.3).

In summary, Crewe draws useful attention to how within the cookstove "development" arena, the two 'ideological themes' of androcentrism (a male-centred worldview [148] ) and evolutionism, have been influential. She does not suggest that the actions of planners and engineers that lead to this situation are intentional but makes clear that the success of such interventions would be improved by closer attention to the conflicting interests of the different "cookstove groups" and the social relationships between them. Her argument is that to do otherwise is to leave 'control in the hands of the more powerful by default'. She also cautions against pigeonholing both 'expatriates' and 'local' actors in the process and suggests that progress will be effected by recognising that these actors have differentiated interests that are mediated through race, class, gender and ethnicity [133].

Her final recommendation to cookstove developers is quoted in full below.

'Once they understand the partiality of their own thought and inventions, draw back the false veil of neutrality and recognize that their efforts are resisted, ignored or improved by the "weak", they may be better disposed to accept the demise of "development" as evolutionary progress controlled by men [133].'

Although this publication is now over twenty years old, the marginalisation of female cooks and the promotion of the expertise of cookstove developers is still very pertinent. As described in Chapter 2, the current emphasis on gender within the cookstove development discourse is somewhat limited to the potential of cookstove interventions to facilitate the empowerment of women. As shown by Crewe, the expertise of cooks is still largely only brought into play at the field- testing stage.

Likewise, the evolutionist approach still dominates with idea of “progress” towards clean cooking pervading many cookstove initiatives. Finally, I would suggest that the social and power relationships that exist in the wider cookstove community, that is outside the household, are largely overlooked. These “defects” might be disregarded if the adoption of cookstoves was less challenging. However, in the absence of clear strategies towards clean cooking for those reliant on biomass fuels, Crewe’s emphasis on androcentrism and evolutionism within discourses of cookstove development remains valuable.

### **3.3.1.5 Conclusion**

Within the scope of this study it is not possible to comprehensively review development theories relevant to cookstove adoption. These selected works are key theories of development that will be used to interrogate and interpret findings. Their authors emphasise the importance of place in their research and recognise that universalist development narratives may be restrictive and underplay the expertise and resistance of recipients of development initiatives. They also acknowledge that change is a dynamic and ongoing process in all societies and that a thorough understanding of social relationships is key to effecting positive social change. As Kothari and Minogue outline, discussion of agency within development is very useful for highlighting the “open secret” of development, that its character and results are determined by relations of power’ [149]. The development discourses discussed here (and others) are used to justify and promote real life interventions that have intended and unintended consequences and as such are key to explorations of development initiatives [150] such as cookstove interventions.

## **3.4 Section 2**

### **3.4.1 Street level bureaucrats**

#### **3.4.1.1 Introduction**

The purpose of this section is to provide background to and illustrate the relevance of Lipsky’s work on street-level bureaucracy (SLB) to CAPS in particular, and cookstove interventions in general. As described in 1.3.2, CAPS is one of many trials to be carried out in Chikwawa under the aegis of MLW. Fieldworkers and CoLT members are resident in the Chikwawa community and work closely with trial participants whereas researchers rarely reside there, visiting periodically, often only for the day. In common parlance we might say that CoLT members and fieldworkers are go-betweens; their role is to be on the ground to liaise with trial participants and to facilitate trial processes.

Lipsky's work and that of others who have built upon it, provides a useful basis for exploring how this works in practice and the challenges and compromises that ensue. There is also a body of "localised" research, that is helpful in drawing out some of the challenges that SLBs encounter when carrying out their roles. This section will conclude with a brief overview of SLB related research carried out in Malawi. The overall aim is to situate this theory in the local context and deepen the theoretical basis of data analysis in Chapters 5 to 7.

#### **3.4.1.2 Overview of theory**

Gilson describes the pervasive influence of Lipsky's seminal publication 'Street level bureaucrats: Dilemmas of the Individual in Public Services' suggesting that the scope and relevance of this work is wide ranging and has had the practical impact of encouraging better ways of working [151].

Quoting from the 2010 edition she summarises SLBs as follows.

'Street level bureaucrats are the public services whose workers "interact with and have wide discretion over the dispensation of benefits or allocation of public sanction" and through whom citizens "experience directly the government they have implicitly constructed"' [135, 151]

She describes how there are many types of SLBs but common features are that they: follow 'scripts' that result from policy; need to 'improvise in order to respond to the particular needs of clients'; use discretion in the context of limited time and resources; may not be clear about what is asked of them and their 'clients' may be resistant to the policy they are implementing [151].

To cope with this situation, they 'develop common routines' that shape how they work and interact with their clients. This may involve stereotyping, including making decisions about whether some clients are more deserving than others. They may ration their time and resources and refer some clients (more "difficult" ones) to other specialists. The consequences of this is that these coping strategies become the policy that is implemented [151].

Lipsky explains that originally his initial definition of street-level bureaucracy was restricted to specific types of 'public service employment of a certain sort, performed under certain conditions' but that after his original work was published, people began to equate SLBs more generally with 'public services with which citizens typically interact', so widening the definition [135]. While CAPS Fieldworkers and

MLW CoLT members are not in public service as such, many of the defining features of Lipsky's SLB fit with their roles. Potential participants in CAPS may choose not to join the trial but if they do so they then have no choice whether to interact with these intermediaries; they are 'clients' confronted by this 'dilemma' [135]. Conversely fieldworkers and CoLT members exercise discretion and have 'relative autonomy from organizational authority' [135]. Compliance results from the superior position of power of these workers as constructed by the trial, which means that they can potentially deny benefits to participants, for example by excluding them from the study.

Gilson suggests that it is 'best to imagine a continuum of work experiences' which may fit Lipsky's classic definition of SLBs or not [151]. She says that it is also important to realise that the experience of SLBs in their roles may cause moves along the continuum as may changes in practice or clientele. She also agrees with Lipsky that there is no way to avoid SLBs making decisions when carrying out their roles; the aim should be to recognise this but to seek to improve situations where SLBs operate [151]. Her summary of the relevance of Lipsky's work to a new field of application, health policy and systems analysis in low and middle-income countries' is a useful one indicating 'three key contributions to the field of public policy analysis'.

- 'a) street level bureaucrats (SLBs) have discretion and power in implementation, and so their practices are what citizens experience as policy and have political consequences;
- b) SLBs' behaviour is systematically influenced by the organisational and institutional environment in which they work, rather being primarily a response to personal preferences and interests; and
- c) efforts to control SLBs' behaviour only undermine their responsiveness to clients, so new approaches are needed to support them as the face of a responsive public bureaucracy [151].'

Gilson also draws attention to the inherent challenge in Lipsky's work to theorists who take a top-down approach. She argues that empirical evidence shows that it is unusual for SLBs to actively seek to subvert policy or to actively work in their own self-interest. Rather they are constrained by limited resources and the exercise of discretion is part of the structural conditions in which they work. The focus should therefore not be on the individual but on the 'broader work environment' as most SLBs operate in ways they feel appropriate and which maintain their 'own sense of

identity and self-esteem'. She concludes that in Lipsky's approach and that of other "bottom uppers" the reality of SLBs exercising agency means that policy is not set from above but enacted in practice. [151].

#### **3.4.1.3 The local context**

Recent research carried out at MLW has explored: how ethical 'community engagement' can be strengthened [152]; how theories of change can be used in this process [153]; tensions and conflicts amongst research volunteers [154]; the role of community advisory groups (such as CoLTS) [26]. This builds on previous work in Africa that increasingly suggests that multiple forms of power relations shape the process and outcomes of "community engagement" and "ethics" processes in medical and health research led by experts from the global North in post-colonial sub-Saharan Africa. For example Molyneux et al.'s study in Kenya which found that gaining genuinely informed consent from research participants was very difficult and that generally there was a 'gross underestimation of the complexity of collaborative community participation in the planning and conduct of ethical research' [155].

In Malawi, Ndebele et al. explored how "informed" consent was obtained in a microbicide trial and concluded that 'about two thirds of the respondents had inadequate understanding of randomization, double-blinding, and placebo use, all of which were important in understanding the study itself and the personal implications of participation' [156]. In an audit of consent procedures, adverse effects and reasons for participating in a research bronchoscopy study in Malawi (a lung procedure involving some risk and discomfort), the authors found that the main incentive to participation in research bronchoscopy was access to healthcare [157]. It should be noted that none of the work discussed above explicitly referred to street-level bureaucracy. However, it does explore the specific social and power relations that street level bureaucrats need to navigate in the context of health research in SSA and particularly in Malawi.

The author of a meta-ethnographic synthesis of the use of SLB theory in health policy in LMICs makes a strong case for the use of this theory as a 'potentially powerful analytical resource' for tackling the 'implementation gap'. That is the gap between policy objectives and implementation [158]. This implementation gap also applies to clinical trials and other types of behaviour change interventions including clean cooking projects. Erasmus selected four Africa based studies for his review and found that while these studies made explicit use of SLB theory they did so in a largely descriptive way 'to explain, illuminate and provide richer descriptions of empirical experiences' but did not test or modify the theory [158]. However, in

agreement with Gilson and Raphaely [159], he concludes that SLB theory provides a useful basis for understanding gaps between policy implementation and actuality, and the unintended consequences of such implementations [158].

An important negative consequence of not paying due attention to how SLBs implement policy on the ground can be a breakdown in trust [160, 161]. A recent publication by Phiri et al. examines the impact of a breakdown of trust between research volunteers in Malawi, and the multiple roles that this group holds in the interface between researchers and research participants [154]. As the authors describe, the development and maintenance of trust in the research environment is a core aim of public engagement. Community research volunteers carry out various roles including feeding back community concerns, recruiting study participants and collecting research data; roles are not exclusive and may conflict with each other. In addition, fieldworkers carry out very similar tasks and are also subject to the same dilemmas. Within the CAPS trial both CoLT members and fieldworkers lived in the Chikwawa community and were subject to the challenges described here; there was a tension between serving the needs of communities and of researchers, and dealing with 'personal obligations alongside research needs' [154].

As Phiri et al. indicate, the role of community volunteers in this context is more akin to the role of fieldworker than may initially be apparent. They receive a salary and it is the requirements of the study and not the community that dictates their responsibilities within their role. This conflict between the community and research-facing aspects of their role acts against the positive impacts that involving community members in research roles is supposed to achieve. Communities are not 'homogeneous and harmonious', rather they are made up of diverse groups and contain 'ongoing inequalities and power relationships' that need to be considered when designing community-based research studies [154].

The issue of trust in this context is explored in more detail. Phiri et al. describe how community research volunteers are often involved in research activities to build trust between researchers and research participants. They conclude that issues of trust between community research volunteers and between these volunteers and the community they serve, is often overlooked. Their argument is that 'trust is intrinsically located within the social relations surrounding participants and delivery-agents in community-based interventions'. They usefully suggest that when designing research trials, it is important to consider that these issues of trust extend beyond the time frame of individual studies. However, beyond this their proposed

response to this issue is limited. Their recommendation is that when designing 'ethical research engagement' activities, it is important to build in monitoring and feedback mechanisms, to avoid the development of problematic social relationships and decreased wellbeing amongst community research volunteers and the communities they serve' [154]. This approach overlooks the role of power in the relationships between volunteers, and between volunteers and the communities they serve. In addition, the possibility that trust may be engendered, and well-being improved by providing opportunities for power dynamics to be shifted is not explored.

#### **3.4.1.4 Conclusion**

Within the scope of this study, Lipsky's definition and analysis of the role of SLBs, and the relevant work of others will be used as the basis for a richer exploration of how the social relationships between fieldworkers, CoLT members, health surveillance workers, researchers and participants impacted on the implementation of the CAPS trial. It will not be possible to test and develop the theory in any great detail. Instead, the aim is to use it to draw attention to the social processes inherent in any technological intervention through the examination of power dynamics and trust within the SLB arena.

In health-based interventions local understandings of health are key to the work of SLBs and to the success of the endeavour and an influential model relevant to how health knowledge will be reviewed in the next section.

### **3.4.2 Understandings of health**

#### **3.4.2.1 Overview**

This section concentrates on the idea of medical syncretism as a useful theory for exploring understandings of health in the context of CAPS.

Biomedicine predominates in health systems globally and is widely assumed to be superior to other forms of medicine. It is valued for its objectivity and its emphasis on science and efficacy [162]. However, biomedicine is in itself a cultural construct and historically embedded in changing attitudes to the body that arose in the nineteenth century [162], with Foucault referring to the emergence of a new 'scientific discourse' at this time [163]. The term 'medicalization' has been linked with this historical transition, with the wider extension of the power of medical professions over 'passive patients' and with colonisation [164]. Lock and Nguyen add to this discussion with their anthropological viewpoint; while they agree that in principle the biomedical approach can significantly improve health, they have two important

provisos. Firstly that it is important to consider that bodies are not the same in all contexts but are the result of 'evolutionary, historical, and contemporary social change' and secondly that 'biomedical technologies' exist only within 'medical, social, and political interests that have practical and moral consequences' [165].

### 3.4.2.2 *Medical Syncretism*

#### 3.4.2.2.1 Introduction

The concept of medical pluralism developed by Kleinman describes the co-existence within health care systems of three different traditions [166]. Firstly the 'professional sector' refers to organised systems such as biomedicine; the second and third sectors are the 'folk or traditional' and the 'popular' sectors respectively [162]. The first sector is dominated by the practise of biomedicine and biomedical practitioners often think that only this approach is valid and objective. Kleinman outlines 'dogmas' regarding biomedicine, that is, that only professionals can carry out health related activities; only biological health is real; the patient is ignorant and the doctor is the expert and each have their role [162]. This sector is linked with medicalization; the expansion of biomedicine into other areas (such as childbirth).

Kleinman makes an interesting point about adherence to medical treatment suggesting that professionals are mistaken when they think that they take the lead, as 'lay people' make decisions about whether to seek advice and then whether to act on it [166]. He suggested that there were three approaches to medical pluralism, that is: using one system for one thing and another for something else; 'hierarchy of resort' e.g. local pharmacy, then clinic, then alternative medicine; 'simultaneous use' [162]. In his later work, he developed his thinking in the recognition that medical systems are 'often far from integrated and systemic, and often messy, chaotic and indeterminate' to move away from the idea that medical systems exist in silos [162].

Pool and Geissler suggest that medical syncretism is a more useful model than medical pluralism (as developed by Kleinman) [162], when studying medical systems. The term syncretism originated in studies of religion and 'refers to unifying or reconciling different or opposing schools of thought'. The concept of 'medical syncretism' as described by Pool and Geissler allows a move away from the rigidity of medical systems and pluralism and a greater emphasis on practice as 'a creative process in which we must recognize the role of invention, innovation, and disorder' [162].



#### 3.4.2.2.2 Selected medical syncretic research in Africa

Hausmann Muela et al. provide a concrete example of how medical syncretism can be a useful framework, in their study of how a Tanzanian community perceived malaria through recognising that 'people are not a "blank slate" but 'process new information on the basis of what they already know' [167]. These authors explore whether and how new understandings 'coexist' or 'merge' with existing knowledge and how this translates into new or amended practices which may develop in unexpected ways and contrary to the aims of researchers and policy makers. They describe medical syncretism as 'the blending of biomedical with indigenous concepts' [167].

Their study site was a small town where the population were exposed to information about malaria since the 1970s through 'local biomedical health services', public and private pharmacies and 'numerous traditional services'. This has resonance with CAPS; the MLW Chikwawa field site office is located immediately adjacent and connected to the District Hospital. In their exploration into concepts of health, they found that the knowledge of health workers about malaria differed from that of investigators in that it was based more on practice in the field and reliant more on 'intuition and experience' than on 'scientific rigour' and therefore situated 'somewhere at the interface between investigators' and community knowledge' [167].

The authors conclude that there is good understanding of malaria within the community which is based on the biomedical understanding of the disease as transmitted by health care workers but that the integration of new health information 'is a dynamic process'. Existing ideas about malaria are not displaced but are 'merged' and 'mingled' with new knowledge about malaria and health in general. Further that even 'if health messages are well understood by the population, the meaning given to them may differ considerably from what health promoters intended to transmit' [167].

Ewing et al. explore these ideas in a study carried out in Chikwawa in which qualitative methods were used to investigate understandings of fever and malaria [168]. They detail how the local term for malaria (*malungo*) was used 'interchangeably to describe malaria and fever in general' and that reported symptoms of malaria 'overlapped with symptoms of other illnesses in both the biomedical model and local illness classifications'. They also found that 'w(W)itchcraft (*ufiti*) was thought to be responsible for childhood fever, as a

mechanism causing sickness' [168]. Concurrent with the concept of medical syncretism, they suggest that 'new health information' that becomes available to communities intermingles with what is already known, to become something new that may differ markedly from what was intended. This conclusion is very relevant to CAPS as it was based at the same location and many of the same people participated in the ACTia<sup>1</sup> clinical trial in which it was nested. In this scenario, CAPS is part of a continuum and new knowledge transmitted through it is merged with existing health understandings gained in part through ACTia and other previous and current health and medical studies and interventions in this established field site. The importance of CAPS being carried out under the aegis of MLW is indicated by Fairhead et al.'s research regarding a large scale Medical Research Council (MRC) trial in The Gambia [169]. The authors conclude that 'people living in the operational shadow of a research station' focus on the institution and the multiple forms of engagement that are part of this relationship and not on individual trials' [169].

### **3.4.2.3 Conclusion**

In summary, while acknowledging the ubiquity of biomedical concepts within CAPS and more generally within health-based cookstove interventions, other social understandings of health are important to consider. The concept of medical syncretism creates a "space" where these ideas can be explored in a deeper way by moving away from "correct" (bio-medically aligned) and "traditional" (local in context) binaries. As mentioned earlier this includes ideas related to witchcraft and "spirits" and these will be explored in the next section under the general heading of occult narratives.

## **3.4.3 Occult narratives**

### **3.4.3.1 Introduction**

The ubiquity of narratives of witchcraft, Satanism and other related ideas is clear to any scholar of African development and periodically makes international news; for example, an article in The Guardian in 2017 reported that two suspected 'vampires' had been killed in Blantyre, Malawi [170]. Concerns about occult practices such as the taking of blood are also reported in many clinical trials in Africa [169, 171, 172], and beyond [173, 174]. Although the CAPS trial did not involve blood-taking, there was concern about the possible linking of the study with these narratives, indicated by a clear statement in the study information sheet that no blood would be collected.

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<sup>1</sup> The ACTia trial (2010-2013) was a cluster-randomized effectiveness trial of malaria medication carried out in Chikwawa. Children aged 4-11 months from 50 villages were recruited and randomized to receive one of two treatments for malaria over a 2.5 year follow up period.

In addition, during initial observation fieldwork for this qualitative study it quickly became clear that “rumours” linking CAPS with satanic practices were present. Grietens et al. usefully summarise three associations linked to the fear of giving blood; ‘conceptions of blood as a lifeforce’, beliefs that losing blood will lead to less strength and with the idea of blood as a tradeable commodity [175].

To explore these issues, this section will include a brief historiography of occult narratives followed by a more focused consideration of the literature relating to these narratives in clinical trials in Africa. It will conclude with an examination of the links between occult narratives and broader power discourses.

#### **3.4.3.2 *Historiography and modernity***

In Evans-Pritchard’s 1937 work he describes the beliefs of the Azande people about witchcraft and sorcery and how rites are used against this perceived malevolence. He suggested that these ideas provide a ‘natural philosophy by which relations between men and unfortunate events are explained and a ready and stereotyped means of reacting to such events’ [176]. White describes how around fifteen years later, sociological explanations became more current and the suggestion was made that ‘gossip about witchcraft revealed social tensions, while public accusations of witchcraft revealed social conflict’ [177].

White’s own approach, however, (based on her experiences in Kenya, Zambia and Uganda in the late 1980s and early 1990s) was to take ‘these stories’ at face value and to treat them as ‘tools with which to write colonial history’ [177]. She describes how colonialism led to rumours that Europeans used local people to collect blood from other Africans which they used to make them stronger and to the view that colonists were vampiric. Her supposition is that it is not important to explain/pick apart these rumours but to use them as a way of exploring power dynamics that are not static but shift over time. White’s approach was to ‘let the ambiguity of African vampire studies remain ambiguous and explore the relations of power and uncertainty in which most colonized people lived’. Her suggestion is that these stories send a message, their function is to get a point across and to describe power [177].

In a recent overview of African religions Olupona says that now that Christianity and Islam are common in Africa, beliefs about witchcraft have altered. Most especially, Pentecostal Christian religions seek to ‘stamp out’ traditional religions as their practitioners link them with witchcraft. This is despite these religious practices being used to counter witchcraft. ‘New Christian notions not only place all traditional

religious activity under the rubric of witchcraft but identify this witchcraft with Satanism, an entirely foreign concept to African worldviews' [178]. The term syncretism arose from such merging of religious elements and has been linked with the exercise and resistance of power [179].

He also suggests that these 'Christian perspectives' (from Pentecostals) have led to marginalized people suspecting that powerful people such as politicians have used witchcraft to achieve positions of power and wealth and to 'witch-hunting'. With the latter, it is often local people who are accused 'unlike inequality's actual agents, the politicians and shadowy global forces against whom action is typically impossible' [178].

In their wide-ranging 2010 work on witchcraft, sorcery, rumour and gossip Stewart and Strathern state that in early works on social change in low-income countries there was an assumption that over time and with "modernization" witchcraft ideas would disappear as they supposedly did in Europe earlier'. However, they suggest that this is mistaken in two ways. Firstly, because old ideas do not disappear even if people say that they do. Rather they are adjusted for new times and 'in contemporary Africa have become a prominent way of conceptualizing, coping with, and criticizing the very "modernity" that was supposed to have done away with them'. Secondly, that in Europe 'at a deeper level, ideas that belong to the genre of witchcraft or sorcery reappear pervasively in modern "witch-hunts"' as is indicated in current anthropological research. Their argument is that '(R)umour and gossip, like talk in general, are constitutive of, rather than simply reflect, social realities' [180].

They do nevertheless agree that over time a change has occurred, agreeing with White that there has been a 'shift to a preoccupation with rumors of predatory relations' between Europeans and Africans, and with Olupona that a link between the Devil and witchcraft has been established, resulting in increased 'stigmatization of the witch'. Their analysis also leads them to conclude that 'contemporary cycles of rumors tend to fit into a picture of expanded and extended relationships signalled by the term "globalization," and that they all tend to depict the equivalent of government or business "conspiracies" against the people' and that gossip and rumour 'fill in the blanks in people's knowledge of what "the others" do' [180].

In general there is agreement 'that "witchcraft" is not an antiquarian anthropological hobby, but a dynamic reality in postcolonial Africa and part and parcel of people's ideas about modernity.' [181-183]. In addition, as Ashforth found when living in Soweto, South Africa, the complexes of discourses and phenomena conventionally

grouped under the term "witchcraft" are part of everyday life in many African communities and are therefore of general concern [184].

It is important therefore to explore how these ideas fit with the "modernity" of clinical trials, research activities and cookstove implementations.

#### **3.4.3.3 Occult narratives, health and technology**

Within clinical trials, even if no blood is taken (as with CAPS) the emphasis on health draws attention to the body. In addition, technological "devices" are often involved, from the basic, such as thermometers, to the more complex, for example, x-rays. Cookstove clinical trials within the context of occult narratives differ from many other health-based interventions in that it involves the introduction of technology into people's homes.

White suggests that 'Vampires were very much a product of modern theories of the body' and a synthetic image, a new idiom for new times, constructed in part from ideas about witchcraft and in part from ideas about colonialism'. She refers to the work of Klaniczay [185] who posits that vampires 'straddle the connections between medicine and violence, between the supernatural and the new scientific realities that were becoming naturalized' [177]. They were a way of talking about the world that both parodied the new technologies and showed the true intent behind their use' [177]. It is also important to note that modern technology is part of witchcraft narratives. For example, reports that witches have 'x-ray eyes' or pilot planes, and that "white people" utilise technological interventions they bring from "outside" [180]. Geissler gives a vivid description of how the idiom of 'kachinja', (blood taking strangers), came to be associated with specific brands of car used by researchers [186].

Grietens et al. explored how participation in clinical trials in Gabon, was negatively impacted by rumours about blood-taking and concluded that this reflected neither ignorance or conservatism but trial participant's attempts to make sense of health and illness [175]. They make the strong statement that 'the social distance between communities and medical institutions, the association of hospitals and research centers in particular, with authoritarian and elitist state and foreign institutions, and palpable social class divisions further nurture these suspicions' [175]. Essentially the authors argue that the basis of these rumours is in unequal power relationships and social injustice. However, their suggested response to this issue is couched very much within the clinical trial environment. That is, they suggest that there is a logic underlying these rumours that needs to be managed; the 'beliefs' of participants

'should be acknowledged and dealt with as part of trial procedures' [175]. There is no suggestion that power relationships should be shifted, rather the "problem" of occult narratives should simply be recognised, and clinical trials carried out in culturally sensitive ways.

Fairhead et al. take a different but very relevant approach to concerns about blood taking in the context of clinical trials [169]. While they are largely in agreement with the historiography of such matters described above, their supposition is that it is not easy to show evidence that rumours are a 'meta-commentary' on globalism and capitalism and that the emphasis should therefore be on more locally specific meanings [169]. Their study context has much in common with CAPS; the setting was a trial of a large-scale pneumococcal vaccine (PVT) that required the recruitment of half the infants in the Gambia (around 17,000) carried out by the Medical Research Council (MRC) between 2001-2004. The authors employed an ethnographic focus, using participant observation, focus group discussions, interviews and a 'interview-administered' survey to explore participants' understandings of the MRC in relation to their child's health [169].

They found that there was a 'transactional logic' expressed by trial participants in which blood taking could be seen either as a 'fair trade' for benefits received or as 'stealing' depending on the context and that this was rooted in the close connection made between 'the body and the 'economy' [169]. Further that decisions about trial participation were made on a case by case (that is trial by trial) basis and in 'a field of uncertainty and speculation'. They situate these blood-taking narratives in a context in which a "'struggle for blood'" permeates life and 'blood logic' and is linked both with gender and social difference. For example, the belief that Africans have stronger blood than Europeans, hence the attraction of "blood-taking" to the latter. However, they are clear that when investigating why these ideas are strongly held and influential it is not necessary to associate them with the "occult", suggesting that a 'mystified reading' is unhelpful and obscures the core issue, that is, the poverty of the trial participants [169].

Fairhead et al. conclude that their research challenges the idea of 'blood stealing rumours as pre-rational' and which therefore can be dissipated by communication and activities such as laboratory visits which seek to demystify science. Instead they argue that researchers should take into account the 'social worlds' of trial participants and frame their dialogues with communities accordingly, in this case 'around the economy of blood' [169]. Although this suggestion is persuasive it is

difficult to see how this might work in practice. In general, however, this study provides valuable insight into how a transactional narrative may form part of a clinical trial and that the focus may be an 'economy of blood'. It should be noted that the MRC PVT (as with CAPS) did not require any blood taking. Other commonalities with CAPS, such as the large research context of MLW, the highly researched population and the considerable economical and power differential between participants and researchers, also indicates that Fairhead et al.'s analysis may provide useful insight to this study.

Linked with Fairhead et al.'s emphasis on blood as a life force, in her anthropological exploration of ideas of the body in rural Malawi, Kaspin suggests that a social imaginary of the body takes shape upon this foundation of 'commonplace experience' [187]. Essentially that symbolic ideas of the body are 'sensible' in this 'agrarian' context and are intrinsically linked with reproduction and production. These symbolic ideas include '*moyo*' (usually translated as life) that she describes as 'not an entity but a force, the quality of being alive' and as being 'concentrated in the blood' [187]. These ideas are complex and detailed consideration is not possible here but Kaspin usefully draws attention to how 'conceptions of the body' may be both symbolic and also firmly rooted in everyday life [187].

#### **3.4.3.4 Conclusion**

There is a great deal more that can be said about the pervasiveness of narratives of witchcraft, satanism and blood-stealing and the relevance of these to carrying out research or implementing technology in Africa, but it is only possible here to give an overview.

The key points to note regarding the CAPS trial is how the combination of a clinical trial and a technological intervention makes occult narratives particularly relevant to consider. It is also clear that increased "modernity" cannot be assumed to lead to a reduction in such rumours. As authors such as White and, Stewart and Strathern suggest, the persistence of occult narratives should not simply be approached as a problem to be solved and a reflection of social reality, but as a having a constitutive role in the development and shifting of power relationships. Fairhead et al.'s research explicates the idea of transactional blood taking and although they do not frame this in relation to occult beliefs, their analysis highlights how economic and power inequities are influential and important to consider. Likewise, Grietens et al.'s description of occult rumours in clinical research 'as a reflection of social injustice

and asymmetric power relations' [175] is very pertinent. Finally, Kaspin provides insight into local understandings of blood and body schemas relevant to the Chikwawa context.

### 3.5 Summary of chapter

The overall aim of this chapter is to draw attention to theories that make the 'self-evident problematical' [140] in order to lay the groundwork for a richer discussion of methodology and exploration of findings in the following chapters. The ideas of hierarchies of knowledge, and that knowledge and power as inextricably linked, have been introduced. A common thread through both sections is the dynamic basis of power and how it is enacted and resisted in social relationships between groups and individuals.

In addition the concept of modernisation, which could be called the 'metatheory of development' [149] also unites the varied theories described here. Modernisation is a theme integral to discourses of development and is also found in SLB theory, in the global emphasis on biomedical understandings of health, and in dismissals of occult narratives as static and outdated. As previously discussed, ideas of progress, of modernisation, of moving up the energy ladder are also still very current in cookstove interventions.

The next chapter will begin with background to the core methodology used in this study, that is the participatory methodology Photovoice. This methodology was developed with the aim of challenging accepted hierarchies of knowledge through promoting the expertise and autonomy of marginalised groups, and of explicating the taken for granted nature of everyday practice and social relationships.



## Chapter 4 - Methodology

### 4.1 Introduction

This chapter will describe the methodology used in this research study where methodology has two meanings, that is ‘both theoretical and practical aspects of the conduct of research’ [188]. Reflecting this the chapter will have three main sections.

The aim of **Part 1** is to “situate the research design”. It will begin with an overview of the research context. This will include the aims and objectives including how these developed over time in the context of the CAPS trial. This will be followed by a discussion of positionality and an introduction to the ontological and epistemological approach taken. This content will be supplemented by further exploration of positionality throughout the chapter, for example when describing data collection and analysis, and will be summarised in the conclusion. The first section will also include a brief review of the literature relating to the methodologies employed with the aim of explaining why these were chosen and how the research design was developed.

**Part 2** describes the practical steps that were taken in data collection and analysis. An overview of data collection and sampling will precede a more detailed description of the data collection process which has been divided into two main sections, the first for CAPS participants and the second for those who could be described using the Lipsky designation “street-level bureaucrats” [189]. The latter group includes CAPS Fieldworkers, Community Liaison Team (CoLT) members and Health Surveillance Assistants (HSAs). The steps and approach to data analysis will be described in section 4.3.6.

In **Part 3** the ethical considerations of this study section will cover generally how ethical approval and informed consent was explained but also explore in detail the ethical challenges of Photovoice methodology. The latter will form the groundwork for the discussion of ethics power and Photovoice in Chapter 7.

The chapter will conclude with a summary of the methodological approach and a description of how the results will be presented in the following chapters.

### 4.2 Part 1: Situating the research design

#### 4.2.1 Aims and objectives

This research is nested within CAPS; as a large-scale clinical trial, a qualitative study was planned from the outset as one of the secondary outcomes. The overall research question included in the protocol was ‘What can be learned from trial

participants and non-participants about adoption of the intervention that could inform effective implementation of the trial findings in the future?' [190].

As described in Chapter 1, CAPS had two study sites: Chilumba in the far north of Malawi, and Chikwawa, one hour south of Blantyre (see Fig 1.1) and the possibility of carrying out this study in both locations was carefully considered. This would have been interesting as there are considerable differences between them. Chilumba sits on the banks of Lake Malawi and fishing is an important occupation whereas Chikwawa is in the far South of Malawi where most residents depend on farming for their income. There are also language and cultural differences between the two communities. However, due to limited time and funds for this research it was decided that carrying out research in Chilumba would not be possible as access was quite difficult, involving a day's drive from Lilongwe Airport. In addition, although the Chilumba site was managed by the London School of Tropical Medicine and Hygiene, Malawi Epidemiology and Intervention Research Unit (MEIRU), there are closer links between LSTM and Malawi-Liverpool-Wellcome MLW. The selected site for this study was therefore the MLW Chikwawa site. As an established field site with an experienced field team, the MLW base provided the resources necessary for this research study. Details of the research team are in 4.3.2.

The aim and research questions for this study were developed once it was determined that only one site would be included and building on the original aim in the CAPS protocol. An important factor in this development was the results of the main CAPS trial and the finding that the intervention cookstoves were not sufficient to reduce rates of pneumonia in under-fives [9]. If as anticipated at the outset of the trial it had been found that rates of pneumonia were reduced, then there would have been an impetus to explore how adoption of the technology could be encouraged and sustained. As it was, the research questions developed had a wider "view" and more general applicability to clean cooking and other technological interventions in similar settings.

Overall aim: To explore the societal factors that influence adoption of a cookstove intervention in the context of a research trial in rural Malawi, and the implications for future implementation of clean cooking technology and research.

This is explored through the following questions: How and why do families in CAPS villages use the intervention stove and how is this shaped by gendered insecure livelihoods and being part of a 'research community'? How do CAPS participants

experience the trial and how is this linked with understandings of health, technology and the research process?; What are the challenges and opportunities from an ethical perspective of using the participatory methodology Photovoice, in the context of a large-scale clinical trial of a cookstove intervention in a low-resource setting’?

## 4.2.2 Reflexivity and Positionality

### 4.2.2.1 Introduction

Chambers describes reflexivity as ‘self-critical epistemological awareness’ involving ‘critical reflection’ on how knowledge is formed and framed. He suggests that heightened awareness of how our own biases, interpretations of the world and how these are distorted by ‘power and relationships’ is crucial if we want to ‘know better’ [191]. In qualitative research, reflexivity and consideration of researcher positionality are seen as integral to the research process. Researchers exercise reflexivity in order to gain deeper understanding of their own positionality in recognition that how we “do” research shapes the whole process including outcomes and is closely linked to our epistemological approach [192]. The specific epistemological approach for this study is discussed in detail in 4.2.3.2. Integral to using reflexivity to explore researcher positionality and closely linked with considerations of power dynamics in the research context are concepts of insider/outsider status [192]. In the section that follows, I will begin by giving some examples of the ways my own outsider/insider positionality is relevant to this study. This will be followed by a brief overview of the literature, leading to a discussion of how a reflexive approach was taken to the overall study design.

### 4.2.2.2 My role in the research

As a Project Administrator and then BREATHE Programme Manager at LSTM responsible for the management of a partnership of experts in air pollution, I had been linked with CAPS since the study began in 2013 and began regular visits to CAPS sites from 2014. The opportunities afforded by this close relationship to CAPS were a useful background to my PhD research: it provided some “insider” access, but also presented some challenges. For example, on early visits to see the CAPS intervention cookstove in use in village households, I was accompanied by senior members of the CAPS Field Team such as the Senior Fieldworker or the Clinical Officer, sometimes both, which may have accentuated my outsider “privileged” status with both fieldworkers and study participants. Working in close conjunction with CAPS co-Principal Investigators (co-PIs) also led to a certain amount of social distance with the field team, although this lessened through familiarity and was

balanced by a tendency over time for field staff to raise issues of concern for me to bring to the attention of the CAPS Co-PIs.

As Acker et al. outline, discussions of insider/outsider perspectives in qualitative research are commonly found in sociological literature, reflecting the core aim of such research which is to understand in depth why people act in a certain way [193]. For instance, Merton identified some time ago the general acceptance of the vernacular suggestion that 'you have to be one in order to understand one' [194]; essentially, that insiders have privileged access and knowledge that gives them an advantage. The idea of the "stranger" as having a measure of objectivity and of questioning the taken for granted, also has a long history [195, 196].

However, as many authors have pointed out, the insider/outsider separation is inadequate to describe the complexity of the social relationships within the research context [193, 194, 197]. This has led to the idea of graduations of insider-outsider status, such as the concept of "outsider-within" suggested by Collins to more accurately represent the position of 'Black female intellectuals' within academia [198]. Other researchers develop alternative ways of reflecting the complexity of positionality by suggesting definitions such as 'the space between' [199] or 'hybrid insider-outsider' [200]. Gupta-Wright suggests that describing her own multi-positionality during ethnographic fieldwork in Malawi as "inbetweenness" is 'a useful way to think about the leaky and transient boundaries of multi-positionality, rather than reinforcing the fixed and dichotomous idea of "insiders" and "outsiders"' [201]. Herr and Anderson's research methods guide adds some clarity to these discussions by suggesting that within research studies, there is a continuum of positionality, that decisions about positionality impact on other decisions, and that such positions are both difficult to 'pin down' and may change over time [202]. As they point out, all researchers occupy 'multiple positions that may intersect and may bring us into conflicting allegiances or alliances within our research sites' [202].

The mutable nature of positionality was reflected in a discussion I had with a female Malawian qualitative researcher who had found that her attempts to explore a child health issue with Malawian mothers had been difficult. Firstly, because some of her interviewees queried why they were being asked certain questions when, as a native Malawian, the interviewer already understood the process under discussion. Secondly, when asked about medical treatment decision making, several suggested that the interviewer would have limited understanding of their experience because of her comfortable financial position. In a different context, (urban Wales), Mannay

found that conducting research in a context to which she was habituated 'had a deadening effect on the interview process' and led her to use innovative methods in order to 'make the familiar strange' [197].

As a stranger in many ways to the research setting, my challenges were different but important to reflect on at all stages of the research process from the study design through to the data analysis stage. As Herr and Anderson describe, considerations of insider/outsider status are further complicated by the multiple ways that positionality can be considered [202]. That is beyond positionality in the study setting, researchers also need to consider: their 'level of informal power' within their organisation; their position 'vis-à-vis dominant groups in society' for example class, race and gender; and relevant to the Malawi context, their position 'within colonial relations within and between nation states' [202].

These wider issues will be reflected on throughout this chapter but the emphasis in the next section is to consider how my positionality within and without the setting fed into the initial research design and choice of methodologies and methods. It is important to set this out here as positionality is not static, the boundaries between insider-outsider status are 'permeable' [194] and dynamic, changing over time [193]. Further detail of how my positionality impacted on data collection, analysis and dissemination activities will be included in the relevant sections.

#### ***4.2.2.3 Developing the research design***

My initial role within CAPS was UK based involving responsibility for tasks such as ordering and arranging the transport of the intervention cookstoves from Lesotho to Malawi. Contact with the Malawi based administration and field teams was by phone and email. The BREATHE Programme Manager role began in April 2014 and expanded my role beyond CAPS to encompass co-ordinating household air pollution partners and activities in Malawi and other African countries. These activities included the arrangement and management of BREATHE's four PhD studentships, two of which were under-funded. This funding gap provided me with an opportunity to propose combining the BREATHE Programme Management role with a part-time PhD studentship. This dual role could potentially have been problematic if expectations or priorities of others in the Partnership had conflicted with my planned focus and research methodology. However, there were no such issues beyond the need for the thesis subject area to fit broadly within the BREATHE Interventions and Policy theme.

Returning to Herr and Anderson's typology of positioning, at this stage, my positionality at the study setting was as an "outsider" researcher but within the "insider" context of MLW. As an older white woman, my race and seniority may have suggested a more powerful position than my actual junior researcher status at LSTM and MLW. My "informal power" within both organisations was however enhanced by my Programme Manager role, although tempered by the emphasis on clinical research in the two establishments. My exposure to the research context in Malawi also highlighted to me some of the concerns elucidated in Chapter 3 about post-colonial development and the persistent narratives of the superiority of the "West". As Gupta-Wright found, 'white ethnicity expresses wealth and a privileged education' in Malawi and this can override other factors such as gender [201].

Keikelame and Swartz suggest that researchers 'practice decolonising' research in African settings, reflecting on their experience of exploring perspectives of epilepsy in urban Cape Town [203]. They describe how colonialism is linked closely with negative health outcomes and the role of post-colonialism in the ongoing process of addressing the impact of these and other injustices. Their key argument is that 'issues of power, trust, culture and cultural competence, respectful and legitimate research practice and recognition of individual and communities' assets' should form part of 'decolonising' research practice. They advise that 'decolonising research' is more about reflexivity 'as a transformative approach' than the use of any particular research method and suggest that turning the research 'focus inward' can allow 'even White researchers' to carry out appropriate research with marginalised groups [203].

While the complexity of gendered and race-based positionality factored in my research design, I was also very aware of the impact of class on my own positionality, if not on how I was perceived by study participants. Griffiths, reflecting on his own status as a white working-class British male carrying out research in the global south, suggests that the 'sense of unfairness that is part of growing up in the margins' can be beneficial in this context. He proposes that social class is an important part of subjectivity and can contribute to 'more ethical praxis' [204]. His suggestion is not that the situation of working class researchers and participants in the 'postcolonial south' are alike but that knowing what it is to be an "outsider" can be a valuable resource in research and can, 'like gender and ethnicity, qualify western privilege in a way that reduces researcher-researched power imbalance'

[204]. This links with my own experience as a working-class woman who was only able to access higher education as a mature student.

As Becker argues, it is impossible to be completely neutral in research, that is, to not 'take sides' [205]. In this case, the overall aim was to explore the experience of the CAPS participants in the CAPS trial and what this can teach us in the wider sense about technological interventions; in addition, my own inclination was to approach this study from the 'vantage point' of the point of view of those at the bottom. This is in opposition to what Becker calls 'a hierarchy of credibility' where information flows up the hierarchy leading to the conclusion that those at the top have access to more credible accounts [205].

As stated earlier, a qualitative study was planned for CAPS from the outset. As O'Cathcain et al. described, qualitative research often takes place within randomised controlled trials (RCTs) in order to gain further understanding about the 'complexity of interventions', the complex social contexts in which they are carried out and to gather evidence about the efficacy of 'treatments and technologies' [206]. These authors pose the question 'What can qualitative research do for randomised controlled trials?' and their conclusions about implementation and interpretation are particularly pertinent for CAPS, as shown in Table 4.1 [206]. If, as described in Chapter 1, there continues to be a drive to roll out cookstoves in LMICs, then gaining "real world" understanding of the complexity of the CAPS intervention is important. Likewise, with such a large scale and important trial as CAPS, gaining deeper understanding of the social context that may help to explain the main trial findings and contribute to effective roll-out of similar technologies, is valuable. In addition, qualitative research can facilitate due consideration of when and how such implementations should be introduced.

Figure 4. 1: Potential value of qualitative research for RCTs

	Potential value	Examples
<b>Implementation</b>	Facilitates replicability of intervention in the real world	Describes components of the intervention so that others can make use of the full intervention in the real world
	Facilitates transferability of findings in the real world	Identifies mechanism of action or contextual issues important for success
<b>Interpretation</b>	Explains trial findings	Explains why trials were null. This may prevent another trial of a similar intervention
		Contextualises results of successful interventions to support dissemination and transferability in the real world
		Explains variation in outcomes

Chambers also problematises the privileging of RCTs over other forms of research suggesting that this underplays the valuable role of qualitative data. He suggests that in ‘situations which are complex, multi-dimensional, uncontrollable, unpredictable and idiosyncratically variable’, RCTs may not be the best choice. He also draws attention to ‘rigour for complexity’ suggesting that in complex interventions, rigour can be facilitated through ‘participation, reflexivity, and responsible relevance’ and that the approaches and methods used in participatory methodologies ‘resonate with and support rigour for complexity’ [191].

**4.2.2.4 Developing an interest in participatory visual research methodologies**

At the formative stage of research design when considering the specific paradigmatic approach to take, my interest in participatory visual research methodologies was triggered by accompanying a film crew to the two CAPS sites in May 2014. My role was to assist with logistical arrangements and to be an unskilled member of the filming team which mainly involved holding the boom microphone and ensuring that consent forms were completed. Travelling with the film crew to two rural communities in Malawi was a valuable learning experience, not just through revealing some of the significant challenges of these communities, but also through witnessing both the enjoyment and expertise shown by villagers throughout the process. CAPS participants were clearly not just passive subjects; to collect the required scenes needed their active and knowledgeable participation. The time available for the shooting was short but this intensive experience indicated that



visual methodologies may potentially be both effective and interesting for participants.

This led me to explore Photovoice methodology and the opportunity to run a small pilot study at CAPS Chikwawa field site. This small-scale study was designed 'to assess the feasibility and potential of Photovoice for qualitative research on understanding cookstove adoption under CAPS and to identify any logistical, ethical and other issues associated with the methodology in this context' [207]. Carrying out this short study with limited time and resources was challenging but valuable. The challenges were in part logistical but also highlighted how power dynamics and in particular stereotyping of participants by fieldworkers could be a barrier to the use of this methodology in the Chikwawa. For example, at the outset, doubts were expressed about the ability of the participants (particularly women) to use the cameras.

This experience combined with regular communication with the CAPS field team and a visit to the CAPS northern site in Chilumba provided a useful grounding for this research design. In addition, concurrently managing the BREATHE Partnership meant that I was immersed in the "cookstove community" and opened up networking and other opportunities. Combining a management and study role did however mean that time in the field was limited.

Additionally, "nesting" a qualitative study within a wider clinical trial provided challenges. I needed to reiterate that my role was not to check conformity with trial protocols or with use of the intervention cookstove. There was inexperience with qualitative methods both from the fieldworkers and participants. It therefore helped that my connection with the CAPS site and the trial began before the qualitative fieldwork and extended beyond it. However, the fact remains that as a white British woman in an academic role paying intermittent visits to Chikwawa, my role could to a certain extent be extractive, if not exploitative.

I have therefore sought to balance the advantages and disadvantages of being embedded within the CAPS trial and the wider MLW network by seeking opportunities to advocate for CAPS workers and participants and through recognising their expertise and autonomy, while recognising the challenges of my "privileged" position. The use of methods that promote this is a key consideration as described in the next section.

## 4.2.3 Methodological underpinnings

### 4.2.3.1 Introduction

As described previously the context of this research and my own positionality provided opportunities and challenges that overall led to a particular ontological and epistemological approach. The overall aim of this section is to make clear the links between these approaches which shaped my theoretical perspective and decisions about methodologies, methods and data sources.

As Ritchie et al. explain there is considerable overlap between theories and approaches in qualitative research and while it is good to have an understanding of these ‘many authors counsel against “epistemological determinism”, as this can force researchers into ‘a theoretical or methodological straitjacket’ [208]. They refer to the work of Seale and colleagues who separate the ‘political, external role of methodological tradition’ and the methodological process that results in useful knowledge. They suggest that while assigning a particular label is not always helpful or necessary, there should always be ‘broad philosophical parameters’ within which researchers work which guide their ‘approach and methods’ [208].

In recognition of the importance of ontological and epistemological grounding this section will begin with an overview of the approach taken. This will be followed by brief explorations of the literature related to the methods used and critiques of these. This section will conclude with a summary of which methods were used and how they were utilised. This will prepare the groundwork for the second part of this chapter which explains all aspects of data collection and analysis.

### 4.2.3.2 Ontological and epistemological approach

The ontological basis of this study is relativist, that is the idea that reality does not exist outside of the understandings and beliefs of people but through socially constructed meanings. Specifically, that ‘the social world is made up of representations constructed and shared by people in particular contexts’ [208].

Guba and Lincoln describe this approach as one in which reality is not universally shared but is ‘apprehendable in the form of multiple, intangible mental constructions’ that are based on social context and experience and as closely linked with a constructivist ‘transactional and subjectivist’ epistemology [209].

A useful approach when considering epistemology is to consider the nature of the relationship between the ‘knower and the knowable’ [210]. Within a constructivist epistemology, this relationship is ‘highly person and context specific’ and transactional. The knowledge, experience, status (for example gender, class, ethnicity) and cultural values of the ‘knower’ all contribute to what is ‘knowable’

[210]. Researchers taking a constructivist approach emphasise that people are not passive but actively participate in knowledge production, and use methods that endeavour to produce 'a holistic understanding of research participants' views and actions' [208].

Creswell's summary of the approach of constructivist researchers suggests that they focus closely on the specific setting in which people live and work with the aim of gaining deep understanding of the socio-cultural context [211]. In the process of doing so, they recognise how their own personal "position" shapes their interpretation and the 'pattern of meaning' that they develop. For example, in this study, my aim was to explore how "reality" was constructed by CAPS participants through a focus on their meanings and interpretations, to gain a deeper understanding of their social world, while also taking a reflexive approach and paying due attention to my own positionality

In addition, and as described in Chapter 3, my supposition is that researchers also need to be cognizant of their axiological position, that is how their values link with and impact on their research. Lincoln and Guba suggest that this is especially the case in constructivism where reality is 'co-created' [210]. Within qualitative research, this value-driven approach is also linked with critical theory which is related to 'empowering people to overcome social circumstances that constrain them' [208]. This umbrella term covers various movements and theories including feminism and is linked with this study in the two following ways. Firstly, through the suggestion that the value of findings should extend beyond a description of social worlds and result in 'emancipatory effects'. Secondly, the linked emphasis within critical theory on promoting greater equality between researchers and research participants which led to the development of participatory action research [208].

Haraway suggests another useful and specifically feminist approach with the concept of 'situated knowledges' [212]. In this concept she brings together aspects of two quite different traditions, a relativist subjective positioning and 'feminist critical empiricism' [212]. The latter draws attention to the importance of experiential knowledge and in particular of women's experiences and 'for developing a feminist account of knowledge' [213]. Haraway argues for 'politics and epistemologies of location, positioning, and situating, where partiality and not universality is the condition of being heard to make rational knowledge claims' [212]. She emphasises the 'connections and unexpected openings that situated knowledges make possible'

and how such knowledges are ‘about communities not about isolated individuals’ [212].

Rose agrees that the work of Haraway [214] and Harding [215] has helped her to move towards a feminist ‘critical politics of power/knowledge production’ through acknowledging her own partiality [216]. However, she countenances against considering reflexivity as a mechanism for removing all uncertainty from the research process as ‘how a research project is understood is not entirely a consequence of the relation between the researcher and the researched’ [216].

I find the idea of situated knowledges useful in the recognition that in all research studies, there are uncertainties that cannot be “managed” by employing reflexivity throughout the process. To do otherwise would, as Rose suggests, be ‘demanding an analytical certainty that is as insidious as the universalizing certainty’ of research approaches which assume that we can ‘survey power as if we can fully understand, control or redistribute it’ [216].

**4.2.3.3 Conclusion**

Creswell suggests a useful framework for understanding research approaches that has three elements. Firstly ‘philosophical assumptions about what constitutes knowledge claims’, secondly ‘general procedures of research called strategies of inquiry’ and thirdly ‘detailed procedures of data collection, analysis, and writing. called methods’ [211]. He gives examples of how this model can be applied to different research designs and I have used this and the three-element framework to provide a broad overview of this study in Table 4.2 below:

Table 4. 1: Overview of research approach

Research approach	Knowledge claims	Strategy of inquiry	Methods
Qualitative	Constructivist and emancipatory assumptions	Participatory (Photovoice) Narrative	Photovoice Observation Focus Groups Interviews

In the next section the methods used (observation, focus groups and interviews) and Photovoice methodology will be discussed in more detail including how these fit with the constructivist and emancipatory assumptions of this study. Firstly, Photovoice methodology will be described and discussed including an introduction to the participatory nature of Photovoice and some of the challenges with using this methodology in this context. Further discussion about the “empowering” potential

will be in Chapter 7. This will be followed with background to the literature about observation methods and various approaches to the method that were considered. There will then be a similar exploration of focus group and interview methods generally and as specifically related to this study.

#### 4.2.4 Photovoice methodology

Photovoice was the core methodology used in this study and a key part of the exploration of CAPS participants' lived experience. A simple description would be that Photovoice is a visual methodology that entails participants using cameras to collect images which are then discussed. Wang and Burris who devised Photovoice described the three main aims of the methodology as 'to enable people to record and reflect their community's strengths and concerns, to promote critical dialogue and knowledge about important issues through large and small group discussion of photographs, and to reach policymakers' [217]. Underlying this top-level picture, however, are important theoretical underpinnings, methodological guidelines and critiques as well as useful examples of the methodology in practice. These will be explored in this section which will also link with a discussion of the power-shifting potential of the methodology in Chapter 7.

The genesis of Photovoice was in Wang and Burris's work with rural women in Yunnan China, as described in their seminal 1997 publication [217]. They developed the concept through practicing what they originally called 'photo novella' and were clear from the outset that the concept was 'the daughter of many mothers' with a sound but multi-faceted theoretical basis [218]. Foremost amongst these is the work of educationalist Paulo Freire whose 'problem-posing education' included the identification of issues important to marginalised people and the development of critical problem solving through dialogue [217]. Freire was critical of education methods that imparted knowledge in a didactic way; he used the analogy of 'banking' with knowledge as a deposit imparted to passive students. He proposed instead that the creative power of the 'oppressed' could be revealed through the concept of conscientization (the development of critical consciousness) [147]. His suggestion was that through dialogue marginalised people could become aware of and challenge existing inequities and gain greater control over their own lives. Freire's ideas are closely linked with empowerment discourses and include the idea that the humanity of the oppressed and oppressors can be enhanced through transformation of 'inequitable social conditions' [219].

Wang and Burris reflected on critiques of Freire and other proponents of participatory approaches, particularly from Maguire [220], that suggested a male

bias and an emphasis on the emancipation of “man”, and countered this by incorporating feminist theory into Photovoice [217]. The methodology was also built on how documentary photography had and was being used as ‘social conscience presented in visual imagery’, particularly contemporaneous movements in the United States and the United Kingdom to involve community groups in collecting documentary images [217].

Photovoice was therefore developed from these three theoretical bases, that is, the literature (and their critiques) on ‘critical consciousness, feminist theory, and documentary photography’ [217]. While the theoretical bases are often cited in the Photovoice literature, for example see [221, 222]; Wang and Burris describe two other sources of Photovoice: the challenging of assumptions by community photographers and participatory practitioners about the ownership of images and participant representation; and the authors’ own experience of developing the Photovoice process with Yunnan women [217].

The Photovoice research described here has been shaped by the theoretical basis of Photovoice but the other sources are also highly relevant. Through this research I am attempting to ‘challenge assumptions about representation and documentary authorship’ and, like Wang and Burris, this research and use of Photovoice has been developed through “on the ground” experience of ‘articulating and applying the process’ [217].

During the time when this research study was being designed, there were no examples of the use of the methodology within Malawi (besides my own pilot work), and I could find only one example of the use of visual methodologies with relation to cookstoves [223]. Since the development of Photovoice, the methodology has been used extensively in fields such as nursing [224] and education [225] and with many different marginalised groups, for example with indigenous Canadians [222], urban youth [226] and the homeless [227]. In the health field, the range of themes includes men’s mental health [228], youth obesity [229], malaria [230], chronic pain [231] as well as the formative and later work carried out by Wang and colleagues [232-234]. In a review by Hergenrather et al., the authors categorised 31 pre-2008 studies into various ‘community concern’ areas, including ‘(1) rebuilding communities, (2) promoting health, (3) living with disabilities,(4) preventing and treating HIV/AIDS,(5) improving quality of life, and (6) assessing the effects of war’ [235]. Researchers working in low-income environments have recognised the value of a methodology that can be used to explore complex issues that are deeply

embedded in gendered social norms. Studies carried out in Africa include a study with child soldiers in Sierra Leone [236], understanding water, sanitation and hygiene (WASH) behaviour [221, 237], and a case study of community psychologists' efforts towards 'just peace' in South Africa [238]. The range of studies is wide, but so is the participatory nature of Photovoice studies. There are also examples of studies that are informed by the Photovoice methodology but use photo-elicitation techniques, in which researchers provide the images or select certain images for discussion, for example [239, 240].

However, key to the goals and sources of Photovoice both at the outset and in contemporary research is the grounding of the methodology in participatory action research [232]. Participatory action research is nested under the 'umbrella concept' of community-based participatory research, which also includes action research, participatory research and collaborative enquiry. It shares with those methodologies 'an overarching set of goals' seeking 'to equalize power differences, build trust, and create a sense of ownership in an effort to bring about social change' [222]. From the outset, these goals were challenging; as described by Wang and colleagues in a critical examination of the first implementation of photovoice as part of the Women's Reproductive Health and Development Program in Yunnan (WRHDP), China [234].

The authors refer to the four modes of participation as identified by Biggs in 1989 [241], namely: *contractual*, in which local people are simply asked to participate; *consultative*, in which researchers involve local people beforehand and consult with them; *collaborative*, in which researchers and local people work together, but researchers take the lead in setting up and managing the research; and *collegiate*, where both researchers and local people are colleagues who bring different skills to the locally controlled research project (see Figure 4.2) [234]. Wang et al. suggest that this framing is helpful when thinking about where power resides at each stage of the research project. The authors delineate how achieving 'collegiate' research has costs and is not straightforward. In this first Photovoice project, 'rural women implemented the photovoice method and analysis' but 'had relatively little input into conceptualization, planning and dissemination, and they had no control at all over the policy making' [234]. Reasons for this include the time consuming and specialist nature of fund raising and planning for research; the rural women in the project may have seen other aspects such as 'documenting the reality of their lives' as a more valuable use of their resources. In addition, Wang et al. describe how 'social roles' and 'community norms' can work against attempts at 'social action' which can lead

to 'a sense of cynicism, despair, or powerlessness' when expectations of change are not fulfilled [234].



Wang 1998 (from Biggs 1989)	
<b>Mode of participation</b>	Description
<b>Contractual</b>	People agree to take part in the enquiries or experiments of research projects
<b>Consultative</b>	People are asked for their opinions and consulted by researchers before interventions are made
<b>Collaborative</b>	Researchers and local people work together on projects designed, initiated, and managed by researchers
<b>Collegiate</b>	Researchers and local people work together as colleagues with different skills to offer, in a process of mutual learning where local people have control over the process

From Cornwall 1996		
<b>Mode of participation</b>	Involvement of local people	Relationship of research and action to local people
<b>Co-option</b>	Token: no real input or power	On
<b>Compliance</b>	Outsiders decide agenda, outsiders analyse and decide on action	
<b>Co-operation</b>	Locals and outsiders determine priorities but directed from outsiders	With
<b>Co-learning</b>	Locals and outsiders share knowledge and form action plans	With/By
<b>Collective action</b>	Local people set agenda and mobilize to carry it out without outsiders	By

From Sanon 2014	
<b>Social justice impact of Photovoice</b>	Description
<b>Awareness</b>	Process facilitates new understandings and increases sensibilities regarding health and social issues
<b>Amelioration</b>	Findings may lead to corrective action over the shorter or longer term but not to do not tackle underlying power systems
<b>Transformative action</b>	Addresses issues at the systems level leading to explicit change in systems or policy

Figure 4. 2: Participatory frameworks

Catalani and Minkler's review of Photovoice literature published in 2010 explores how Photovoice has developed since the 1990s and how the community based participatory research element of the methodology is realised and feeds into outcomes [242]. The authors used a tool developed by Viswanathan et al. [243] to assess whether 37 selected articles achieved a 'participation rating' of low, medium or high [242]. The low rated studies were mainly exploratory studies of short duration and with limited interaction between researchers and participants, whereas medium rated studies were longer and there was usually an action component in the form of an exhibition [242]. The highest level of participation was achieved in studies that 'had a longer than average duration, reported an emphasis on training and community capacity building, and engaged in action'. These mostly had their basis in well-established long-term ongoing relationships, and as in the example given of Lykes et al. [238], led to the 'sharing of power' through 'developing a shared basis of knowledge and expertise' [242].

Sanon et al. build on the work of Catalani and Minkler with their 2014 review aiming to 'advance the use of the photovoice method by conducting a historical review of its use related to social justice' [244]. The authors specifically selected articles about Photovoice published in the period 2008-2013. They had two research aims: to explore how authors of Photovoice manuscripts 'implicitly or explicitly related the methodologies' used to the social justice aim embedded in 'historical' Photovoice. This is defined as the 'methodology-method fit'. In addition, they mapped impacts of research through a social justice framework to identify whether the Photovoice research 'was used to promote change either at the individual level or in the systems, environment or policy realms' [244]. See figure 4.2 for framework.

Linked with the participatory framing of Photovoice and the inherent emphasis on social justice is the idea of giving a voice to those in society who are less powerful. Wang and Burris link the acronym 'VOICE – voicing our individual and collective experience' with the group 'contextualising' and 'storytelling' that occurs in Photovoice communal discussions [217]. Fairey problematises the idea of voice to participants in participatory visual research suggesting that it is not sufficient to "have a voice" and suggests that there has been a 'theoretical neglect of listening' [245]. She emphasises a striving for meaningful voices that can be heard but is clear that change can only be catalysed if the voices raised during the process are listened to. Essentially, her argument is that the audience for participatory photography studies is important, that is, as the 'promise of participatory photography projects lies not only with who is taking the pictures but also with the

people who are looking at them and who take them seriously' [245]. Cornwall uses the term 'from involvement to influence' to highlight how involvement in a participatory process is not sufficient to influence change, but also requires efforts "from above" [246].

In addition, an important part of the Photovoice methodology is that images do not stand alone and should only be analysed and disseminated in conjunction with participant text [217]. This is clearly stated by Wang in an early Photovoice publication:

'People merely creating images is not the key to photovoice, however. The process also requires that people define these images. Photovoice entails people's discussing their images that they have produced, and by doing so, they give meaning to, or interpret, their images' [232].

Rose provides a useful overview of the use of images as research data including delineating the difference between photo-elicitation and Photovoice [247]. She points out that as Photovoice is an action research methodology, it involves more than just studying something, but engages both participants and researchers 'in a process of social learning, analysis and empowerment'. However, she links empowerment with both methodologies, with Photovoice in the 'relation between participants and society' and with photo-elicitation in the 'relation between the researcher and the researched' [247]. She describes how with photo-elicitation, analysis of photographs is common, often involving content analysis, sometimes a frequency count, and that most 'treat the photographs and interview transcripts as one body of data' [247]. In this study, images have not formed part of the analysis process, whereas references to them in transcripts have. An element of photo-elicitation was, however, used in IDIs with CAPS participants as detailed in section 4.3.4. Further discussion of how images are used in visual participatory methodologies and specifically in this study, is included in Chapter 7.

However, as Catalani and Miller, and Sanon et al. have detailed, the participatory nature of Photovoice research differs markedly and facilitating long term research that involves participants at all stages from design to dissemination is very challenging as researchers generally have funding and time constraints that limit their time in the field. This is particularly the case within the context of a PhD as in this study. To ensure that participatory methodologies such as Photovoice is not used in a tokenistic way, it is useful to use frameworks such as those devised by

Wang, Cornwall and Sanon (see Figure 4.1) to review progress along the participatory continuum.

Guijt and Shah made a distinction between participation as a 'means' or as an 'end' and suggested that taking an 'instrumental approach' as opposed to an 'empowerment approach' can be valid [248]. An instrumental approach might be to use participatory methodologies to meet the aims of the research or project more efficiently (which may include cost), as opposed to an empowerment process where the community has more control in the process. As Cornwall describes, participatory practice is often not straightforward, 'it constitutes a terrain of contestation' in which the priorities of the different actors and their power 'shape and reshape the boundaries of action'; she suggests therefore that researchers think in terms of '*optimum* participation' [246].

Linking this back to Photovoice in this study, amplifying the "voice" of CAPS participants and attempting to find powerful "listeners" was challenging. While I did not take a view that it was fine to use the methodology purely for instrumental reasons, its usefulness (as indicated in the pilot work) was an important selection factor. The participatory ladder or continuum idea also provided a useful impetus to find opportunities to move from involvement to influence of research participants. This will be discussed in more detail in Chapter 7.

#### 4.2.5 Observation

Gold's classic exploration of fieldwork roles usefully describes a spectrum of observation positions from that of the complete participant to the complete observer with interim stages (in sequence) of participant-as-observer and observer-as-participant. As he states, each field work role 'is at once a social interaction device for securing information for scientific purposes and a set of behaviours in which an observer's self is involved' [249]. In my case, observation of the CAPS environment began in 2014 when I accompanied a film crew to the Chikwawa and Chilumba sites collecting film footage (see also introduction to this chapter). Working in close contact with the team, helping set up shots, "crowd control" and holding the sound boom entailed many hours of observing village life in both natural and "scripted" forms. This role did not fit with Gold's description of the 'complete participant' as someone whose purpose and identity is hidden from those being observed or the 'participant-as-observer' where the observer builds a longer-term relationship over time, or the observer-as-participant which calls for 'more formal observation' in 'one-visit interviews'. Instead, in this case, it was closer to a 'complete observer' involving 'reconnaissance' of the 'social setting as preparation for more intensive study' [249].

Gold also points out that 'with increasingly more observation than participation, the chances of "going native" become smaller, though the possibility of ethnocentrism becomes greater.' With this in mind, when it came to fieldwork, I considered participating myself in cooking activities, that is, to take more of an anthropological approach. When considering the extent and type of observation that would be applicable to my research, a description in Jackson's collection of essays inspired by his ethnographic work amongst the Kuranko of Sierra Leone seemed pertinent [250]. Jackson explains how he approached his research with a 'grounded view' focusing on the way that people move and interact in everyday life. He suggested that his aim 'emphatic understanding', would be acquired through the acquisition of social and practical skills [250].

The description that follows seems to emphasise Jackson's initial lack of empathy. He explains that he boiled water on an open fire he lit, for bathing and drinking, (although notably not cooking). At first, he cared little about how he did this, although he was very aware that wood was precious and carried a long way by women; consequently, he wasted wood. One day, as he describes 'for no reason at all' he noticed the careful way that village women lit and tended their fires to limit wastage of fuel and maximise efficiency during cooking. Jackson suggests that his imitation of this and other practices 'was a creative technique' which helped him to 'grasp the sense of an activity' and that this embodiment is crucial for the acquisition of emphatic understanding [250].

Savage questions this assumption that researchers can gain a deeper understanding of the social world of others through this type of embodiment with reference to Jackson's fire making activities. She suggests that though this idea is attractive, it is fundamentally flawed as he does not consider 'the degree to which the body is culturally constructed and interpreted' [251]. This mirrors Savage's own experience of returning to nursing and engaging in what she defines as 'participative observation' in which the researcher 'attempts to derive knowledge using all the senses'. What Savage found was that despite her nursing expertise, her lack of recent experience meant that she could not engage in all nursing tasks and that activities such as the shift handover served to highlight the difference between herself and the ward nurses. In addition, she felt that 'she inhabited' her body differently being older than the other nurses, and it became clear to her that 'the researcher's body was not a tabula rasa on which the experiences of others could be drawn, unsullied by those of the researcher' [251].

I concluded that “standing in the shoes” of a CAPS participant would be of limited value as the aim of my research was not to learn about my own experience and perceptions of cookstove and open fire cooking, but to explore participants’ perceptions and the social interactions within and without CAPS households. Unlike Jackson, I did not struggle to empathise with CAPS villagers, but wanted to move beyond this to recognise and learn from their expertise and lived experience. The aim was more to see through their eyes than to attempt to stand in their shoes.

Pool and Geissler describe participant observation as the ‘main research tool of the anthropologist’, that entails observation over extended periods of time, in close contact with those being observed [162]. They describe how taking on the role of an insider in this way is open to criticism as barriers such as language and different backgrounds can lead to a lack of ‘cultural competence to interpret’ activities [162]. The behaviour of those being observed is also affected by being watched. However, the authors’ succinct description, ‘the basic fact of ethnography is that the researcher is *present* and asking questions’ is a useful one. Further that issues related to overcoming the ‘positional’ nature of ‘social knowledge’ is not confined to ethnography and is not a ‘methodological flaw’. Rather the value of an anthropological approach is in a move away from ‘cultural relativism’ and towards privileging the viewpoint of the local [162].

Winther’s study of the impact of electrification in a Zanzibari community has some useful insights into the possible value of an “outsider” researching cooking activities. She describes how female cooks were happy to explain in detail to her how they cooked, that is to display their skills to a ‘relatively ignorant, but presumably interested, foreign woman’ [252]. Winther also wrestled with concerns about her lack of language skills but found that employing two Zanzibari young women from a local town did not result in new information as her village informants were ‘unsure of what the educated strangers from town would think of them’ [252].

In summary therefore, as an “outsider” woman demonstrating interest in “womanly” cooking activities, observation whether informally or through more organised observation sessions seemed to be a useful methodology. As Morgan concludes, ‘full-scale participant observation’ can be impractical and an inefficient use of resources but ‘naturalistic observation’ has several advantages, including collecting a wide range of behavioural information, varied interaction with participants and ‘open discussion’ [253]. However, as Morgan also indicates, not everything is

observable, for example 'attitude formation and decision making' and habitual behaviour and in this case, focus groups can be a useful way forward [253].

#### 4.2.6 Focus Groups

Focus groups were used in two ways in this research study, that is with CAPS fieldworkers and with CAPS participants who participated in Photovoice activities. With the former group, the aim was to facilitate an interactive group discussion in which dialogue between the participants would lead to rich and deep exploration. Focus groups are a recognised methodology used within the Photovoice "framework" [234] and their use in this study was also predicated on the previous Photovoice pilot work [207].

As described by Morgan, focus groups are a valuable method not just for scoping research but also to explore research questions. It is the 'group interaction' that allows fuller exploration of perspectives and experiences, through participants sharing and comparing leading to a deeper understanding of 'consensus and diversity' and complex motivations and behaviours [254]. In addition, focus groups can be a time effective way to carry out research. However as Morgan also construes, with focus groups it is important to consider whether the topic and setting are suitable for this methodology, that is, will there be active discussion and interaction [254].

Theobald et al. (2011) describes the experience of a group of experienced researchers using focus groups under challenging circumstances with the aim of improving the quality of research using this methodology. The authors include four Malawi based studies in the overall total of 14 reviewed and concluded that while in some cultural contexts the use of focus groups was challenging, this was not their experience in Malawi. Rather 'in Malawi people already use discussion to solve challenges facing their communities in rural and urban areas alike' and that 'focus groups are akin to normal life in these communities' [255].

The use of focus groups in Malawi is well established [256-258] and has been linked with a tradition of oral storytelling [259]. Mkandawire-Valhmu and Stevens carried out 12 focus groups with 72 Malawian women living with HIV as part of a 'critical ethnography', in which, taking a feminist and postcolonial approach, they examined these women's lives in ways that sought to empower them and lead to 'emancipatory change' [258]. They concluded that this method is particularly effective for exploring complex and "difficult" issues with women and that 'collective narratives produced within focus groups convey a wisdom that can come only from

experiential experts' [258]. Similarly, Greco et al concluded that in the rural Malawian context, focus groups are more useful than individual interviews as they encourage research participation from those who are reluctant to speak on their own or worry that they don't have enough to say [256]. Focus groups therefore seem a good fit with the aim to explore perception and experiences of cookstoves, culturally embedded decision making and the "taken-for-granted" nature of cooking.

Greco et al.'s reference to the participatory potential of focus groups is echoed in Wilkinson's suggestion that focus groups are a valuable tool in feminist research and open up the possibility of reducing the 'power and influence' of the researcher [260]. She advocates the use of focus groups as a way of bringing people together to share their experiences to develop an understanding of the 'social and political processes' that impact on their lives and how the negative results of these might be mitigated through communal action. She concludes that the 'relative power possessed by research participants' during focus groups 'is not simply an ethical issue' but also leads to better quality research [260].

The selection of focus group participants is much discussed in the literature and bringing together homogeneous groups that have experience and status in common, in order to limit power differentials may facilitate more open discussion [208, 261]. Theobald et al. discuss how and whether focus groups should be grouped by gender and age, for example groups of younger women or older men. In some circumstances this can be problematic (the example given here is from research in Yemen where women were usually accompanied by a male companion), but in 'all cases researcher-authors stressed the need for some flexibility in recruitment approaches' and 'the need to think on one's feet and respond pragmatically to the unexpected' [255].

The use of focus groups in this study was therefore predicated on two main considerations. Firstly, with regard to the use of Photovoice with CAPS participants, group discussions are a key part of the methodology [217]. Secondly, with both fieldworkers and CAPS participants and in the Malawian context, interactive group discussions appear to be a useful way of exploring how decisions are made and understandings formed.

#### 4.2.7 Interviews

In the initial planning for this study, it was proposed that up to twenty interviews would be carried out. The scope of these with regards to both subject matter and interviewees was not fixed to allow the opportunity to use interviews to explore



themes and issues arising from earlier fieldworker focus groups and Photovoice activities, that is, to take an inductive approach to the use and design of interviews in the study.

The process of interviewing has a “taken for granted” nature and many researchers avoid detailing the research process [262]. Critiques of the use of interviews as a research method include that it reflects the dominance of interviews in the media and ‘the cult of celebrity’ [208]. A useful description of three models of interviewing as outlined by Silverman [263] is given by Ritchie et al., each ‘underpinned by a different epistemological standpoint’ [208]. Firstly, positivism where the process is highly structured, and data is understood to show an ‘objective/accurate’ account of the issue being discussed. Secondly, ‘emotionalism’ where issues are explored in a more in-depth way and data is ‘viewed romantically and uncritically’ as a true representation of the interviewees’ lived experience. Thirdly, ‘constructionism’, in which interviews are also exploratory and in-depth but where the interview ‘is recognised as part of the representation of that which it seeks to explore’ and it is accepted that interviews cannot reveal the ‘authentic reality’ of the lives of interviewees’ [208]. As detailed in section 4.3 above the latter is the approach taken in this qualitative study.

Ritchie et al. refer to Silverman’s critique of the constructivist approach as narrowing the view of the interview to the process itself but suggest that this is over-stated. They conclude that an ‘interview remains an effective way of exploring the ways in which participants experience and construct their lives’ with the proviso that interviewers need to pay careful attention to the interpretation of interview data and the interview process [208]. An emphasis on interpretation is found in the field of hermeneutics and in the interview dialogue there are two contexts, that of what is being researched and of the researcher, and the suggestion is that there is interaction and co-informing between the two contexts [264]. This term ‘double hermeneutic’ is used to represent this ‘concomitant production of meaning and meaning-making’ and is linked closely with the emphasis on reflexivity [264] in interviews and other research processes.

A useful way of looking at how knowledge is created in the interview transaction is through two contrasting metaphors of the miner or traveller, that is, ideas of interviewing as a process of collection of knowledge (mining) or as a process of construction of knowledge (travelling) [265]. The design of the interviews used in this study were in-depth and semi-structured and informed by the constructivist

approaches described above. As Kvale describes, there is no standard approach to interviews as there is with questionnaires (he lists twelve different forms) but what is clear is that interview research is replete with ethical considerations [265]. Ritchie et al. describe key features of in-depth interviews as being interactive, having a structure but allowing flexibility, 'getting below the surface', generating new knowledge and having an emphasis on language, hence the extensive use of audio recording [208]. With semi-structured interviews, the topic guide usually contains an outline of the areas to be covered with prompt questions where appropriate [265]. Returning to the traveller metaphor, Kvale suggests that in this scenario the researcher 'walks along with the local inhabitants, asks questions and encourages them to tell their own stories of their lived world'. Also that it is important to recognise that interviewing is intrinsically linked to analysis as 'intertwined phases of knowledge construction, with an emphasis on the narrative to be told to an audience' [265].

Another important factor to consider when conducting interviews is the 'asymmetrical power relation' between interviewer and interviewee, the interviewer generally decides what will be discussed and for how long [265]. That is not to say that interviewees are powerless; the power of the interviewee can be demonstrated by the withholding of information or through emphasis on 'counter-narratives' that bring wider 'societal concerns' into the interview [266]. However, at the opposite end of the spectrum from such resistance techniques, the interviewee may also manipulate the interview process through responding in a way that may be received positively by others, that is exercise 'social desirability bias' [267].

This unequal power relationship is very relevant to this study and complicated by many of the interviews being completed by a CAPS fieldworker and either in the presence of, or under the direction of, an "outsider". The context of the CAPS trial and the greater MLW research environment, and the provision of valuable cookstoves would also seem to indicate that care needed to be taken to militate against social desirability bias. In this study, interviews were carried out at a later stage and built on the relationships developed through previous group activities. In the case of the participant interview process, this was closely linked with Photovoice activities and included a photo-elicitation element. Further details are in the relevant sections below. Of course, power asymmetry provides complex challenges and cannot be "managed" or mitigated entirely, but reflexivity and flexibility throughout the interview and analysis process is helpful to 'give access to the manifold of local

narratives embodied in storytelling' and opens up meanings and understandings of the 'lived world' [265].

#### 4.2.8 Summary

The methods used in this study were developed in an iterative way to complement each other. As Arksey suggests, a useful approach is to consider the 'individual strengths, weaknesses and biases of the various methods or sources of data collection' and apply them in 'a way that they counterbalance each other' [268]. The process should be about blending and not just collating methods. Morgan refers specifically to the complementary nature of focus groups and interviews but also makes the wider point that 'the goal of combining research methods is to strengthen the total research project, regardless of which method is the primary means of data collection' [253]. Combining different methodologies and methods can shed light on phenomena in different ways.

In this study, the combination of methods was developed over time and the overall study design was informed by the aims and objectives as well as my ontological and epistemological stance. Underpinning this design is a desire to, as Chambers puts it, 'know better' which entails 'self-critical reflexivity' and the realisation that doubt is normal and to be embraced as part of the research process [191].

The table below shows an overview of what methods were used and with who and therefore acts both as a summary for this part of the chapter and an introduction into Part 2: Data collection.

Table 4. 2: Participant/methodology/method overview

<b>Role</b>	<b>Location</b>	<b>No.</b>	<b>Activity 1</b>	<b>Activity 2</b>	<b>Activity 3</b>
<b>CAPS participant</b>	Village 1	1	Observation	Photovoice	Interview
<b>CAPS participant</b>	Village 1	10		Photovoice	
<b>CAPS participant</b>	Village 1	3		Photovoice	Interview
<b>CoLT member</b>	Village 1	1			Interview
<b>CAPS participant</b>	Village 2	1	Observation	Photovoice	Interview
<b>CAPS participant</b>	Village 2	10		Photovoice	
<b>CAPS participant</b>	Village 2	3		Photovoice	Interview
<b>CoLT member</b>	Village 2	1			Interview
<b>CAPS participant</b>	Village 3	1	Observation		Interview
<b>CAPS participant</b>	Village 3	10		Photovoice	
<b>CAPS participant</b>	Village 3	3		Photovoice	Interview
<b>CoLT member</b>	Village 3	1			Interview
<b>CAPS participant</b>	Village 4	1	Observation		Interview
<b>CAPS participant</b>	Village 4	10		Photovoice	
<b>CAPS participant</b>	Village 4	3		Photovoice	Interview
<b>CoLT member</b>	Village 4	1			Interview
<b>CAPS participant</b>	Village 5	1	Observation		Interview
<b>CAPS participant</b>	Village 5	10		Photovoice	
<b>CAPS participant</b>	Village 5	3		Photovoice	Interview
<b>CoLT member</b>	Village 5	1			Interview
<b>Female Fieldworker</b>		4	Focus group		
<b>Female Fieldworker</b>		2	Focus group	Interview	
<b>Male Fieldworker</b>		8	Focus group		
<b>Male Fieldworker</b>		2	Focus group	Interview	
<b>HSA</b>		1	Interview		

## 4.3 Part 2: Data collection

### 4.3.1 Overview

Pilot work to assess the practicality and efficacy of using Photovoice methodology in this context was carried out in November 2015 and is described in a separate publication [207]. The main data collection took place in 2016, starting in April with observation in two of the five selected villages. In July 2016 there were observation sessions in the three remaining villages and training, image collection and focus groups with the Photovoice participants. Focus groups were also held with CAPS fieldworkers, one female group and one male. Interim analysis of data from July activities was carried out in August, September and October to inform further data collection using in-depth semi-structured interviews in November 2016.

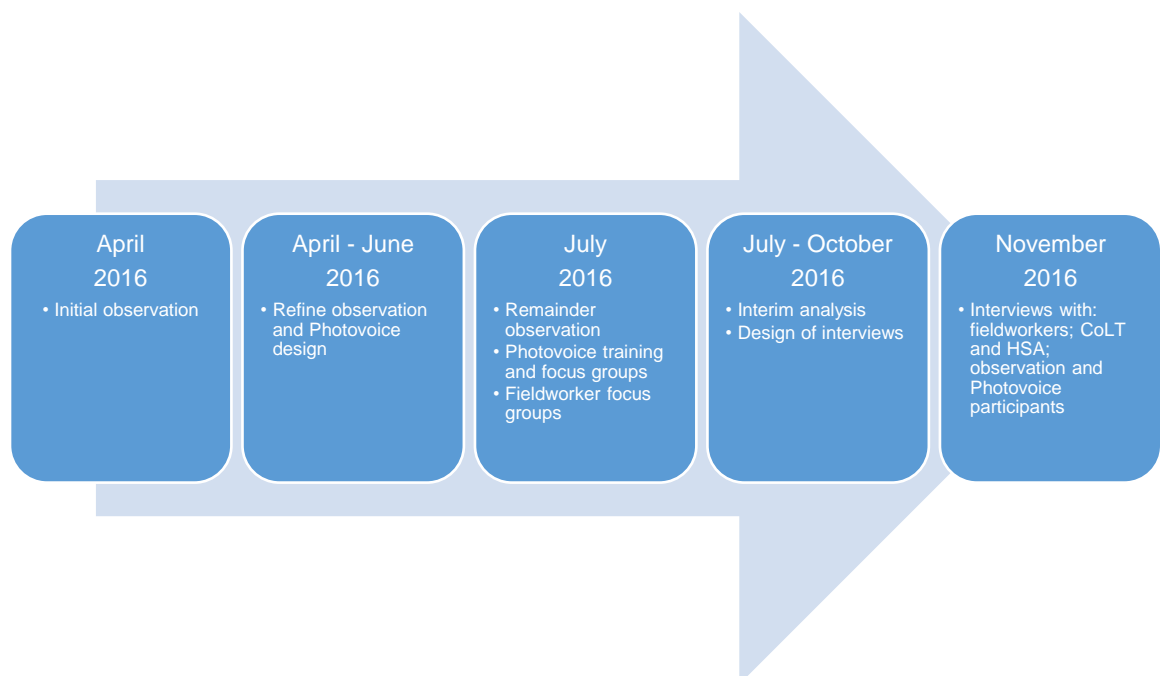


Figure 4. 3: Data collection timeline

### 4.3.2 The data collection team

The data collection team (in addition to myself) consisted of a Qualitative Research Assistant (QRA), a photographer trainer, a translator and a driver.

The Qualitative Research Assistant was Caroline Kumbuyo, a young Malawian female CAPS fieldworker. Caroline had recently completed a dissertation about cookstove adoption as part of a part-time study module for a Diploma in Monitoring and Evaluation at the Catholic University of Malawi, Faculty of Social Science. She was therefore familiar with social science concepts and had some experience of qualitative methods. Caroline was employed full time on this study for nine months.

She contributed to planning activities and took a leading role in participant selection and liaison. Caroline also conducted most of the interviews (except for two fieldworker interviews I completed) and the focus groups with participants. She was supported by Andrew Nuanje, the Senior Fieldworker at the Chikwawa base at that time, who provided expert knowledge and guidance regarding sampling and communication with study participants.

The photographer trainer was Ernest Mwale, a young man from Blantyre who had also been involved in the pilot Photovoice work. He is an experienced photographer and filmmaker working for Eldson Chagara Productions and led training sessions in each village and also attended some of the village focus groups. Emma Nyirenda provided instant translation to me during the interviews with CoLT members and CAPS participants. She was also a CAPS fieldworker and had been part of the pilot Photovoice field team. Finally, Mosses Kaimfa was the driver for the team; Mosses is an older Malawian man and his calm demeanour and interest in livestock and farming made him a useful member of the team beyond his driving skills.

I was present during almost all the activities either providing oversight and guidance or conducting them myself. The only exceptions were interviews with two of the fieldworkers and with the HSA as these were carried out after my November 2016 visit. I personally conducted the two fieldworker FGDs and one male and one female fieldworker IDIs. In other activities, I worked closely with Caroline during the sessions and we met regularly in person during fieldwork periods and communicated via email, Skype and phone at other times. During the interviews with CoLT members and CAPS participants, Emma provided simultaneous translation so that I could follow up on any interesting discussions or ask additional questions immediately.

### 4.3.3 Sampling

#### 4.3.3.1 Overview

All CAPS participant sampling was carried out in close collaboration with the CAPS field team who had extensive knowledge of the Chikwawa area, the villages within CAPS and the CAPS participants. The QRA communicated with participants through CoLT members who arranged events such as the focus groups and were present during all activities. There was also a pragmatic element to selection of CAPS participants; changes were made depending on availability of villagers.

Villages were selected for maximum variation; the following factors were considered when selecting villages: size of village; location of village in relation to main roads

(facilitating access to trading centres) and in relation to wooded areas (facilitating access to “free” fuel); economic opportunities available to village participants beyond subsistence farming. See Table 4.4 for details. Selection of CoLT members was automatic, in that each of the selected villages had a responsible representative who facilitated access to village participants throughout the study and was also interviewed.

I used purposive sampling to ensure maximum variation in the selection of CAPS participants within target villages. As Ritchie et al. describe, this approach has two main aims: firstly to ensure that the key relevant population(s) are identified; secondly that there is sufficient diversity within the group to allow exploration of the impact of relevant characteristics [269]. All CAPS participants in the sample resided in one of the five intervention villages selected as described above. The primary selection criterion was gender and the QRA was asked to recruit eight women and two men from each village in recognition in the primary role of women as family cooks in Chikwawa.

To ensure that the sample was as diverse as possible, I requested that female-headed households were included in the sample and that non-users of the intervention stove should not be excluded. Also, that a symbolically representative sample of village residents with regards to age and economic circumstance be selected. The selection of CAPS participants was carried out primarily by the QRA who liaised closely with other CAPS team members to identify individuals who met the criteria and to arrange their voluntary recruitment.

The need to involve local experts when sampling in unfamiliar contexts is well recognised [270] and by this stage I had developed a collaborative relationship with the field team and valued their expertise and judgment. Although relying on ‘gatekeepers’ may be an effective way to carry out sampling with “hard to reach” populations, there is also the potential of bias towards compliant or affirmative participants [269]. However, this had not been my experience in the sampling for the previous pilot Photovoice study in that participants selected by the field team had varied characteristics and openly shared their perspectives and priorities about food. That is they did not appear to have been selected as “compliant” CAPS participants but on the contrary made very little reference to cookstoves in their interviews [207]. See also Appendix 3.

Details of selected CAPS participants for this study are in Table 4.5.

The participation of fieldworkers in focus groups and interviews was on a voluntary basis. The QRA canvassed the team for interest in gender specific focus groups resulting in a male fieldworker group of eight and a female fieldworker group of four. Volunteers were also sought for two female and two male interviews.

Finally, one HSA was interviewed when it became clear from a fieldworker interview that these workers were an important source of health information and to explore specific issues about understandings of pneumonia. The QRA recruited this person on the basis of convenience.

In summary, in each of five selected villages, the following activities were carried out: observation of a cooking session; Photovoice training, image collection and focus group; interviews with four people. The CoLT members for each village were interviewed and one HSA. Eight male fieldworkers and four female fieldworkers participated in gender specific focus groups, and from those groups, two male and two female fieldworkers were interviewed.

I played an active role in the selection of all study participants through defining criteria and checking details of sample villages and individuals; I oversaw the recruitment of participants by the QRA. She was guided by other CAPS Team members, particularly the Senior Fieldworker, and worked closely with the CoLT members for the five selected villages. Sampling was therefore a collaborative process that recognised the extensive local knowledge and expertise, of fieldworkers and community representatives. The result was a 'purposeful' or 'judgement sample' in which participants were actively selected to form 'the 'most productive sample' to answer the research questions [271].



#### 4.3.3.2 Village characteristics

The following details were provided by the CAPS Qualitative Research Assistant at the outset of the study.

Village	Description
1	Village 1 has 137 households and is located on the Chapananga Road. It has a school and some small retail shops. Most people in the village are sugarcane farmers but they also grow crops for their own use.
2	Village 2 is far from Chikwawa hospital, past the Majete game reserve. The village has 105 households, no school, but 4 churches. It has no health post like other selected villages. Just like in the other villages most people are farmers while some also make charcoal for sale.
3	Village 3 is located close to the Dyeratu trading centre and is on the banks of the Shire River. It has 402 households. The facilities available in this village are St. Lawrence Secondary school, a health post funded by a well-wisher, 3 retail shops and 3 churches. Most people are farmers who grow crops for subsistence and commercial use on the Shire River banks although there are also a few fishermen.
4	Village 4 is also far from Chikwawa hospital close to Village 2. It has 90 households, with a government primary school, a maize mill which uses diesel and 2 churches. It has no health post like the other villages. Just like in the other villages most people are farmers.
5	Village 5 is located on the main road close to the Kasinthula Canal. The village is on the riverbanks of the Shire River and some residents are fishermen, while many of them are farmers who grow rice, maize, vegetables for both commercial and subsistence farming. The village has 180 households. The only facilities available in the village are a church and 2 shops. The children go to school available in a nearby village.

Table 4. 3: Sample village characteristics

During the observation session in Village 1, it quickly became clear that the above information was incomplete. The householder had electricity connected to her home as did others in that village. This is an example of the benefit of an outsider perspective as the QRA had not thought this worthy of mention and could not explain why this difference was observed in this village. Investigation revealed that that many village residents were smallholders for the Kasinthula Cane Growers

Association (KCG)<sup>2</sup>, growing sugar cane for processing at the Illovo Sugar Mill. KCG receives a community premium for the sale of the sugar through a Fairtrade mechanism and this has allowed the construction of a primary school, support for high school students, provision of boreholes, improved housing, improved healthcare facilities and the electricity connection for many homes.

#### 4.3.4 CAPS Participant Data Collection

##### 4.3.4.1 *Introduction and overview*

At the core of methodology used in this study was the participatory methodology Photovoice. The design of this process was based on previous pilot work that is described in a separate publication [207]. The experience gained from this pilot work encouraged a flexible and iterative approach. The experience of the previous small-scale process helped anticipate some of the practical issues that could arise but more fundamentally, highlighted that the challenges of using participatory methodologies in the context of applied health research and the opportunities for “moving along the participatory continuum” would be challenging but worth striving. When feeding back the results of the pilot work to the participants, one of the group suggested that they could all now be considered local experts in Photovoice and the others agreed that they would like to be involved in any similar future research. This idea was also fed into the study design with plans to invite these experts to Photovoice focus groups to share their experience.

##### 4.3.4.2 *Sampling*

Each village level Photovoice group contained eight women and two men. Older and younger men and women were included. Most were farmers whether as their main or subsidiary occupation. See Table 4.5 for details.

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<sup>2</sup> KCG was established in 1996 in conjunction with the Malawian government and local sugar mill (now operated by Illovo Sugar). Poor quality land is used to grow sugar cane for the mill providing an income for farmers and permanent and seasonal work for others.

Table 4. 4: Details of Photovoice group participants

<i>Gender</i>	<i>Age range</i>	<i>List of stated occupations</i>
<b>Village 1</b>		
Female	24 - 32	Shareholder at Kasinthula (2 female and 1 male) Mini-bus conductor Sells rice Subsistence farmer (3 as primary occupation and 1 as secondary)
Male	28 - 50	
<b>Village 2</b>		
Female	20 - 65	Runs bicycle hire business
Male	23 - 32	Casual labourer Subsistence farmer (7 as primary occupation and 3 as secondary)
<b>Village 3</b>		
Female	23 - 38	Sells Doughnuts
Male	46 - 51	Sells maize Builder Guard Subsistence farmer (6 as primary occupation and 2 as secondary) Pastor
<b>Village 4</b>		
Female	18 - 35	All – primary occupation of subsistence farmer
Male	30 - 36	Owns a shop Charcoal burner
<b>Village 5</b>		
Female	20 - 49	Sells doughnuts Owns a shop
Male	23 - 53	Pump attendant (Kasinthula) Sells phones Commercial farmer Subsistence farmer (6 as primary occupation and 3 as secondary)

Two of the observation participants were from this group and three others participated in observation sessions only. All the observation participants were interviewed and two others from each of the five villages leading to a total of fifteen CAPS participant interviews, three from each village. Sampling for the interviews was carried out between July and November and was carried out by the QRA with assistance from the Fieldworker Supervisor and with my input via email and phone. We decided that the observation participants should all be interviewed, one from each village. Criteria for the selection of other interviewees included gender, age, village location, occupation, female head of household (HOH), keen and not so keen cookstove users.

The final list is below:

Table 4. 5: Details of CAPS participant interviewees

CAPS participant IDI list				
Role	Village	Age	Gender	HOH
Photovoice	1	28	M	Yes
Photovoice	1	25	F	No
Observation/Photovoice	1	30	F	No
Photovoice	2	26	F	No
Photovoice	2	34	F	Yes
Observation/Photovoice	2	27	F	No
Photovoice	3	23	F	No
Photovoice	3	38	F	No
Observation	3	26	F	No
Photovoice	4	36	M	Yes
Photovoice	4	35	F	No
Observation	4	28	F	No
Photovoice	5	25	F	No
Photovoice	5	42	F	Yes
Observation	5	35	F	No

#### 4.3.4.3 Observation

Observation of the cooking of a meal took place in each of the five target villages. In each case an appointment was made around midday to observe a female CAPS participant cook a meal. In all cases this took place outside the participant's home and various family members and neighbours were present for some or all of the time. The observation team was me and the QRA (and sometimes also our driver). Images were collected with permission of the participant and brief notes (and drawings) were collected in situ and added to afterwards. These sessions allowed observation of what food was cooked, how it was prepared and cooked (including the fuel used) and who the meal was shared with. After the first observation session I realised that what was observed could be roughly divided into four areas: family; food, fuel; finance and this proved useful in subsequent sessions to guide both probing questions and note taking.

Table 4. 6: Example of summary observation notes

<i>Family</i>	<i>Food</i>	<i>Fuel</i>	<i>Finance</i>
Extended family (brother) Feeding neighbours' child Brother helping with shopping and cooking Small children present during cooking Lunch cooked to fit with family (school) schedule	Local greens (but bought) Oil bought in small amount Tomatoes key ingredient Different pans for different tasks Nsima twice a day – also maizemeal porridge for breakfast Mostly soya for protein but beans also mentioned. Not now as problem with harvest Some evidence of shortage (beans)	Previously charcoal Now wood – access not a problem Chopping small pieces seemed to be OK Has electricity so does not use solar panel 3 stone fire evident No power uses 3 stone fire	Self-employed – shop Husband a teacher Saving as no longer buys wood/charcoal but what about electricity cost Buying small amounts relatively expensive, e.g. cooking oil. Said soya is cheap 'Eating own profits' – soya from own shop Lost earning time through cooking (2 hours)

#### 4.3.4.4 Photovoice process

##### 4.3.4.4.1 Camera training and image collection

The cameras selected for the Photovoice image collection were (as in the pilot work), basic digital cameras with a viewfinder and disposable batteries. Each camera was packaged for distribution in a zip-lock A5 plastic folder with spare batteries. Budget allowed the purchase of thirty cameras, so it was necessary to stagger distribution in two tranches. See Table 4.8 for details.

A local photographer EM (who had also assisted with the Photovoice pilot work) was recruited to assist with the training process). A pre-meeting was held to agree how the training should be carried out and it was agreed that the QRA would introduce the session and explain that images were to be collected as a form of research, that each will have five days to collect fifty images showing: what they ate; how this food was cooked; who cooked the food; who they cooked and ate with and that each participant could also take twenty images for themselves. She also explained that there would be a meeting (focus group) in each village where all the participants would get together and discuss the stories behind the images. The role of EM was to show individuals in the group how to use the cameras and to talk about any problems that may be encountered with an emphasis on the avoidance of risk. The QRA then concluded the session with a reminder of the task and to confirm when the cameras would be collected.

After the 3<sup>rd</sup> training session the team had a meeting to discuss progress and issues so far. There were some concerns from the QRA and EM that the villagers were struggling with the training. I reassured them that the aim was not necessarily

aesthetic images but to encourage stories about cooking issues and that this could take place whether collection of images was “successful” or not. During the image collection process there were some issues with batteries going flat and it was also found that the locally available batteries were of very poor quality necessitating a trip to Blantyre (one-hour away) to buy replacements. Image processing was also carried out in Blantyre and this resulted in one focus group being delayed until later in the day.

Table 4. 7: Photovoice activity schedule

<i>July</i>	<i>a.m.</i>	<i>Village</i>	<i>p.m.</i>	<i>Village</i>
4			Photovoice Training	2
5			Photovoice Training	4
6			Photovoice training	3
11	Collect cameras/photo process 1			
12	Sort photos and prep for FGDs		Photovoice FGD	2
13	Photovoice Training	1	Photovoice FGD	4
14	Photovoice Training	5	Photovoice FGD	3
18	Collect cameras/photo process 2			
19	Sort photos and prep for FGDs		Photovoice FGD	1
20			Photovoice FGD	5

#### 4.3.4.4.2 Focus Groups

In preparation for focus groups, the camera memory cards were taken to the main town Blantyre for processing. An issue identified early on was that many participants had taken more than the seventy images (fifty for study and twenty for their own use). In some cases, participants had taken over three hundred. I decided that we would get the first seventy-five images on the cards (after the practice ones had been deleted) with the proviso that participants could discuss any image not printed while viewing it on the laptop.

Focus groups were held in local facilities in each village. In three cases the building used was a church and in the two others school buildings were utilised. In Village 5, the CoLT member was present during the discussion although he was advised that he could not part. In Village 4 the session started late because of delays in photo processing which reduced the time available (as no lighting available). Participants were given their own set of images and then asked to take out their personal twenty and select others that they wanted to discuss. This was not always straightforward, often the participants were hesitant and wanted the QRA to help them select images. The plan for the images to be discussed was for each group to sort them

into categories that they wanted to discuss. Large sheets of paper were laid on the floor for this purpose. In general, the participants wanted to use up all their images and also needed guidance when selecting categories.

In Village 2 and 5 the group was joined by a male participant (different person for each one) from the previous pilot study to share their experience of the Photovoice method. It was planned to have a female pilot study participant join us in Village 4, but we were running late, and she had to return home.

#### 4.3.4.4.3 Interviews

All the participant interviews took place in November 2016. They were conducted by the QRA and I was present with a translator. As with the FGDs the interviews were facilitated by the relevant CoLT member, that is she/he made the arrangements to meet and were usually close by during the interviews. The location of the interviews was weather dependant, November can be both hot and rainy, so shade or shelter was often a priority. In some cases, interviewees were “lined up” waiting to be interviewed but this did not seem to be problematic with those waiting, talking to the CoLT member or amongst themselves. In Village 5 however (the same village where the CoLT member was present during the FGD) there did appear to be some tension amongst the group which suggested that being overheard could be problematic in some circumstances.

In other more widespread villages, interviewees were brought individually by car to a central point or the team went to their home. The interview process in Village 1 was difficult as unbeknown to the field team the CoLT member was no longer welcome in the village. Therefore, we could not use the planned church or any other building to meet and when it began to rain heavily needed to conduct interviews in a very steamy vehicle. Once it became clear there was an issue (when the CoLT member came back from collecting an interviewee with his t-shirt torn after an argument with his wife) the driver also needed to drive around the village to collect people to “protect” the CoLT member.

Each interview had three parts (besides the opening and closing sections). Firstly, a table was completed with details of the meals and snacks in the previous 24 hours including details of who cooked and how they cooked. The aim was to learn more about everyday cooking as opposed to the more “issue” based discussion in Photovoice FGDs. The use of diaries to record such detail can be difficult in contexts where clocks are uncommon and literacy rates low [272]. The use of 24-hour dietary

recall is a well-established method in nutrition studies that seemed useful in the wider context of food and cooking [273].

The second part of the interview also used a “prompt” mechanism by combining elements of Photovoice and photo-elicitation. For each Photovoice participant, their images were collated into a PowerPoint presentation for viewing on a laptop. I selected ten images around the research areas of food, fuel and family to be numbered one to ten in the set. During the interview the participant was asked to comment on the story behind the first ten images (photo-elicitation) and also offered the opportunity to talk about any other image that they had taken (Photovoice). After some hesitation over this selection in the first few interviews, we decided to ask for participants favourite picture. Participants were encouraged to look at all their images on the laptop preferably by scrolling through themselves.

The third stage contained a series of questions about perceptions of health, what others said about the trial (rumours) and timesaving. A question was also included about participation in a CAPS sub-study (CHAPS) to explore perceptions of air-monitoring equipment. The final question related to whether participants would consider buying a similar cookstove to the ones used in the intervention.

The use of prompts such as the completion the 24-hour recall table and the photo-elicitation stage draws on the use of ‘cultural probes’ by Lambe and Senyagma in their exploration of drivers of cookstove use in Kibera, Kenya. The authors found that using photographs taken by participants but selected by researchers, as prompts, made interviews more relaxed and productive [223]. With the three interviewees that had taken part in observation sessions only, fieldwork images were used at the photo-elicitation stage. This was less successful in that the participants were less engaged in discussion of the images presumably as they had less personal connection with them.

#### 4.3.4.4.4 Other Photovoice activities

There were other activities associated with Photovoice as listed below:

In June 2017 each of the 5 villages that participated in Photovoice activities were given four cameras (as used in the research study), spare batteries and 20 printed images in a photo album. This activity was carried out by the MLW Science Communication Team using funds from the publication of a fieldwork image in the Lancet [274]. The team met with the village Chiefs, representatives of Village Development Committees and Photovoice participants and explained that the



cameras could be used communally, for example to collect images about issues to raise to the attention of others, or to celebrate special events.

In May 2018, further sessions were held with Photovoice participants in each village to select images for exhibition and village exhibitions were held in June 2018. These exhibitions were held in conjunction with the showing of a CAPS dissemination film in various villages [275]. This innovative dissemination method was designed to communicate the main study results to CAPS villages; the film was carefully produced in conjunction with MLW staff and translated into Chichewa and Tumbuka (the language spoke in the Northern CAPS site). The selection of exhibition images and the Photovoice exhibitions will be discussed in more detail in Chapter 7.

### 4.3.5 Street level Bureaucrat Data Collection

#### 4.3.5.1 Overview

This group includes CAPS Fieldworkers, CoLT members and HSAs. As discussed in more detail in Chapter 3 section 3.4.1, these roles fit with the definition of street level bureaucracy although each group of individuals has different responsibilities. At the outset of the study, fieldworkers had been identified as a key group with extensive experience of CAPS and other trial implementation in Chikwawa. Through discussions in fieldworker focus groups and through interacting with CoLT members during Photovoice activities, it became clear that CoLT members were central to the trial implementation and as village residents and representatives would be a fruitful source of rich data. The decision to interview a HSA was taken after fieldworker interviews and discussions of how CAPS participants received health messages.

#### 4.3.5.2 CoLT members and HSA

##### 4.3.5.2.1 Sampling

CoLT members who were interviewed were each resident in, and responsible for, the target villages. This approach was taken, partly because this was convenient but also to continue the participatory process developed through Photovoice activities. By the time the interviews took place in November these CoLT members had a good understanding of the aims and character of the CAPS qualitative study and were familiar with the study team.

CoLT members interviewed were all in their forties, married with children and had been CoLT members for some years. Several were born in the village they represented, and others were incomers (the two female members after marriage). See Table 4.9 for details. In Nyirenda et al.'s exploration of the recruitment and functioning of the CoLT member group, the authors concluded that democratic selection of members was flawed [26]. For example there were no members under

the age of 20, and the majority ‘had additional leadership roles in religious and other social groups’ which resulted in a lack of ‘socio-demographic diversity’ [26].

However, in the context of this small-scale study the CoLT member interviewees were representative of the wider CoLT group and resident in villages with varied characteristics.

Table 4. 8: CoLT member details

Village	Gender	Residency details	Years in post
1	M	Born in village	7
2	F	Moved from elsewhere, following her parents and was then joined by her husband	5
3	F	From Zomba (100km away), came to Chikwawa with husband as in-laws based there	7
4	M	Born in village	8
5	M	Born elsewhere but village 5 is ‘his parent’s village’	9

4.3.5.2.2 Process

4.3.5.2.2.1 CoLT Member Interviews

CoLT member interviews were carried out in November outside the homes of the interviewees. This is a very hot and humid time of year and where possible a shady area was found. In one village the outdoor location was problematic as it began to rain heavily, and we had to complete the interview in the study vehicle.

The interviews were semi-structured and began with a general discussion about where the CoLT member was from, their CoLT member experience and their family and occupation. This was followed by a discussion of how the CoLT member thought CAPS participants had experienced the trial, the benefits and negative aspects of CAPS (from the perspective of the participants), household roles in Chikwawa, and marital practices. Finally, the interviewees were asked about good health in Chikwawa and the barriers and enablers of achieving good health.

4.3.5.2.2.2 HSA Interview

The topic guide for the HSA interview was developed during November 2016 fieldwork for three reasons. Firstly, that in a male fieldworker this group of workers was identified as a key source of health information in Chikwawa. Secondly, to try to explore in more detail what people in the area meant when they used the term “pneumonia”. Thirdly, after a discussion with the Senior Fieldworker about the use of the local term “*kufesuka*” to describe non-specific febrile illness. I asked for two

HSA to be interviewed by the QRA if possible, but it was only possible for one to be arranged with a female HSA in her 30s who had been born and lived locally. The interview was semi-structured and covered local definitions of good health, how this may be linked with the cookstoves and what is meant by CAPS participants when they use the terms “*kufesuka*” and pneumonia (in her view).

#### 4.3.5.3 CAPS Fieldworkers

##### 4.3.5.3.1 Sampling

The CAPS fieldworkers who participated in focus groups and interview were a symbolically representative group. In the focus groups there were eight male fieldworkers and four female fieldworkers which was reflective of the larger number of male CAPS fieldworkers. Women’s access to education and paid employment in Malawi (as in many other contexts) is negatively impacted by gender inequality [258]. In the male group there were more senior fieldworkers, also reflective of the inequitable gender split of senior/junior fieldworkers. All the four fieldworker interviewees were in their thirties and had worked on CAPS for several years.

##### 4.3.5.3.2 Process

Methods used with fieldworkers were focus groups in July 2016 and semi-structured interviews in November 2016.

##### 4.3.5.3.3 Focus groups

Fieldworker focus groups were held in July 2016 in a meeting room at a local lodge with soft drinks and snacks provided. The location was chosen as it was only a five-minute drive away from the site office but clearly separate from it. The aim was to emphasise that discussions at the focus groups would not be “fed back” to MLW and would remain confidential within the group. At a previous visit in April 2016, I hosted a lunch for all the fieldworkers at another local lodge so that I could explain in an informal setting about the planned qualitative study and to encourage a more open relationship with the group. From the group of CAPS fieldworkers employed in July (six female and twelve male), four female and eight male fieldworkers participated in gender specific focus groups. The sessions were conducted in English and facilitated by me. The QRA was invited to participate in the process as an assistant facilitator but declined. The discussions were recorded, and data was also gathered through the collation of post-it and flipchart content.

Each session began with an overview of the aims of the CAPS Qualitative Study, the confidentiality and anonymity of the focus groups, the consent process and information about how the data gathered would be stored and used. It was emphasised that this activity did not form part of the management of the fieldwork

team and that, for example, issues related to delivery of CAPS could be discussed in confidence. It was also made clear that while data would be anonymised in the thesis and publications, confidentiality was limited due to the small number of fieldworkers and the sharing of discussions with other team members during the focus group process.

The discussions were informal beginning with open-ended questions about how CAPS differed from previous studies and the challenges of introducing technology in the Chikwawa context. This was followed by an exercise where the fieldworkers were asked about the benefits of cookstoves and the barriers to their use, on post-it notes. These were then used in a group activity to draw up lists on a flipchart. This was followed by a discussion about the longer-term impact of CAPS locally, specifically whether the cookstoves would still be in use in five years' time. Each session concluded with an opportunity for further comments.

Although I had interacted with most of the attendees previously, there was still a "distance" between me in my outsider Principal Investigator (PI) role and the fieldworkers who could be seen to be at the bottom of the MLW hierarchy. In previous informal discussions with field staff, I was also aware that the Chikwawa team felt that they were isolated from the main group of staff and in some ways seen as "poor relations".

Certainly, the focus group process seemed novel to both groups and while this appeared to lead to some initial hesitation and uncertainty, the groups became more relaxed through the session. Despite being planned as a way to initiate more interaction, the post-it/flipchart section at first seemed to result in less communication. This may have been linked with unfamiliarity with this type of task as completion of the post-its and group completion of the flipchart ultimately resulted in useful discussion. At times in both groups there was some whispering which may indicate lack of confidence and/or reluctance to share views openly or boredom/lack of interest.

Tuckman and Jenson's model of the various stages of group settings as 'forming', 'storming', 'norming', 'performing' and 'adjourning' [276] could be applied to this scenario. The model describes a move from the group's dependence on the leader, through to intragroup conflict, leading to the development of cohesion, evolving to interactive open discussion and final thoughts [208]. However, the impact of my outsider "powerful" status as group facilitator must also be considered. Although by this point, I had developed a closer relationship with the fieldworkers, this was not

on the basis of our equal status and the FGD members may have had very legitimate reasons for not sharing all their concerns with me. On the other hand, both groups were cohesive in that they had worked closely together for some time under quite challenging circumstances; fieldwork in rural Chikwawa can be arduous and seems far away from the comfortable MLW offices in Blantyre.

It seems plausible that my “enhanced” status may also have been linked with participants taking the opportunity to raise issues that they felt important and were sometimes wider than the CAPS study. For example, in the male focus group, a fieldworker with responsibility for cookstove maintenance took the opportunity to raise his concerns about the environmental impact of discarded lead batteries. Another male participant made a plea for me to feed back to PIs at MLW that there should be more attention paid to dissemination of study results. Generally, participants in both focus groups took the opportunity to advocate for the CAPS participants. The female group was generally much quieter than the male group which may have been related to the small number of participants. Ritchie suggests that focus groups should ideally contain six to eight participants and that with smaller groups the interviewer may benefit from ‘energising or challenging’ the group [208]. The “shyness” of the female group may also have been related to the social and economic marginalisation of women in Malawi and their exposure to the oppressive power of men ‘in daily interactions’ including the workplace [258].

#### 4.3.5.3.4 Fieldworker Interviews

Fieldworker interviews were held in a private office within the hospital complex immediately adjacent to the MLW site office. This was in order to ensure that we could not be overheard, that we were on “neutral” territory while still being conveniently close to the site office. The QRA arranged these appointments. I conducted two, one with the female fieldworker and one with a male fieldworker in English. The additional two were conducted by the QRA after I had left Malawi, one in Chichewa (with a female fieldworker) and the other (at his insistence) with a male fieldworker in English.

The interviews were semi-structured with content developed through interim analysis of both fieldworker and Photovoice focus group data. Each started with a request for the interviewee to say how they came to be working on CAPS and their role in the study, followed by a question about whether the fieldworker would buy one of the intervention cookstoves if possible. The benefits of the cookstoves (from the perspective of the participants) was also explored building on discussions in fieldworker focus groups. A phrase from the female focus group: ‘It would be better

for a Chikwawa villager to buy a bag of maize than a cookstove', was used to prompt discussion. Other issues arising from previous focus groups were explored including willingness of CAPS participants to buy cookstoves, what CAPS participants meant when they referred to "doing gender"; the role of illiteracy in use of the intervention cookstove and understandings of pneumonia. A final question related to who the fieldworkers thought influenced CAPS participants and the role of rumours and gossip on participation in the study.

#### 4.3.6 Data analysis

##### 4.3.6.1 Translation and transcription

All focus groups and interviews were recorded using small digital recorders.

Translation (from Chichewa to English) and transcription was carried out by the QRA with assistance from the MLW Translation and Transcription (T&T) Team. The head of that team also carried out a quality audit of the translated transcriptions by reviewing twenty percent of the content. This input from and overview by the T&T Team was very valuable as members have extensive experience and liaise with Malawian staff at MLW to develop a dictionary of common terms.

Both translation and transcription are challenging processes and result in an abstraction from the original encounter and can be described as 'impoverished decontextualised renderings' of interactions [277]. The period over which transcripts were received was quite drawn out which was frustrating at times but allowed me to develop familiarity with terms used and problem areas, for example the lack of differentiation in Chichewa between he and she and the various terms that can be used for cookstoves.

The MLW T&T Team had a standard format for transcripts that included verbal "extras" such as pauses, laughter and encouraging noises e.g. "mmm"; participant emphasis on particular words was also indicated by bold text. As Bailey indicates transcripts cannot be considered as 'neutral records of events' and are interpreted by researchers [278]. In this case there was also an additional but necessary step that depended on the expertise of a dedicated team. I was able to contact the QRA and the T&T Team head directly as transcripts were received to seek clarification if necessary and also met with the head of the T&T team to discuss problem areas.

Englund is very critical of researchers in Malawi who do not learn Chichewa and of the translation process, suggesting that the latter often has a low priority and is linked with a 'top-down' colonial approach [132]. As suggested by Kvale, the approach taken in this study was pragmatic, concentrating less on whether

transcripts were 'correct' and 'valid' but more on whether they were useful for the purposes of the research [277].

#### 4.3.6.2 Analysis process

As Ritche et al. indicate, qualitative data analysis is a 'mix of creativity and systematic searching' which takes place throughout the whole research process [208]. Interim analysis was carried out between the July and November data collection periods using observation and field notes, and transcripts from fieldworker and participant focus groups. Thematic analysis was used to identify *a priori* and emergent, codes and categories. Based on personal experience of the cookstove field and the literature search detailed in Chapter 2, *a priori* based enquiry with fieldworkers included the challenges of the CAPS trial, perceived benefits of the intervention and factors implicated in longer term adoption. The emphasis on food preparation and cooking in the Photovoice process and FGDs was also loosely connected with identifying barriers and enablers of cookstove adoption but the aim was to widen the scope and encourage the collection of inductive data.

Through this process I decided to explore the following issues in IDIs, that is, these were areas emerging that needed to be further understood:

- Household decision making about cookstove use and purpose
- How gendered roles are linked with cookstove use
- Trial implementation and relationship between fieldworkers, CoLT members and participants
- Understanding of health/science and how this is linked with cookstove use/purchase
- Religious/satanic beliefs and use/purchase of cookstoves
- Benefits and disadvantages of cookstove from CoLT member viewpoint
- Marriage practices in Chikwawa and how these impact on household roles and decision making
- Understanding of health in the local community and how this is linked to cookstove use and the trial process

Braun and Clarke describe thematic analysis as being a good fit with the constructivist approach and as a 'a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex, account of data' [279] and this approach was taken in this study. Data was managed using NVivo with all transcripts added to the system and coded inductively beginning with the July data and adding and coding November data as it became available. That is, the same

codes were applied across the data set, taking a systematic approach to help 'locate themes which do not appear in an orderly way' [208].

The six steps advocated by Braun and Clarke were used to structure the thematic analysis, that is: familiarisation with the data; generation of initial codes; theme searching; reviewing themes; definition and naming of themes; report production [279]. The framework approach to thematic analysis was used to 'compare and contrast data' while still retaining connection to the source, and to help order and visually analyse the data [280]. In summary the following steps were taken: all transcripts were read several times so that I was familiar with the content; each transcript was coded to develop a set of codes and sub-codes (known as nodes and sub-nodes in NVivo); a framework of all codes was developed by extracting data from NVivo into a chart (spreadsheet); data in each cell was summarised retaining interesting quotes; categories were developed by collating codes. In the final mapping and interpretation stage categories were used to develop themes using visual "maps" available within NVivo, through the development of memos and with reference to field notes. This stage was both deductive as the literature (Chapter 2) and theoretical underpinnings (Chapter 3) fed into the analysis but was also inductive as it drew on emergent themes from the data. This data analysis was an iterative process with 'ongoing interplay between data collection, analysis and theory development' [280]. An example of charting and a visual map used in theme development are in Appendices 5 and 6.

#### **4.3.6.3 Measures to assess research quality**

Seale suggests that a 'confident view of social research as a craft skill' requires the researcher to draw on social philosophy and theory but not be constricted by a particular paradigm; in this way he suggests that it is possible to develop broad quality criteria for qualitative research [281].

In this section, I will outline the strategies I used for quality assurance of this study using the concept of trustworthiness. Overall, I sought to ensure the quality of this study by reflecting and acting on my ontological and epistemological approach throughout the study process and the writing of this thesis. As Lewis et al. indicate, the trustworthiness of qualitative research depends not only on an appropriate design and rigorous research conduct but also on thorough and truthful presentation of the 'analytic routes followed and the evidence accrued' [282]. However, trustworthiness is not a 'matter of final proof' but is always 'negotiable and open-ended' and depends on the acceptance of the account by readers [281].



The work of Lincoln and Guba (1985) [283] was influential in introducing the concept of trustworthiness in qualitative research [281, 284]. Trustworthiness was developed out of the sense that ideas of validity and reliability used to assess the quality of quantitative research are unhelpful in qualitative research as they suggest that objective knowledge can be produced through using the “correct” research tools [281]. Lincoln and Guba detailed four aspects of trustworthiness, that is: ‘credibility’; ‘transferability’; ‘dependability’; and ‘confirmability’ that can be used to foster worthwhile qualitative research [283].

Newton Suter suggests that many researchers believe that credibility is the most important benchmark of the quality of qualitative research [284]. He suggests that credibility can be achieved through measures ‘such as confirming evaluation of conclusions by research participants, convergence of multiple sources of evidence, control of unwanted influences, and theoretical fit’ [284]. However, these measures of credibility can be problematised and may not be consistent with qualitative epistemology, for example the idea that influences can be controlled. In addition, although it seems important that research participants can recognise the account produced, I consider that the interpretation of the researcher is a key part of the qualitative process.

In this study I have attempted to enhance credibility by developing an account according to my underlying epistemology. As described in more detail in section 4.2.3 I have drawn on a combination of constructivist and critical epistemologies to develop appropriate research strategies but have also interpreted data within these paradigms as narratives and within an exploration of the underlying power relations that produce them. Although it was not yet been possible to carry out a formal dissemination process with the study participants, the credibility of this research was also enhanced through the Photovoice exhibition activities. The questions raised by attendees at the exhibitions and the selection of images for exhibition by participants as detailed in section 7.3.2.1 and Appendix 1, indicate a measure of confluence between the study results and the priorities of the local population.

Transferability of qualitative research is closely linked with the concept of generalisation and the striving for external validity that characterises quantitative research [281-284]. The approach of qualitative researchers to generalisation differs widely in line with their epistemological stance but there is some agreement about general principles that indicate the transferability of qualitative research [282]. This includes the use of ‘thick description’ [283], ‘comparisons across cases’, and

'evidence of theoretical transference' [284]. Lewis et al. provide some clarity by providing 'three distinct types of inference' that are relevant to qualitative research; 'representational generalisation'; 'Inferential generalisation' and 'theoretical generalisation' [282].

Representational generalisation refers to the extent to which the research sample is representative of the population from which it is drawn. Inferential generalisation involves questioning the extent to which the results are relevant to other settings or contexts. Theoretical generalisation is related to the drawing of 'theoretical propositions, principles or statements' from study findings that can be more generally applied [282]. Kuper et al. suggest that a discussion of how the results of a study 'advance theoretical understandings that are relevant to multiple situations' is important when considering transferability [285]. However, Lincoln and Guba summarise how in practice, it is not the responsibility of qualitative researchers to 'provide and *index* of transferability' but to provide sufficient in-depth information that makes judgements of transferability possible [283]. A discussion of the extent to which the study results can be generalised is included in section 8.8. and includes representational, inferential and theoretical generalisation, as defined above by Lewis et al. [282].

Newton Stewart describes how dependability is linked with the quantitative concept of reliability, that is the extent to which similar findings would result if the research was repeated [284]. Lewis et al. suggest that although some researchers contest the applicability of dependability to qualitative research, it is an important part of studies that seek to influence policy and more generally it gives reassurance about the 'sturdiness of a finding' [282]. Therefore it relies on facilitating a full and clear understanding, and confidence in, data collection, analysis and interpretation [282] through 'common qualitative strategies' such as 'rich documentation' and triangulation [284]. Finally, Lincoln and Guba suggest that trustworthiness in qualitative research depends on confirmability [283], that is, the extent to which the results can be confirmed by others. In contrast to positivist notions of researcher bias and objectivity, confirmability in qualitative research draws on the concept and process of reflexivity [284]. The use of audit trails and triangulation have also been linked with confirmability [283]. A general description of the practice of triangulation is that it involves combining multiple methods and sources of data [286].

Dependability and confirmability in this study was promoted through providing a detailed account of the research process concurrent with its methodological

underpinnings, thick description of results and taking a reflexive approach throughout the whole research process. In addition triangulation was used in recognition of the key role this strategy plays in the dependability, confirmability and overall trustworthiness of qualitative research [281, 284].

Although there is some debate about the value of triangulation to qualitative research, many researchers are in agreement that it has a role and have found benefit in the four forms of triangulation established by Denzin (1978) [287] [282]. These are: methods triangulation; triangulation of sources; triangulation through 'multiple analysis'; and theory triangulation [282]. Seale suggested that using triangulation in this way allows a move away from the 'idea of convergence on a fixed point' and towards a concept of triangulation 'as revealing multiple constructed realities' and 'difference' [281].

Triangulation was used to widen and deepen understanding and enhance trustworthiness in this study in three ways. Firstly, through 'methods triangulation', the comparison of data generated through qualitative methods and Photovoice methodology. Secondly through triangulating sources by comparing different sources of data including observation, focus group and interview data. Thirdly through viewing the data from different theoretical perspectives [282]. As described in the previous section, at the analysis stage, data from different sources, methods and Photovoice methodology, was treated as one data set. Patton suggests that it is at the analysis stage that triangulation is most fruitful, as this enables a diversity of ways to explore particular phenomenon and can enhance credibility through 'strengthening confidence' in the results of a study [288].

In summary, as May suggests, quality in qualitative research can be enhanced by 'systematic, self-conscious research design, data collection, interpretation and communication' [289]. My approach in this study has been to consider how trustworthiness can be enhanced at all stages of the research process through study design, data collection and analysis to the writing of this thesis. Fundamentally, trustworthy research is also ethical research; ethical considerations will be discussed in detail in the next part of this chapter.

#### 4.4 Part 3 - Ethical considerations

##### 4.4.1 Overview

As Ritchie et al. describe there is 'broad consensus at a high level of abstraction' about ethical research that can be summarised as: research should be useful and not be too demanding for participants; participants should be recruited on a

voluntary and “informed basis”; risks of adverse consequences for participants should be minimised and their confidentiality and anonymity observed [208]. The authors suggest that researchers need to look beyond these basics in order to be able to anticipate and deal with ongoing ethical challenges after “official” ethical approval is given. They need to carry out their research thoughtfully and carefully and develop an ‘ethical conscience’ that puts the interests of their research participants at the centre of all they do [208].

Aellah et al. describe this ongoing process as ‘relational ethics’, as neatly summarised below:

‘Relational ethics are the complex and spontaneous momentary pursuit of morally right actions in personal interactions with other humans. They are guided not so much by formal rules as by individual and social conscience, and by particular overlapping identities and relationships.’ [290]

A relational ethics approach was taken in this study and this will be reflected in the structure of this part of the chapter. As discussed previously, the extent to which Photovoice is “empowering” or “gives voice” to participants provides ethical challenges to the use of this participatory methodology. Therefore, the ethical basis of this study under consideration here is beyond the instrumental, relating not only to ethical approval processes but also to the ethical use of Photovoice.

This section will begin with a description of the study ethical approval process including how consent was obtained. Followed by an exploration of Photovoice and “empowerment”; how this may be defined and assessed. This section will also explore how careful consideration of the representation of Photovoice participants in images is important to avoid widening power inequalities with reference to the idea of ‘situated visual ethics’ [291].

#### 4.4.2 Ethical approval and study processes

The qualitative research theme of CAPS was approved by the College of Medicine Research Ethics Committee (COMREC) in Malawi and LSTM Research Ethics Committee in the UK. Informed and voluntary written consent was obtained from all study participants. As a sub-study of the main CAPS trial an amendment to the trial protocol was produced which included separate information and consent sheets for CAPS participants, fieldworkers and CoLT members/HSA.

In practical terms all participants in this study either read or listened to the QRA read the information and consent sheets and either signed the consent form or provided a

thumbprint. In the latter case, as per MLW protocol, an additional witness signature was obtained. In all cases consent was obtained as a separate exercise before any fieldwork began. Completed consent forms were stored securely in CAPS project files. All CAPS fieldworkers had up-to-date Good Clinical Practice training, were experienced in the ethical conduct of research and trial processes were closely supervised by the CAPS Trial Manager and the Senior Fieldworker. The standard MLW forms for permission to take and use images were also used as directed by COMREC who rejected the need for a specific Photovoice images permission form as submitted with the amendment to protocol paperwork.

#### 4.4.3 Definitions and critiques of “ethical” Photovoice

##### 4.4.3.1 Overview

In this section the two ethical dimensions of Photovoice: 1) representation and advocacy; and 2) “empowerment”, will be critically examined.

The section will begin with consideration of how the production and use of images within Photovoice and other visual methodologies provides specific ethical challenges. This will be followed by a brief examination of definitions and potential assessments of empowerment, generally and more specifically related to Photovoice. The aim is to set a sound basis for further discussion in Chapter 7 of the ethical use of Photovoice in this study.

##### 4.4.3.2 Representation and advocacy

In all contexts, but particularly in low-income settings and with marginalised communities, there are ethical challenges to carrying out “hands-on” research using visual media, related to representation and advocacy. The most obvious ethical challenge to using Photovoice is that participants are put at risk. This is particularly the case when the issues being explored are sensitive [228] or activities are being carried in circumstances where photography has negative socio-political connotations [292]. These matters cannot be left to ‘happenstance’ and researchers must be aware of the unintended consequences and minimise risk in their research [293].

Wang and Redwood-Jones draw attention to privacy laws (in this case in the United States) and other approaches to protect against factors such as ‘intrusion into one’s private space’, ‘disclosure of embarrassing facts’, ‘being placed in a false light’ and images being used for commercial gain. They propose a set of minimum standards to mitigate these risks including extensive use of consent forms and written material, and training of participants [293]. Other authors have explored these issues, provided updated recommendations and emphasised that cultural context is key

[222, 292]. In the context of rural Chikwawa with low literacy levels however the use of written material and consent forms for all images would have excluded many people. It was notable during the completion of study consent forms that the majority of Photovoice participants could not read the information sheet themselves and signed the consent form with their initials or a thumbprint. As previously described the Photovoice methodology was built on Freire's work with illiterate people and was designed to be accessible to anyone that can use a camera. Wang and Burris suggest that the aim of Photovoice is to affirm 'the ingenuity and perspectives of society's most vulnerable populations including those who may not be able to read or write' [217].

In this case the requirements of the local ethical review board regarding the collection and dissemination of images was minimal and limited to the use of standard MLW forms. However, the experience of the pilot Photovoice study and the larger Photovoice study described here, led over time to the development of what Ponic and Jategaonkar (based on the work of Clark et al. [294]) call 'situated visual ethics' [291]. Situated visual ethics are context relevant and critical means of ethical decision making that take into account that 'all decisions and actions are framed by various perspectives and embedded in systems of power' [291].

These authors also refer to the concept of 'condescending ethics' in which research ethics boards seek to protect research participants from harm by insisting on anonymity. They suggest that this 'othering' can reinforce the lack of power of research participants and limit their participation in 'knowledge production processes' [291]. Anonymity can be achieved using computer software to pixelate or blur faces but such adjustments 'can decontextualize and perhaps obscure the meanings and experiences that participants are wanting to communicate' [228]. Participants in visual research may also object to anonymisation and ask that their contribution, opinions and experiences are openly acknowledged. If this does not happen then confidentiality and anonymity may be 'another way of silencing participants' voices and raises important questions about power relationships in research and control of the research' [294].

Although there were no ethics board limitations on image use set in this instance, it was clear to me that the use and dissemination of Photovoice images must be carefully considered. Of particular concern to me was what Sanon et al. call 'attributional bias', that is the possibility that Photovoice images and text may lead to further marginalisation of participants, for example by being used 'to locate social

justice problems within disadvantaged communities, but not in advantaged communities' [244]. As George et al. conclude, ethical concerns about the collection and use of images is about more than gaining consent and spans 'issues of justice, autonomy, non-maleficence, beneficence and fidelity' [295].

A further complication is that the scope for dissemination of images is now so wide and that the sharing of images of the internet can lead to researchers and participants losing control over, and exploitation of, Photovoice images [228, 291]. This is not an issue that Wang and colleagues encountered in the early days of Photovoice when participants had control over their own image negatives [293]. The idea of 'situated visual ethics' advocates approaches to image dissemination that provide a way to balance these concerns of exploitation against promoting Photovoice participant autonomy. In summary this approach advocates flexibility around consent, anonymity and confidentiality which is situated in the contexts within which the data is produced [291]. In addition, it takes into account that ethical decisions about the use of Photovoice images are not just relevant to the ethical research board stage but 'require ongoing deliberation and reflection' [291].

Becker (referring to the work of Berger [296]) suggests that the value of images is that they are 'irredeemably specific' and show how those depicted are not abstract arguments or generalised stories but 'really exist as living people who come from and work in real places' [297]. This leads him to conclude that they must therefore be handled as carefully as other types of social science data [297]. Situated visual ethics provides an approach to these issues that involves 'an ongoing process of negotiation, reflection and experimentation' that is specific to the particular context [294].

Liebenberg proposes that an important way that Photovoice can "give voice" to participants is through the public display of images and that this can influence 'how social concerns are understood and responded to' [298]. Her opinion is that within the 'advocacy context' it is crucial to pay attention to the audiences for exhibitions, essentially to who is able to hear the voice and what actions result. She concludes that reporting on these matters is a crucial part of a critical approach to Photovoice [298]. In Chapter 7, I will discuss how I have applied these concepts (relating to representation and advocacy) to the process used and to the study data.

### 4.4.3.3 “Empowerment”

#### 4.4.3.3.1 General definitions

The ‘concept of empowerment has a long history in social change work’ and is about recognising power inequalities and seeking to bring about change to reduce these [299]. Kabeer suggests that empowerment cannot be considered without disempowerment, as the former ‘refers to the process by which those that have been denied the ability to make choices acquire such an ability’; therefore ‘empowerment entails a *process of change*’ [300]. She makes a distinction between first-order choices which are strategic such as livelihood and marriage choices and second-order choices which impact on quality of life ‘but do not constitute its defining parameters’ and suggests that expansion of people’s ability to make strategic choices occurs across three inter-related dimensions. Firstly ‘resources (pre-conditions) that may be material but also ‘human and social services’ and are linked with ‘rules and norms’ which give authority to some actors, for example head of households. Secondly, ‘agency (process)’ which entails having ‘the ability to define one’s goals and act on them’ and can also be negative (power-over). Finally ‘achievements (outcomes), for example enhanced well-being or increased life-expectancy [300].

As discussed in Chapter 2 the concept of empowerment is deployed to suggest that female cooks can be “empowered” through both the use and sale of cookstoves. Cornwall describes how this economic narrative is widespread in development policy as indicated by promotional material primarily concerned with how women can be “empowered” through ‘the acquisition of material means’ and how the benefits of this enhanced earning power can be ‘put to the service of their families, communities and national economies’ [299].

Cornwall is critical of this “empowerment lite” and uses the work of Sardenberg [301] to delineate the difference between this “liberal” economic empowerment and “liberating” empowerment [299]. She suggests that although liberal empowerment dominates development discourses, it is reductive with undue emphasis on individuals and “power to” gain, hold and exercise power. Liberating empowerment however is a ‘relational construct’ and ‘constitutive of collective power’ and involves challenges to the status quo [299]. It is linked closely with the development of critical consciousness which is a core feature of Freire’s work and underpins Photovoice methodology.

The emphasis in this study is on liberating empowerment and on the ability to make choices that matter. This concept of empowerment involves both individual and



structural change and highlights how the latter shapes 'individual resources, agency and achievements' and recognises that 'how people define their goals and what they value will reflect their social positioning as well as their individual histories, tastes and preferences' [300]. In addition, it is informed by three insights from the feminist literature on empowerment as summarised by Cornwall. Firstly, that empowerment is not simply about people gaining confidence which allows them to have more impact but about a recognition that inequality is 'neither natural or acceptable'. Secondly, that it is intrinsically linked with the 'relations of power in which people are located' and therefore emphasis on social and gender relations is important. Thirdly, is the concept of empowerment as an ongoing process and not a 'fixed state or end-point' or a 'measurable outcome to which targets can be attached' [299].

In the next section the concept of empowerment as defined by Photovoice researchers will be explored beginning with the work of Wang and Burris.

#### 4.4.3.3.2 Photovoice and empowerment

Empowerment is specifically referred to and discussed in an early Photovoice publication with reference to the origins of the methodology in 'problem-posing education' [218] as espoused by Freire [147]. The authors describe how dialogue is used to 'empower' women to identify issues of concern, followed by direction of their efforts to 'individual change, community quality of life, and institutional changes' [218]. Wang and Burris also emphasise that a novel part of the methodology, (at this time referred to as photo-novella), is empowerment through the provision of a mechanism for disadvantaged people to 'communicate their vision and their voice in order to inform policy' [218].

In later publications, Wang and/or Burris continue to link the Photovoice methodology with the development of critical consciousness and suggest that it can 'promote critical dialogue and knowledge' [232] and 'stimulate social action' [217] but claims of "empowerment" are no longer explicitly made. A more nuanced description of the methodology in a later Wang publication is that it 'expands the forms of representation and the diversity of voices who help define, and improve, our social, political, and health realities' [302].

The table below is reproduced from a Wang et al. publication about the benefits of Photovoice as a participatory health promotion strategy and makes clear that increased access to power is one of many 'potential advantages' of the Photovoice methodology [234].

Table 4. 9: List of potential advantages of Photovoice from [234]

#### Potential advantages to all participants

- Contribute to effective, healthful change
- Improve political, social, material, or scholarly status
- Exchange new ideas, methods, and resources for making a difference and improving the quality of life
- Gain increased credibility by virtue of affiliation and collaboration

#### Potential advantage to participants with most power

- Learn from local people's expertise
- Do work valued by others
- Innovate in a community context
- Recognize others as persons and thereby enhance one's own humanity

#### Potential advantages to participants with less power

- Participate in representing and enhancing one's own community through a vivid and specific way of taking pictures and telling stories
- Enhance self-esteem and peer status
- Express appreciation, forge new ties, and give something personal and tangible to others in the form of photographs
- Increase access to power

Liebenberg critiques the idea that empowerment happens simply through giving participants cameras, collecting images and discussing them [298]. She suggests that this is just part of the process and refers to Wang and Burris' definition of the four kinds of access required for empowerment [218], that is, access to knowledge, decisions, networks and resources [218]. Liebenberg's own definition of empowerment is however not very clear.

A more focused approach to impact assessment was taken by Foster-Fishman et al. who followed up a Photovoice study with semi-structured interviews with participants. All interviewees reported that 'they were significantly affected by their experience as photographers' and that this had 'three main types of impact'. That is, '(a) increased self-competence, (b) emergent critical awareness of one's environment, and (c) the cultivation of resources for social and political action' [303]. The authors illustrate these impacts through direct quotes from the participants and make a convincing case for positive individual effects for participants as well as for the potential of a wider social change over time.

Foster-Fishman et al. make clear that the ability to make change happen also depends on the availability of resources. Further that 'disempowerment' may occur if the "will" for change is present without the opportunity to effect change; they suggest that other researchers need to account for this potentially restrictive factor [303]. They conclude however that exploring the impact of Photovoice studies and mechanisms by which "empowerment" is achieved will add to the quality of that research and may ultimately lead to the realisation of social change [303].

#### 4.4.4 Summary

In this section, two components of ethical Photovoice research, representation and advocacy, and “empowerment” have been discussed. These two aspects are complementary to each other and there is cross-over between them. The idea of situated visual ethics has been explored as a useful approach to navigating ethical challenges in Photovoice practice with marginalised communities and for advocating for them. It has been shown that “empowerment” is a complex concept generally and also in relation to Photovoice methodology. The distinction has been made between “liberal empowerment” and “liberating empowerment”. It has been suggested that the latter is a more useful and “ethical” concept as it recognises that empowerment is a process, embedded in power relations that involves challenging the status quo.

This discussion will form the basis of the exploration in Chapter 7 of the ethical use of Photovoice in the context of this study.

#### 4.5 Conclusion

In Part 1 of this chapter I have outlined how the design of this research study was developed as a sub-study of the main CAPS trial, the particular value of taking a qualitative approach in the context of an RCT and how the research questions were formulated. I have reflected on my positionality in the design and conduct of the research including the relevance of the Malawi context, my job and research role, and my status as an older, white, working-class woman.

I have described the background to my ontological and epistemological approach which is broadly constructivist but informed by feminist and emancipatory assumptions and how this fed into the study design, choice of methods and Photovoice methodology. I have provided background to and critiques of these methods including how their use was considered reflexively. With regard to Photovoice methodology, I have described how this was developed, provided some examples of use and an introduction to some of the issues of using a participatory methodology in an applied health context.

In Part 2 I have described the data collection process in detail, including details of all participants, how they were selected and the activities that took place, with separate sections for fieldworkers and CoLT members (SLBs), and CAPS participants. The data analysis process has also been outlined. The concluding part of the chapter (Part 3) includes details of the ethical approval process and also introduces critiques of the ethical use of Photovoice to set the scene for Chapter 7.

In summary, in this chapter I have outlined both the methods used in this study and the methodological theory that guided the study strategy. At the centre of this research is the participatory methodology Photovoice and the social justice grounding and emancipatory potential of this has shaped the overall design. Building on the Photovoice pilot work and on relationships developed with fieldworkers over time encouraged a flexible and pragmatic approach and the development of an effective exploratory strategy.

The study results will be presented in the following chapters beginning with Chapter 5 which explores 'Change and innovation in the context of gendered insecure livelihoods'.

## Chapter 5 - Change and Innovation in the context of gendered insecure livelihoods

### 5.1 Introduction

As I detailed in Chapter 1, Malawi is a low-income country where the majority of the population rely on subsistence agriculture for at least part of their nutritional needs. Vulnerability to increasingly unreliable weather exposes people to “boom and bust” harvests and leads to considerable food insecurity. With limited options for employment, many Malawians particularly in rural areas are reliant on erratic piecework for paid employment restricting their ability to manage their resources. Access to a variety of foodstuffs is difficult for those in rural locations and safe food storage is difficult in locally constructed homes; refrigerators are rarely found in the typical Chikwawa kitchen, even when electricity is available.

The links between cooking and food are clearly inextricable and diverse. Food availability and variety, the sharing of food, and cyclical access to food will therefore be explored in this chapter in an analysis of how these issues are key to understanding views about cookstoves, their use and how this links with adoption of the technology.

In the field of household air pollution and improved cookstoves, gender is also a key theme. As described in Chapter 2, calls for cookstove interventions emphasise the burden of cooking on open fires that falls to women and young girls, and how this limits their economic and educational potential, and negatively impacts their health. In addition, in the context of patriarchal societies there is an assumption that women have little autonomy regarding the purchase and use of improved cookstoves.

The literature relating to gender and cookstoves reveals a more nuanced picture of gendered household roles than described above and this is also the case in Chikwawa. In the second section of this chapter, gendered household roles will be examined in detail. Understandings of gender will be explored through specific references to the term and the reported lived experience of household roles. The role of men and children in the cooking process will be included. What family members do in the home is closely linked with household livelihoods and the role of farming, piecework and other employment in gendered household dynamics will also be investigated.

As discussed in Chapter 2, time saving through reduced wood collection and cooking times has been linked with increasing economic opportunities for women

and freeing girls to attend school. How CAPS participants, fieldworkers and CoLT members view the potential of this “saved time” will also be explored.

The framing of this question around ‘insecure livelihoods’ recognises the pressures on Chikwawa communities and individuals but no assumptions about the homogeneity of the population or the ability of its members to cope or thrive under adverse conditions, have been made.

I considered resilience as an alternative concept as it is commonly employed in research in low income settings [304, 305]. Resilience can be generally defined as a ‘set of skills, attributes, and abilities that enable individuals to adapt to hardships, difficulties, and challenges’ [306]. Critiques of the concept include that there is an over- emphasis on the positive nature of resilience and on individual self-reliance as a key determinant of managing shocks and stressors [239, 304]. An alternative view is that resilience is a ‘neo-liberal’ governance approach that overlooks the role of society in ensuring that people have the support they need [307]. That is, the stress on individual responsibility may lead to a down-playing of the role of ‘social structures’ and the broader environment, on health inequalities [308].

In the context of sub-Saharan Africa, Matinga questions the view that resilience is ‘wholly positive and desirable’ and suggests that it is only ‘one dimension of coping’ [63]. She proposes an alternative related concept of ‘hardiness’ which is not always so positive, as although it helps people cope with adversity it encourages people to find this adversity acceptable and may hamper positive change [63]. After considering the critiques of resilience and Matinga’s alternative approach, I therefore decided that I would remain sensitive to exploring and revealing agency on the part of CAPS participants without framing this agency as resilience.

The overall aim in this chapter is therefore to explore, how and why families in CAPS villages use the intervention stove and how this is shaped by insecure livelihoods, from the perspective of trial participants. The emphasis will be on the challenges that are encountered but also the strengths of Chikwawa residents that are relevant to change and innovation in the context.

This exploration will provide a basis for Chapter 6 (the next chapter) which will consider understandings of health, technology and the research process. In Chapter 7, the impact of the research environment on the CAPS participants will be considered in more detail with emphasis on the power dynamics in that process and possible avenues for positive change.

Throughout these three results chapters, the abbreviations below will be used to make clear who is being referred to in quotes and other references; this information will be supplemented by the gender, age, occupation of the speaker when relevant.

Table 5. 1: Abbreviations used to indicate sources of data

<i>Description</i>	<i>Abbreviation</i>
The 5 representative CAPS intervention villages	V1, V2, V3, V4, V5
CAPS trial participants, i.e. Chikwawa residents in CAPS intervention villages enrolled in CAPS	CTP
CoLT members (1 per village)	C1, C2, C3, C4, C5
Male CAPS fieldworkers that participated in focus group	FM1, FM2, FM3, FM4, FM5, FM6, FM7, FM8
Female CAPS fieldworkers that participated in focus group	FF1, FF2, FF3, FF4
Male CAPS fieldworkers that participated in interviews	IM1, IM2
Female CAPS fieldworkers that participated in focus group	IF1, IF2
Health Surveillance Assistant	HSA
Qualitative Research Assistant	QRA

## 5.2 Poverty and recurrent hunger

### 5.2.1 Introduction

Statistics about food insecurity and hunger in rural Malawi are easily accessible and “food crises” can sometimes seem commonplace. Famines occurred in 1949 [309] and in 2002 [310] and in 2016 there was a drought in Malawi (and other African countries) which resulted in a national emergency being declared; it was estimated that half the country would need food aid to survive [311].

Hunger in Malawi results from climatic and economic crises but there are also annual cycles of shortage and plenty that are linked with dependence on local crops, particularly maize. Mandala describes the three seasons as follows: ‘the cold and dry (*masika*), hot and dry (*chilimwe*), and rainy or wet (*dzinja*), running from May to August, September to November, and December to April respectively’. The rainy or wet season is the time when the harvest is anticipated and hunger is experienced, and also a time of increased farm labour of planting and weeding [312]. This seasonality is of course approximate and uncertainty about the timing of planting and harvesting is ever present and exacerbated by climate change [43]. A typical maize cropping cycle is described below:

'With the first rains in November/December, maize is sown, it matures during the hunger or lean months from January to March, and it dries with the end of the rainy season in April and May; it is harvested in the cold months of June and July, and it is eaten in the hot months from August to October. At this time normally feasts take place. With the next sowing in November, the cycle starts anew.' [313]

It is important to note that data collection for this study took place at two different times of the year, namely in May and November. This suggests when Photovoice activities and fieldworker FGDs were carried out in May, that (subject to seasonal fluctuations) the maize harvest was anticipated. In November when interviews took place, the time of plentiful supply had just passed. It seems likely therefore that CAPS participants would be reliant on stored or bought maize during both data collection periods.

As Smale explains, Malawi differs from other African countries such as Zimbabwe in that while maize is an important crop, it is predominantly 'produced and consumed in villages' [314]. Lack of technical and market development has resulted in most Malawian maize being 'consumed directly by producers' or circulating in small local markets. She refers to the phrase "Chimanga di moyo" (maize is life), and the 'ideal of producing enough maize to meet household needs' as a core motivating factor for Malawian smallholders [314]. Mzamu provides a useful example of how the value of maize extends beyond its nutritional role: the association of 'pure white maize grain and flour' with wealth and high status and darker maize with 'low rank and 'poverty' is a vivid example of the symbolic value associated with maize and its 'production, consumption and distribution' [315]. In 2017, *nsima*, the Malawian maize meal porridge, was added to the UNESCO Representative List of the Intangible Cultural Heritage of Humanity [316].

In the context of this study, two notable exchanges occurred, the first demonstrated the pervasiveness of hunger in Chikwawa and the second the centrality of maize. In an interview with a male CAPS Photovoice participant (36- year old charcoal burner), he selected as his favourite photograph the image in Figure 5.1 of a group of children and explained why, as below:

'I can say that all of these pictures interest me because I was taking them with a reason... because if you heard clearly, I said that a lot of people only



had vegetable relish [stew eaten with maize meal]. It is the issue of poverty that is making us not to be changing... but there is a picture right here. I took that picture, if you can see clearly the children were hungry that time. So, if you can see the children clearly, there is *mfula*, do you know *mfula*? Yes, certain fruits, they break and eat. Yes, so this picture interested me because this was happening because of poverty just because of the season... when I came close to the children and saw what they were doing that time, aaa I felt sympathy.’ (CTP V1)



Figure 5. 1: Children eating *mfula*

See also section 7.2.3 for further discussion of this and other images; this participant was the subject of one of three case-studies.

In the female fieldworker FGDs, in response to a question about whether CAPS participants would still be using cookstoves in five years' time, the affordability of cookstoves was discussed. One of the members of the FGD summarised the situation by saying 'it is better to buy a bag of maize than to buy a cookstove, they will prefer food'. Her colleague responded that 'now there is hunger...no-one can buy' and that people in Chikwawa will determine what is most important to them and that is food. Reference to the phrase "it is better to buy a bag of maize", was included in the topic guide for fieldworker interviews and responses to this will be detailed later in this section. However, the Photovoice process used with CAPS participants including focus groups and interviews (with photo-elicitation prompts) also provided rich data on food availability and variety and the sharing of food.

My supposition is that use of cookstoves is intrinsically bound up with who cooks, who they cook for and how food is shared. Further, that exploring availability of and

access to food can provide insights into gendered household and community dynamics, that impact on when and how cookstoves are used. In this rural community, farming is also important and discussion of this and other livelihood opportunities, is key to gaining further understanding of change and innovation in this context.

Table 5.2 that follows provides an overview of what CAPS interviewees ate in the 24 hours preceding their interviews, the source of their food, how it was cooked and who it was shared with.

Table 5. 2: Participant interview 24-hour recall details

Photovoice and Observation Interviews – 24-hour recall details						
	Meal/snack	Consumed	Source	Cook	No.s	Cooking method
<b>Village 1</b>						
<b>Participant 1</b>	Breakfast	Porridge	Market	Interviewee	5	Cookstove
	Lunch	Nsima/pumpkin leaves	Market	Interviewee	7	Cookstove
	Supper	Nsima/cabbage	Market	Interviewee	7	Cookstove
	Snack	Mangoes	Casual trader		7	
<b>Participant 2</b>	Breakfast	Porridge	Own farm	Wife	6	Cookstove
	Lunch	Nsima/cowpeas	Own farm	Wife	6	Cookstove
	Supper	Nsima/cowpeas	Own farm	Wife	6	Cookstove
	Snack	Mangoes	Casual trader		6	
<b>Participant 3</b>	Breakfast	Tea/sweet potato	Market	Interviewee	3	Open fire
	Lunch	Nsima/fish	Market/Casual trader	Interviewee	4	Open fire
	Supper	Nsima/beans	Market	Interviewee	2	Open fire
	Snack	Mangoes	Casual trader		3	
<b>Village 2</b>						
<b>Participant 1</b>	Breakfast	Mangoes	Casual trader		4	Cookstove
	Lunch	Nsima/fish	Market	Interviewee	6	Cookstove
	Supper	Nsima/fish	Market	Interviewee/Daughter	5	Cookstove
<b>Participant 2</b>	Breakfast	Porridge	Market	Interviewee	5	Cookstove
	Lunch	Nsima/fish	Market	Interviewee	4	Cookstove
	Supper	Nsima/fish	Market	Interviewee/Daughter	5	Cookstove
<b>Participant 3</b>	Breakfast	Porridge	Market	Interviewee	4	Charcoal stove
	Lunch	Nsima/beans	Market/gift	Interviewee	3	Charcoal stove
	Supper	Nsima/beans/spaghetti	Market/gift	Interviewee	6	Charcoal stove
<b>Village 3</b>						
<b>Participant 1</b>	Breakfast	Sweet potatoes/instant juice	Market	Interviewee	5	Open fire
	Lunch	Nsima/bean leaves	Market	Interviewee	4	Open fire
	Supper	Nsima/bean leaves	Market	Interviewee	5	Open fire
<b>Participant 2</b>	Breakfast	Sweet potatoes/tea	Field/shop	Interviewee	5	Cookstove
	Lunch	Nsima/Chinese greens	Market	Interviewee	5	Cookstove
	Supper	Nsima/Chinese greens/eggs	Market	Interviewee	4	Cookstove

	Snack	Mangoes	Passing trader		5	
<b>Participant 3</b>	Breakfast	Tea/Bin ladens (bread rolls)	Shop	Daughter	3	Open fire
	Lunch	Nsima/fish/Chinese greens	Field/market	Interviewee	11	Charcoal stove
	Supper	Nsima/fish/Chinese greens	Field/market	Daughter	8	Charcoal stove
<b>Village 4</b>						
<b>Participant 1</b>	Breakfast	Tea/sweet potatoes	Market	Daughter	5	Cookstove
	Lunch	Nsima/cowpeas	Market	Interviewee	4	Open fire
	Supper	Nsima/small dried fish	Market	Daughter	6	Cookstove
<b>Participant 2</b>	Lunch	Nsima/beans	Field/market	Wife	9	Open fire
	Supper	Nsima/soya pieces	Field/shop	Wife	9	Open fire
<b>Participant 3</b>	Breakfast	Pumpkins	Market	Interviewee	4	Cookstove
	Lunch	Nsima/pumpkin leaves	Market	Interviewee	4	Cookstove
	Supper	Nsima/soya pieces	Market/shop	Interviewee	4	Open fire
<b>Village 5</b>						
<b>Participant 1</b>	Breakfast	Nsima/birds	Field/passing trader	Interviewee	4	Open fire
	Lunch	Nsima/vegetables	Field	Interviewee	4	Open fire
	Supper	Nsima/pigeon peas	Field/NGO	Interviewee	4	Open fire
<b>Participant 2</b>	Breakfast	Porridge (maize)	Family/shop(salt)	Interviewee	8	Open fire
	Lunch	Nsima/fresh fish	Family/market	Interviewee	10	Open fire
	Supper	Rice/beans	Market	Interviewee	10	Open fire
<b>Participant 3</b>	Breakfast	Porridge (maize)	Market/shop(sugar)	Interviewee	3	Open fire
	Lunch	Nsima/fish	Market/Kasinthula	Interviewee	4	Open fire
	Supper	Nsima/vegetables	Market/dimba	Interviewee	4	Open fire

These data provide a snapshot of daily meal preparation and consumption and highlight several important factors. However it must be recognised that there is the potential for social desirability bias in that respondents may have provided responses that present themselves and their families favourably, and met with expected social norms [267]. In Vaughan et al.'s study of the dietary knowledge of older Malawian's, interviewees 'remarked with some consternation and humour on the current expectation of three meals a day' [317], suggesting perhaps that people may report food consumption according to their idea of data collectors' expectations. Although it was not the intention, it is also possible that the way that this data was collected and recorded encouraged a line of questioning about specific meals.

Nevertheless, the data suggests that there was widespread consumption of *nsima*, (two or three times a day) and of different types of vegetables. Protein is not consumed at every meal and when it is, this is mainly in the form of fish or beans. Seasonality of food availability is shown through the purchase and eating of mangoes. There are various sources of meal ingredients including from interviewees' own gardens or fields, from local markets and passing traders and from family members. Indications of a changing, more "modern" diet are indicated by references to spaghetti, instant juice and bread rolls from a bakery. All interviewees reported that the primary female cook or a young woman in the household cooked the dishes and food was mostly shared with members of the household. In one case 11 people shared lunch including builders working on the home of the interviewee. The list of different cooking methods illustrates the phenomenon referred to as stacking where different cooking methods and fuels are used as convenient. It should be noted that at this stage (November 2016) many of the intervention cookstoves were defunct. Overall the table shows some similarity between households in terms of food access and cooking but also differences illustrating the complexity of everyday cooking practices that will be the focus of the next section. The table will also be a reference point throughout the chapter.

### 5.2.2 Food scarcity and plenty

In sorting images in Photovoice FGDs (which took place in May) it was quickly clear that *nsima* was a central dish, a wide variety of vegetables were eaten, and that protein was gained from consuming beans, fish and meat.

In the FGD discussions, maize and particularly the consumption of *nsima* was also shown to be not only a central part of Chikwawa meals, but to convey deeper meanings. For example, a male participant says that 'we depend on *nsima* so much in Malawi because it gives us energy that we need for doing field work' and a female

participant links maize with strength of the body and of teeth. In a village close to the Shire river, a male participant describes cooking for his wife while she is drawing water as follows, 'I do prepare *nsima*, so that she should find it when she returns and know that my husband loves me.' As indicated by Smale [314] a link is also made with the "low-status" of darker maize, 'we only have non-white flour now as it is the time of hunger, only the rich can have white flour now' (CTP V5). This particular FGD concludes with a description of the importance of the Shire River to the village and how this is intrinsically linked with the growing of maize culminating in ululation [vocal celebration] from female members of the group.

Follow up interviews with Photovoice and observation participants took place in November. Discussions about what was eaten the previous day (see Table 5.2) showed that regular consumption of maize (eaten 2 or 3 times) and concerns about obtaining it in sufficient amounts were common. When interviewees did not have any maize flour remaining, they described travelling to the local trading centre to buy it in small amounts, that is by the 'basin'. One female householder walked to and from her remote village (bicycle transport being beyond her means) to buy two basins at MK1,200<sup>3</sup> each with additional cost for milling.

The seasonal aspect of diets in Chikwawa was also shown in these interviews. Many interviewees consumed mangoes purchased from passing sellers although some said that they could not afford to do so. Mangoes are available for only a short period each year around November, December time and in November 2016 were widely available for collection or purchase. Sweet potatoes were also a common breakfast and a recognised substitute for *nsima* in difficult times. This is indicated by discussions of eating sweet potatoes in the village FGDs and specific references to shortage and hunger as follows:

'Sweet potatoes are a food that people use as *nsima* with the way the maize has become a problem. When we go to the market and buy the sweet potatoes, we can get energy in our everyday life. Since buying a basin (of maize) costs MK1300 but sweet potatoes can be bought for MK300.' (Female CTP V1)

'A person who does not have money to go and buy a basin...maybe he has MK250 in his pocket. So, seeing that it cannot buy a basin it is better that I should go get the sweet potato and we will share then sleep.' (Male CTP V2)

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<sup>3</sup> MK is the currency symbol for the Malawian Kwacha; 1000 is approximately £1

These data do not make clear whether ‘maize is a problem’ due to: the time of year; difficulty in accessing land and home-grown maize; climate change and/or unreliable weather for optimum production, or a combination of all three. Although fieldworkers reported that many of the participants were subsistence farmers, assuming that people in Chikwawa depend solely on subsistence agriculture is a ‘highly simplified way of looking at rural situations’ [310]. As shown in Table 5.2 many interviewees purchased maize for *nsima* as well as other food items. In Vaughan et al.’s recent study of dietary change in Malawi, the authors concluded that a pattern of eating whatever could be found is now ‘closely associated with monetary poverty and the consequent inability to acquire food (especially maize flour) in bulk’ [317]. Whether participants in this study were able to grow enough maize for their own needs or had access to buy maize (whether in bulk or piecemeal) is not inconsequential but the emphasis given to issues with access to maize and *nsima* has a wider significance. Visitors to Chikwawa from other countries are usually (as I was) offered rice to eat with relish but with some bemusement from Malawians, who relate that they are still hungry if they have not had maize but “only” rice or sweet potatoes. Without consuming maize, people say that they have gone to bed hungry, that is, “on an empty stomach”, *angogona nayo*’ [315].

When it comes to the relish to eat with *nsima*, FGD participants describe a wide variety of vegetables consumed including ‘Chinese leaves’, pigeon peas, okra, beans, small dried fish, eggs and uncommonly meat. Interviewees describe buying items day by day, including cooking oil, which is sold in small sachets containing just enough for cooking one meal. Tomatoes are also seen as a crucial ingredient of relish and are difficult to grow in Chikwawa. Describing the previous day’s meals, an (older, female) interviewee from V4 explained:

‘We bought green leaves for lunch at the market at MK50 per portion so total MK200. In the evening we ate *nsima* with small fish, cost was MK500. We also bought cooking oil at MK100 and tomatoes for MK200.’ (Older female CTP V4)

When possible, villagers grow their own vegetables either in the “farm” fields or closer to home in “gardens”. Some people also have access to “dambo” or “dimba”<sup>4</sup> land which is valued for being close to a source of water, most likely in this context the Shire River. An additional benefit of working for the Illovo Sugar Company is access

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<sup>4</sup> The terms dimba and dambo are used to describe land that is valued because it is naturally irrigated (in this context by the Shire River). An analogous terminology in the European context would be wetland(s).

to irrigated, ploughed land for growing maize and vegetables for home consumption (see Figure 5.1). When households have space for gardens and resources to set-up and maintain these, then these small-scale crops may mean that people are not 'stressed' by getting relish 'we just go into our garden, pick our relish and cook and eat with the children'. (Female CTP V2)



Figure 5.1 - Irrigated, ploughed land made available by Illovo

The message that emerges from the Photovoice process and from FGDs and interviews with CAPS participants is of a daily struggle to obtain nutritious food exacerbated by seasonal and ongoing food shortage and lack of resources. It seems likely that climate change is also a factor. Ingenuity and resourcefulness are key to achieving the goal of feeding families and this daily routine is nested within wider routines of food growing and availability. Uncertainty, whether due to issues such as erratic weather and seasons or insecure employment, permeates the food system in Chikwawa and this cannot be divorced from the cooking process which includes cookstove use.

The data also shows that not all households are the same; access to food is unequal. This is illustrated through discussions of the consumption of meat. In the CAPS participant interview food diary discussion (November 2016) there is only one reference to the purchase and consumption of meat. An older female participant describes buying 1.5 kg of offal at a cost of MK1200 for lunch. (The same interviewee unusually is also able to afford bakery bread rolls for breakfast.) Another interviewee consumes a smaller amount of meat protein through eating cooked birds caught and sold by local boys.



However, FGD discussions took place in July around the Malawi Independence Day (6<sup>th</sup> of July), a time of celebration when chicken is commonly eaten. This prompted the collection of images showing meat and discussion of how eating meat was exceptional. There were also many images of meat (mainly goat) being prepared and sold in the marketplace and of small field mice, a locally available source of free or cheap protein, being cooked.

For example, an image of chicken prepared for the 6<sup>th</sup> of July prompts a discussion in Village 2 FGD of how often meat is eaten and it is agreed that this is uncommon, although everyone makes the effort at this time of year. 'There we should not lie that we eat chicken more often...no. But now we should celebrate, so on this day I caught my chicken so my children at home can eat and celebrate on the 6<sup>th</sup> of July.' (Female CTP V2) It is agreed that having your own chickens makes it more likely that you will have access to chicken meat but problems such as Newcastle Disease<sup>5</sup> can make chicken rearing difficult. Having other livestock however does not necessarily equate to eating goat meat or beef as these may be reared just for selling. In Village 3 two male participants discuss how people desire special food to make this occasion but may not always be able to acquire it.

'Mmm, even the person is very poor, they do their best to find something to eat on that day. Even if they have never eaten rice, we do taste it on the 25 December or on the 6th July. So, most of the times, if you come here during the celebration times you will find that there is that kind of relish in almost all the households.' (First male CTP V3)

'I wanted to explain the story, in connection to what these people are saying. Like myself on the celebration day I ate vegetable foods...because I ran short in my pocket. With my poverty I did not manage to go and buy good food.' (Second male CTP V3)

In the same village there was some disagreement about whether goats are killed in the villages for home consumption and it is notable that CTP 2 as above was dismissive of these claims 'When someone has killed to eat then maybe it's the chicken then I will accept but goats...' although there was general consensus that it did happen. The eating of meat appears not to be value free and this is further illustrated by a quite heated exchange in another village closer to the trading centre.

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<sup>5</sup> An infectious and potentially fatal viral disease of birds.

In this case the topic of discussion was the consumption of meat cooked on large “pans” outside; almost exclusively by men (see Figure 5.2). A male participant describes taking an image at the ‘video’ (where films are shown) of meat being cooked on a big pan as a business, ‘when you have killed it and cut it into pieces, you start frying it there where the people drinking beer are ... and portion for him to eat.’ He explained that he took this picture to show that this was also a type of cooking that is ‘in the bad group’ due to the smoke produced and also because of hygiene concerns about the cooking process. Some of the women in the group (FGD Village 3) say that they eat this meat; although not in situ, they take it home and eat with *nsima*. Others vehemently deny that they have done so:

‘To us women, on my side at my family I have never bought (fried meat) from there where they fry and eat at my home.’ (First female CTP V3)

‘Even me, Since I started my family and had 4 children, I do not know the fried meat... in the name of Jesus. I do not do that.’ (Second female CTP V3)



Figure 5. 2: Men cooking and buying meat at the ‘video’

When asked why this is the case, responses include simply ‘not wanting’ but there is also a concern from some that pork is or may have been cooked. Others suggest that it is simply not affordable. (Female CTPs V3)

This issue of eating meat from ‘big pans’ shows the complexity of decisions made about food purchase and consumption and also the role of gender in the process. Men cooking meat as a business is seen as unremarkable, despite the trope that in Africa women cook. In contrast, women’s access to meat cooked in this way seems to be contested, even morally suspect. This may be connected to the link with drinking alcohol at the “video” and there also seems to be a link with biblical

condemnation of eating pork. Mandala describes historical restrictions on access to food for women and men including women being assigned different ‘grades’ of food (meat, fish, vegetables and salt in descending order) when there is a shortage, and a designation of some parts of fish or meat as ‘distinctly “female” and “male” [318].

In one of the villages remote from the trading centre, a female FGD participant extols the usefulness of soya meat replacement products, that she describes as ‘chicken in a sachet’.

‘Now this is soya pieces, to me eating meat is very hard. We buy “chicken” soya pieces at a cheaper price so most of the time I buy this kind of relish. At our home we like eating this kind of relish.’ (Female CTP V2)

In other FGDs, images of soya pieces are discussed as if it is just another relish ingredient, despite being a manufactured food and an innovation in Malawian rural meals. Vaughan et al. suggest that although processed foods are commonly available in Malawi and are especially appealing to young people, their ‘penetration into the food system’ of rural Malawi is limited [317]. Cost is clearly a factor in the acceptance of this food stuff (MK150 per packet according to one interviewee) but this also shows that Chikwawa residents are open to novel developments that meet an obvious need and are affordable and accessible. (See also Figure 5.3 which shows soya meat replacement on back shelf, a range of maize based snacks popular with children and small sachets of oil hanging from ceiling).



Figure 5. 3: Small local shop

Mandala carried out a small survey of food consumed in Chikwawa and concluded that rural people do not just eat food that they grow themselves. Also, that food is

consumed outside the household and that this 'informal food' reflects a capacity to 'absorb foreign foods and to give rise to new eating habits'. He suggests that focusing on 'informal eating' highlights the 'importance of money in rural survival strategies, the wide variety of items people eat, and the food regime's openness to "foreign" influences' [318]. Trying new food stuffs entails risk however and reveals inequality in food access.

When discussing the consumption of food, FGDs and interviews with CAPS participants also show how food shortage and plenty are integral to decisions made about and views of sharing food. This will be explored in the next section.

### 5.2.3 Sharing of food

Mandala describes the 'two dominant principles of sharing food in rural Malawi'. Firstly the "'golden-age" theory' that promotes the 'ideal that every member of the community deserves access to food' exemplified by the *chidyerano* communal meal common in the past and secondly the "'alternative vision"' which 'highlights the limited nature of these rights' and is associated with persistent hunger [312].

As part of the FGD discussion in V3 the QRA asks directly whether food is shared between families and receives the unanimous response that this is not the case. A male participant says that 'there is no such things, they ended'. However, it is agreed that this did happen in the past. An example is given of why this type of sharing may be problematic and is not the norm is given by a female participant:

'It was happening. You will cook maybe cook meat at your house...

Maybe next time she will cook Okra...

...she has cooked Okra

...Will it work?

So, eating each other's food does not happen often (*chidyerano sikwenikweni*)' (Female CTP V3)

The speaker is suggesting that if this happens then the exchange is not "fair". One household provides meat while the other serves low-value vegetables. Another scenario is described, that is, maybe when the neighbour has meat she will say that she cannot come and share food as she has no maize flour and will eat inside her house. There is also a link made with hunger:

'and also the big issue here in Chikwawa right, why we would do that, when you have cooked you should eat with your children, the big issue is hunger...' (Female CTP V3).

Another female suggests that things are different ‘in the mountains’ with that ‘tribe’ and there is general agreement that this type of sharing does not happen in Chikwawa because of hunger.

A female participant suggests that this type of sharing between households causes problems within the household, as described:

‘the issue being that, the *nsima* she brought yesterday with only one fish [was maybe] just because she was eating with me. Had it been that she was eating with her children would she share only one fish with them. If things are like this, then it causes issues at home’. (Female CTP V3)

That is, the neighbour may not share “fairly” but will reserve food for her own family. For this type of sharing to work it appears that a high level of trust is needed and the capacity to reciprocate with food of a similar “value”.

However, people do agree that within households, people eat ‘in local African style’ (Female CTP V3), that is they share food from one plate. However, descriptions of this practice and its discontinuation also indicate that change over time occurs and that gendered household roles and the experience of food insecurity are embedded in meal sharing practices in Chikwawa.

A CAPS participant from Village 1 emphasises how important it is for each family member to have their own portion of food with reference to two of her images (see Figure 5.4. and 5.5):

‘It was me (in this image) cooking *nsima* here I was serving. Yes, I was putting into groups. We don’t eat together but on separate plates. The *nsima* in the food warmers is for those who are away so that it will still be warm for them when they return, but the sectioned plates which are seen here are for the twins.’ (Female CTP V1)



Figure 5. 4: Female CTP V1 portioning food



Figure 5. 5: Twin children of CTP V1 eating from sectioned plates

This participant eloquently shows how concern about sharing of food and the “shadow” of malnutrition particularly of children is always present even in a household with more resources than most (her husband is a salaried teacher, she has a small shop and her parents can afford to employ a houseboy). In addition, family members have commitments outside the home that mean that not all meals are shared. In this case the participant’s husband works at the local school and older children are at school during the day. In other cases, insecure piece work may mean it is not possible to know when male members of the household will be home.



These issues are also explored in the FGD in Village 5. A female participant describes how she portions into three categories, one for her oldest male child who is eighteen, one for her husband and one for her and the remaining children. She explains that this is because the older boy and her husband are often not present, so their food is put aside. However, the discussion (between women in the group) then moves on to issues with how children eat, maybe they are also 'dusty' or 'have mucus'. The suggestion here seems to be that women are responsible for the behaviour and cleanliness of children.

So, eating with his children might make a man 'uncomfortable' and therefore he should be treated 'respectfully' and eat on his own. The women agree that the mother must just 'persevere' and accept these things from her children. So, the women 'just eat' as 'they are the ones who give birth'. A man in the group explains that when he is present, he eats with his wife and his children eat together and suggests that it is not correct for an older person to eat with children; possibly he means for a man, as general consensus is that it is fine for women to eat with children. Like the participant in Village 1, decisions about portioning food and supervision of children are clearly also impacted by concerns about everyone getting a fair share and sufficient food for their needs. A male participant describes eating slowly and watching his children to see if they have enough, so that he can add to their *nsima* from his portion if necessary. (Male CTP V5)

Hunger is also indicated as part of the reason that young boys are described as "difficult". When observing a participant in V2 cooking and sharing a meal with her children and neighbours (see Figure 5.6), her son eagerly joined in the meal but became very upset when his mother terminated it by taking away the food to be eaten later. He cried throughout the rest of the time we were there, including when photographs of the family group were taken (as requested by the mother).

Another female participant describes why her son (5 years old) eats from his own plate. She says that:

'this boy is very difficult...when you are eating with him, if you don't leave some food he will fight...he will take the food from the plate [and if he does this when sharing with his sister she will complain that] she is also a kid'. [To deal with this issue she says] 'we decided to buy these plates with shares so that each should have one' [but that there is still the issue of there not being enough food to go around]. (Female CTP V3)



Figure 5. 6: Sharing a meal in V2, boy keeping close to the relish

The sharing of food, eating communally with friends and family appears to be an important skill that children in Chikwawa must learn as they grow up. In an environment where food is far from abundant, children must learn to manage their appetite and may not be satisfied even at the end of a meal. A child's "good manners" while eating is tested and reinforced through sharing meals with family members and particularly under the guidance of their mothers [318].

#### 5.2.4 Conclusion

In this section food insecurity has been shown to be persistent in Chikwawa. This is partly linked with reliance on seasonal home-grown foodstuffs but also results from inability to buy food due to monetary poverty. Access to maize is seen as an important "marker" of a sufficient diet and having a store provides security. It is clear that not all households are the same, some are able to buy maize in bulk whereas others struggle to obtain it day to day. The data also illustrates how access to relish ingredients is also differentiated, particularly related to access to meat.

In Jerneck and Olsson's work on agroforestry adoption, the authors widen their focus beyond tree planting to encompass food insecurity, climate change, ill-health and energy scarcity [319, 320]. They suggest that there is a "food imperative" that is, 'the over-riding task of putting food (and water) on the table' that acts against long term planning and discourages risk taking and that this hinders the adoption of technology particularly with the "poorest of the poor" [319]. I would propose that cookstove adoption faces similar constraints. In addition there is the idea introduced in Chapter 2 of reduced bandwidth in settings of scarcity that leads to short term



thinking and poor long term decision making [98, 321]. The conclusion of Jerneck and Olsson is that while food security does not guarantee adoption of new technology, it is a necessary pre-condition of such adoption [319].

Cookstoves are part of the set of practices described in this section, that Meah calls 'foodwork', that is as relating to the 'planning, purchasing, storing, cooking' and preparation of food [146]. In the literature about cookstove adoption, for example [69, 104, 322] there is often an emphasis on whether particular "local" dishes can be prepared using the new technology. I would suggest that considering cookstoves as part of the wider food system and of "foodwork" can facilitate a deeper understanding of how they are used and why they may not be used. These data have shown that how people eat, share food and cook is a dynamic process and this is part of wider changes over time. People's decisions are based in their everyday lived reality but are also shaped by what has happened in the past, and external influences. However, if the technology fits, for example eating soya pieces or growing new types of maize, then there are no or few barriers to its use.

A final important message to note from this section is how villagers in Chikwawa struggle daily to feed their families, to share the limited food they have and to ensure that children in particular have healthy diets. This short-term challenge is clearly given a higher priority than concern about the longer-term impacts of cooking on open fires and fits closely with the 'food imperative' highlighted by Jerneck and Olsson [323]. In Table 5.2 a mix of different cooking methods is shown and while this is a small-scale "snapshot" of practices (and subject to social desirability bias), it is indicative of the "messiness" of everyday life and how in this context decisions are made not just day to day but meal by meal. Clearly gendered ideas of "foodwork" are also influential.

Gender is also key to the exploration in the next section of household roles, livelihoods and decision making.

## 5.3 Gendered decision making, household roles and livelihoods

### 5.3.1 Introduction

In her exploration of domestic cooking spaces, Meah draws attention to the complex gendered nature of power in such contexts and suggests that the cooking arena is a 'contested space for men and women' in both the Global North and South [146]. She takes a Foucauldian approach in proposing that such spaces do not just lead to the 'silence and subjection' of women but can also provide them with 'opportunities to exercise agency and resistance' [146].

This section will begin with an exploration of the Chikwawa “cooking space” through an examination of how people talk about gender in that context, including through descriptions of the household roles of women, men and children, how these roles are dynamic and contested and the use of humour in this contestation. These gendered household roles are closely related to household decision making and sub-Saharan women’s production and employment. This then leads to a concluding discussion of the supposition outlined in Chapter 2, that is, that decisions about cookstove purchase and use are complex and nuanced.

### 5.3.2 Understandings of gender

As illustrated by the quote below, people in Chikwawa are used to speaking about “gender”, by which they generally mean women’s and men’s socially ascribed intra and extra household roles. Further, these roles are contested and subject to change. Humour is also used when discussing gender.

The female CoLT member (30-year-old farmer) in Village 2 describes how ‘the world has turned around’ and this has resulted in women carrying out ‘male tasks’; the example she gives is cutting trees in the bush. However, as detailed in the following she suggests that this is not reciprocated:

‘So, these days since the time they said that the world has turned around, when the man says that aaa I am going to the bush to cut trees you also just say that I am also going...We assist each other.’ (C2)

When the QRA asks whether the man then helps with the dishes, the response is unequivocally no.

‘The woman is the one responsible for washing or the children, not the man. The man cannot wash dishes. ‘Why? He is the man. He just deserves his respect...(laughs)’ (C2)

‘OK, so washing dishes is taking his respect away?’ (QRA)

‘Yes’ (C2)

But you said things have changed we are assisting each other? (QRA)

‘It has changed since it is us women who are saying that we should assist the men.’ (C2)

‘But not the men to help the women?’ (QRA)

‘No’ (C2)

At this point the whole (female) group, (QRA, translating fieldworker, C2 and the researcher) laugh. (The use of humour will be discussed later in this section.) This

reveals that it is the privilege of a man not to do some tasks and that this is linked with his more powerful position in the household.

Part of the changing nature of narratives about gender equality is of new ideas coming from outside. This is reflected in the interview with the male CoLT member (40-year-old pastor and farmer) from Village 1 who says that 'some organizations are coming here that try to sensitize men so that they can be doing women's work but still here it seems like it's difficult. Women's work is for women. Men's work is for men'. (C1)

However, a younger male CoLT member (30-year-old shop owner) thinks that ideas of gender equality has had an impact. While he agrees that 'our ancestors' say that boys should learn men's work and girls should learn women's work, now 'with the coming of gender they should work equally'. He says that he also agrees that 'nowadays most people understand' this and their children work in the same way whether they are a girl or a boy. (C4) The idea of gender 'coming' clearly infers that this is an external factor that has been brought into Chikwawa.

In one of the Photovoice IDIs (Village 2) the female participant (25-years-old) explains that she took a picture (see Figure 5.7) of her brother chopping wood because she was trying to persuade him that boys should help with this work:

'So, I took this picture to show that gender issues are difficult here because when we tell boys to help us with household chores they refuse. They say that this doesn't concern them because it is girls' work. But this time it was like I told him to say aah boys do this work most of the time'. (Female CTP V2)

It appears that if she can persuade him that boys doing this work is "normal", then she will also effectively contest gender ideology.



Figure 5. 7: Photovoice participant's brother chopping wood (after persuasion)

Some of the tensions inherent in incorporating these “outsider” views of gender equality in the Chikwawa setting is demonstrated by a male CoLT member when he explains why he took a particular image (Figure 5.8) of a young girl cooking (bold added for emphasis).

‘Yes, ee I was interested saying that aa the person who is cooking *nsima* here is a girl child and is learning some roles, so I took a picture.’ I thought it was interesting what she was doing; I knew that she was learning the women’s roles **although cooking is for everyone** but this one has learnt well so I went closer to take the picture.’ (C4)



Figure 5. 8: Girl ‘learning the women’s role’ of cooking on an open fire

A group discussion (Village 1) shows how women and men incorporate and negotiate these “outsider” ideas through contested descriptions of household roles and burdens. In essence, a lively discussion of “who does what?” and “who does most?”. This contestation is specifically related to gender norms and privilege. The women (who outnumbered the men eight to two) suggested that women worked equally in the fields with the men and then when they returned home the men sat around while they cooked and carried out household tasks. This leads to one woman saying that ‘us women are being oppressed so much in Malawi, here in Chikwawa’. The men counter that they are the ones that do the bulk of the farm work and also piece work outside the home, while the women respond that they also do this but that in return, men do not share the considerable burden of housework.

The discussion gets quite animated with accusations from both sides of ‘lying’ but remains good natured and eventually one of the women proposes that:

‘The men are telling the truth. Can you be quiet please? The men are saying the truth, what is needed here is gender. We should be working in a balanced manner, 50-50. If it is washing the plates you finish the cleaning. If I am sweeping, you should mop, even if its cooking then you should portion. If it’s the piecework we should be going together. It should be 50-50. Is it clear?’  
(Female CTP V1)

She seems to be suggesting that there should be more gender equality in household roles and responsibilities. One of the men responds that there ‘are some shameful jobs, the cleaning of plates is not good’ and counters with the suggestion that ‘it is better for us both to go and search for money’. (Male CTP V1) This shows a clear link between gender identity and roles in the household. To maintain gender ideologies, it is important that men see it as “unnatural” and shameful for them to do this type of household work. Harmony is restored when one of the women says, ‘I thought we will be going together’ and the group agrees that ‘we will be going together’ with laughter all round. Note again the use of humour which will be discussed later in this section.

This idea of gender as something that people *do* is also evident in other FGDs and seems to be directly related to a change in ascribed gender roles. For example, when describing how her son accompanied her to the borehole to collect water, a female participant says that sometimes ‘he draws water for me and helps me because when they say gender, it means there is...the women’s jobs goes to men while the men’s jobs the women are also supposed to work on that. That is gender.’ (Female CTP V2). In a more complicated exchange in the Village 3 FGD, while it is

agreed that boys do cook, the group has differing opinions about whether this only happens when there are no girls available. There is a clear inference in this exchange that it is not “normal” for boys to cook and that if they do, this is threatening to gender order. It is also clear that the concept of gender is common parlance. A female participant says: ‘He can cook, gender’ to the amusement of the group. Another female participant explains that her older male child helps with housework and when his younger sister can also do so, she will expect them both to assist: ‘We will do gender, they will be taking turns’. People appear to be referring to a conceptualisation of gender as a new normative idea related to a change in roles, (whether they “approve” of this idea or not), when referring to gender as something that they “do”.

West and Zimmerman examine the idea of “doing gender” in their 1987 article. Their argument is that men and women ‘do gender’ through complex ‘socially guided perceptual, interactional, and micropolitical activities’ and that this results in certain characteristics and roles becoming ascribed to masculine and feminine “natures” [324]. They do not suggest that individuals “do gender” in isolation, but that gender is ‘an emergent feature of social situations’ that serves as both an ‘outcome’ but is also the basis for the preservation of unequal power and privilege between men and women [324]. In this way “doing gender” both practically and symbolically constitutes what gender is, that is, a fundamental organising principle of society that ascribes “naturalised” characteristics and roles to women and men, which they must perform in order to be recognised as women and men, and as such to be socially accepted.

The data explored above relating to “doing gender” in Chikwawa does in some ways illustrate West and Zimmerman’s central point. That is, ‘doing gender’ through the performance of ascribed tasks is one of the ways in which patriarchal ideology is reinforced and that the more ‘doings’ (daily practice) reflects normative ideals, and the more it is tied to gender identity, the more this ideology appears ‘natural’. For example, in the female CoLT member’s description of her husband refusing to do the dishes although she worked with him in the field, and the male CoLT member’s statement that ‘Women’s work is for women. Men’s work is for men’ (C1). Or as shown by the concern of the male participant in the FGD that it would be ‘shameful’ if he was seen washing dishes. In addition when speaking about the girl cooking as ‘learning the women’s roles’, the male CoLT member in Village 4 demonstrates the ‘distinctively social way’ in which members of society are categorised, in this case as a girl, through ‘doing gender’ [324].

However, in other ways “doing gender” as used by the participants of this study appears to mean something related but different. There is a self-consciousness connected with discussions of gender and the use of humour which seems to suggest a certain amount of discomfort, of going against the norm. This concept of “gender” is related to men and women doing the same jobs, or male children carrying out household tasks normally completed by female children. In the exchange described in the FGD in Village 1 about men and women working ‘50-50’ there is a certain amount of tension that is eventually diffused by one of the women. This uncertainty and contestation connected with this form of “doing gender” also seems to be related to gender equality as something that is brought in from outside. This leads to the conclusion that although the study participants “do gender” as defined by West and Zimmerman, they also actively “do gender” when practicing or discussing gender equality, that contrasts with and challenges existing gendered social norms.

Butler’s conception of gender as a ‘performative accomplishment’ instituted through repeated acts over time is also relevant to this discussion. She does not suggest that gender is self-consciously “performed”, rather that gender identities are constructed through interactions with audiences and that this becomes a ‘mode of belief’ [325]. Although Butler describes how moving outside these performative roles can be seen as taboo and result in social sanctions, she also sees some space for change in these interactions. If gender is not a ‘seamless identity’ then there is the possibility of ‘gender transformation’ through a ‘different sort of repeating’ [325].

Butler’s work has however been criticised for her emphasis on the theoretical and a neglect of the material. For example, Nussbaum suggests that Butler’s presentation of the body as a cultural construct ignores the fact that culture cannot ‘shape’ all aspects of the body such as hunger or the specific health needs of women. She is also critical of Butler’s ‘narrow vision of possibilities for change’ and her avoidance of any discussion of how power structures that oppress marginalised people may be resisted [326]. West and Zimmerman suggest that movements ‘such as feminism can provide the ideology and impetus to question existing arrangements, and the social support for individuals to explore alternatives to them’ [324].

Riley and Dodson’s study of gendered household roles and food security in urban Malawi provides some relevant reflections on how ‘gender as concept and in practice has been constructed, reworked and resisted’ leading to a ‘distinct set of local associations with the word gender’ [327]. An italicised form ‘*gender*’ is used to

refer to this local version. The authors describe two narratives of '*gender*' prevalent in their study that relate to 'doing gender' as discussed above. First is the suggestion that men displayed a paternalistic attitude when they claimed to practice *gender*. Both men and women described how a man might assist with domestic duties only in exceptional circumstances, for example when his wife was ill. In this case the arrangement is not one of shared responsibility but of supporting a woman 'in meeting *her* obligations to the household' [327]. However, women interviewees generally viewed '*gender*' more positively and 'defined *gender* as positive social change' which would lead to more support with household tasks, for example cooking while the wife is sick or away from home. Riley and Dodson suggest that participants in this study also linked '*gender*' with modernity, with being 'Westernized' and describe how this appears to have led to men representing themselves as 'practising '*gender*' in order to be seen as 'urban, modern and progressive' [327].

As discussed in more detail in section 2.4, co-operation and conflict [107] are an integral part of the gendered power relationships in households that impact on the complex social norms [108] in such contexts. It is possible that in Chikwawa, research organisations such as MLW, charities and NGOs also provide alternative models for "doing gender" that challenge existing norms. The interactive nature of the research process and particularly the Photovoice FGDs may have provided a way of exploring different and contested ways of doing gender and of expressing ambivalence and resistance to these. The introduction of cookstoves into the household may also have had a "disrupting" effect. However, as West and Zimmerman indicate, the designation of household labour is not just a matter of who does what but is the 'material embodiment of wifely and husbandly roles' and key to the maintenance of the 'dominant and subordinate statuses' of men and women [324]. This suggests that shifts in household roles are not trivial and that the underlying dynamics of power and privilege that govern "rules" about who does what, make change difficult. Riley and Dodson also conclude that 'efforts to promote gender equality' in Malawi are hampered by a failure to 'connect global ideas with the grounded reality' and an under-appreciation of context specific meanings of gender [327].

As mentioned earlier, humour was often used in discussions of gender as shown in the exchange above with the CoLT member from Village 2 and in the FGD in Village 1. As I was able to follow the discussion in the former case, I also found the discussion funny and joined in the laughter. However, determining why I did so is



not straightforward. We were a group of women laughing at the inconsistency of a man who asked his wife to help him but would not help her. At face value she came off worst in this scenario but, possibly, the laughter was mockery of her husband to try to balance out this inequality. In the second case, the slightly heated discussion was “managed” by one of the women present and the group appeared to laugh as a way of diffusing an awkward situation. This humour also draws attention to the way that questioning gender “roles” is fundamentally destabilising for people and therefore makes them uncomfortable; laughter may be a way of “managing” the discomfort as well as the conflict and contestation that the discussions provoke and/or reveal.

The use of humour in relation to gender does appear to be present in many societies and while it may result in ‘marginalisation and othering’ and ‘discipline and ridicule’, it may also have ‘liberatory or revolutionary potential’ [328]. Humour is part of the social relationships between people and commonly found in ‘points of tension’ or ‘fault lines’ within society which includes reinforcement of but also resistance to, gender norms [328].

In both cases referred to above, humour was expressed around what West and Zimmerman call ‘issues of *allocation*’, that is discussion of who does and gets what, and how action is planned, executed and directed [324]. These are central issues for discussions of gender as they relate to power relations within the household. The focus of the next section will therefore be an analysis of household roles including those of women, men and children, how these fit with existing and emerging ways of “doing gender” and how this is linked with cookstove use and adoption of technology.

### 5.3.3 Role of family members including children

#### 5.3.3.1 Overview – “Who does what”?

The descriptions provided by CoLT members in IDIs provide a useful overview of household roles in Chikwawa. The narrative of the CoLT member from Village 5 indicates some of the difficulty that is inherent in asking about seemingly mundane matters that are however complex and subject to social desirability bias [267]. There appears to be an element of saying what is expected, that is, that “doing gender” in his village shows a measure of gender equality.

He says that “women’s work” is gardening or piece work, some also ‘do businesses’ and make doughnuts. Others are volunteers for different organisations. However, he then expands on this by explaining that the:

Likewise, when describing housework, he says that everyone carries out tasks:

'..as a family' and 'if there is daughter in the family, the daughter will do such chores.... the sons can also cook, wash'. [But] 'women are the ones that do the chores, I shouldn't lie, the women are the ones that do the household chores ...it is just an expression of respect in our tradition'. (C5)

In this classic expression of gender ideology, he minimises the importance of women's income-generating work and its contribution to the household illustrating the link between gender roles and power.

However, he also presents an idealistic picture of village life and the transformative impact of the intervention cookstoves in statements such as 'just as the daughters, that's how it goes in this village ...sons also do the chores...they also pound maize, or rice'. He also suggests that now with cookstoves men can 'cook by themselves, making fire, boiling water, taking flour, cooking *nsima* by themselves without waiting for the wife'. (C5)

The male CoLT member from Village 1 gives a more straightforward unambiguous account:

'Men, their job is, if they are employed is, they go to work and then they come back, or they go to work in the farm. They are supposed to cut down trees, building kraals, that's work, or digging toilet.

'Women are supposed to cook food, fetch water for bathing, wash clothes, mopping in the house and making sure that all the children have taken their bath.' (C1)

This illustrates the clash between accepted normative roles which are largely observed (although contested) and messages perceived as coming from outside. Women's and men's jobs are presented as well defined and adhered to. When prompted by CK he says that women can do men's work but qualifies this, 'women say that moulding bricks, building houses is for men, if you find a woman moulding brick then they say that the woman has no husband'. The suggestion is that there must be an unusual situation for it to be socially acceptable for her to deviate from expected gendered behaviour. There is laughter throughout this section from interviewer and participant suggesting a measure of discomfort. He mentions culture specifically, it is 'our culture', indicating that he is aware things are different

elsewhere. The link with cooking is summarised as: men work or farm to earn money for food, women buy food and cook it. 'The children are supposed to wait and be given food which their father has given the woman that she should cook'.

The narrative he presents, is that women earning money is the exception, which only happens with those who do not have a husband. The money that women earn is often seen as incidental rather than "bread-winning" as this supports the ideology of dependence on and respect for men as "breadwinners". This narrative underpins and bolsters unequal distribution of paid work and control over resources through associating women with reproductive work and men with productive work. However, this is at odds with the involvement of married women in the production of food for sale whether from farming or processing (for example, doughnuts), and in piecework. This will be discussed in more detail in 5.3.5.

A female CoLT member describes how men and women go to the farm but when they get back the woman cooks:

'Eeeeh the men don't do the cooking they just stay.....Eeeeh it's like they run away from this issue of cooking....They say that the cooking issue is about the woman and that if they do it, they will look foolish. They say that it is the ladies who love cooking.' (C3)

She says that women:

'...do farming' [and look after the home, doing laundry and cooking], 'they cook that people at home should eat'. (C3)

Whereas men only cook if the woman is sick, some cannot cook even then and go hungry if a child or relative does not assist. She concludes that there is 'no connection' between the work of men and cooking'. (C3) As in the description of a woman only moulding bricks if she has no husband, then a man will only cook in exceptional circumstances. Otherwise gender identity constricts what men and women should do.

In the fieldworker interviews, a question is included about what CAPS participants mean when they use phrases such as 'this is gender' and 'doing gender'; responses suggest that this narrative is an unfamiliar one to fieldworkers indicating that it is a response to being asked questions by outsiders. Both female interviewees say that despite ideas of gender equality being present in Chikwawa, this does not translate to changes in behaviour. Instead, it is a 'village belief' that women cook and fetch

wood (F1 IDI) and male and female roles are not interchangeable as women 'mostly respect men a lot' and will mock a man if he carries out tasks such as sweeping (F2 IDI). That is, that women play an active role in upholding gender ideologies through "policing" the boundaries of what is acceptable behaviour by women and men.

The male fieldworkers however suggest that CAPS has influenced gendered norms. For example, through linking the phrase with the idea (mentioned earlier) that the cookstoves 'promote gender' as they allow men to cook out of sight (M1 IDI) and suggesting that such phrases simply indicate that villagers understand that 'men can do what women can do, women can do what men can do'. (M2 IDI) These responses suggest that "outsider" ideas of gender equality can destabilise what West and Zimmerman refer to as the 'interactional scaffolding of social structure' that upholds patriarchy [324].

Children also have household responsibilities as summarised by a male CoLT member. He describes how children have tasks 'according to their age'. His children are small so their 'main work is to go to school when they are back, they take their food and eat sometimes they are asked to borrow something, or to get goats back into the kraal' [an animal enclosure]. Young children are 'taught little by little' as a 'person cannot be born today then start walking'. As children get older 'if they are girls, they assist their parents drawing water, cooking and cleaning around the house...for boys it depends on the household'. In some cases, 'they also assist with drawing water or cooking and they can also help their fathers repairing the house or kraal'. He says that it is important that children are taught such tasks so that when they are grown up, they 'can stand on their own like their father and mother'.

However, the equal sharing of household tasks between boys and girls depends on the household, in some 'boys are not allowed to work...girl children work like slaves, but other households try to get the boy to do work which is associated with girls'. He makes clear that even when households encourage boys to do more household work, their non-compliance is more acceptable than it would be for girls. When this is queried, he says that this situation results from 'our ancient parents say that boys they should do men's work, girls should do women work...but now with the coming on of gender they should work equally whether a male or a female there must no difference'. (C4)

To explore further what it means to "do gender" in Chikwawa the next two sections will explore men and cookstoves and children and cooking, that is, to move away from the pre-dominant paradigm that only women in Africa cook and as such should

be at the centre of cookstove interventions<sup>6</sup>. The aim is to explore household roles and cooking “outside the norm” in order to understand more deeply how family dynamics are linked with use of newer cooking technologies.

### 5.3.3.2 *Men and cookstoves*

An interesting angle on male responses to receiving cookstoves is described by one of the male fieldworker interviewees. He says that he came across an incidence of changed behaviour when visiting one village. He was told by a male CAPS householder that ‘sometimes I do use the cookstove, I just take it inside in the house and cook and because it does not produce a lot of smoke; it’s good for us husbands we can also use them’. The fieldworker thought that cookstoves might increase men’s interest in cooking. They could promote gender equality because men can go inside and cook out of sight when they would be ‘ashamed to be seen cooking’ outside. (IM1) A similar scenario was described by a male CoLT member. He said that men also benefit from cookstoves:

‘...as they are able, to cook when the stove is on the veranda...these men sometimes they are shy to cook in an open place so they can place it wherever they can be comfortable to use it’. (C3)

In this way cookstoves can reduce the social unacceptability of transgressing social norms. A male CAPS participant makes a related but different point, saying that the cookstoves:

[made men] ‘curious’ [and that] ‘men happen to be helping the ladies to cook because of being enticed with the way the stove behaves’ [and especially how it is not necessary to] ‘blow air, no. It does it itself, you just adjust the volume and you hear it’. (Male CTP V1)

There was general consensus amongst the fieldworkers that the cookstoves were attractive to men due to their potential as a power source for charging mobile phones and radios. This led ‘to husbands maybe breaking the cookstove’ (Female FGD). They reportedly ‘misused the stoves’ by unscrewing them to take out the battery. It was thought that this illicit charging also sometimes led to batteries being overcharged and rendered defunct (Male FGD). Solar panels were also a target of this tampering which was linked with calls for larger solar panels. (F2 IDI). A more positive angle was put on this issue by a male fieldworker who said that male CAPS

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<sup>6</sup> See for example the gender related content of the Clean Cooking Alliance website which relates wholly to women: <http://cleancookingalliance.org/about/news/01-01-1990-women-and-gender.html>

participants used their 'knowledge' to take apart cookstoves as they were curious about how they worked. (IM2). This fieldworker was heavily involved in maintenance of the cookstoves and keen to highlight that this had been problematic throughout CAPS. Spare parts were difficult to obtain and plans to initiate "Cookstove Clubs" where CAPS participants would be taught how to fix stoves did not work out. It should be noted that these Cookstove Clubs were targeted solely at women.

Pictures of men cooking were not common amongst the many images collected by Photovoice participants. There was a series of images in Village 4 showing a man cooking inside on the cookstove, but this was not discussed or noted at the time. This may be because the participant chose not to include it, or it may simply have been overlooked. There were however several "posed" pictures of men cooking as illustrated in Figure 5.9 and in this case, it was discussed.



Figure 5. 9: Man wearing wife's hat and pretending to cook

This image (of a Photovoice participant) prompts laughter from the other male participant and there is some discussion of the hat he is wearing (which is seen in previous images worn by his wife). It is clear from the discussion (and the image) that he is not cooking or planning to do so on that occasion. A male friend and relative is also pictured with the same way (although without the hat). This participant (CTP V4) is the same one that talks of cooking for his wife to show her love. While there is an element of mockery in this image, the fact that it and others like it are collected shows an interest in cookstoves that does not seem to apply to cooking on open fires. There is also a playfulness shown around "doing gender" that may be linked with the actual or perceived audience for the images and the fact that outsiders are interested in cooking behaviour. Potentially the associations between

cookstoves and modernity may open up new justifications for cooking as masculine behaviour.

It is also interesting to contrast this ambivalence about cooking with the matter of fact way that men's involvement in cooking outside of the household (and the context of heterosexual partnerships) is discussed. This suggests that (admitting to or doing) cooking within the household is effectively ceding some power or status, which men are reluctant to do. It isn't the act of cooking itself that is the problem but what it symbolizes. As discussed previously, (section 5.2.2) men cooking meat for sale at places where people gather is commonplace. Employing men as household cooks is also common in Malawi and in Village 1 a participant describes how her parents have a 'house boy' that cooks for them (Female CTP V1). It also seems to be acceptable for 'bachelors' to wash their own plates and cook as described in the FGD in Village 1. In describing a picture of a young boy cooking in the Village 5 FGD, a male participant explains that he took the image to show how the mother was training her son as he 'should know cooking now' in case he is a bachelor in the future. He says that 'you straighten a tree while it is small'. (Male CTP V5) A female participant IDI in Village 2, describes how her husband and others carry out ironing and other household tasks when working away from the village. (Female CTP V2) Clearly, it is not the tasks in isolation that are an issue but how they relate to the maintenance (or not) of power and privilege.

How does children's use of cookstoves add to this analysis? If husbands are largely resistant to cooking and their wives also look down on them for doing so, is this reflected in the next generation? What does the role of children in cooking practices reveal about family dynamics and the use of cookstoves in that context? The next section explores these issues.

### **5.3.3.3 Children and cookstoves**

Both boys and girls are interested in cookstoves and like to use them. As each meal generally is cooked from scratch, this household burden is often shared with children of both genders. Children also cook for themselves if they find some food, for example roasting maize, and this can be part of "playing house".

A female CAPS participant from Village 2 highlights a specific concern about children using cookstoves in her interview; that is that through inexperience and carelessness a child might damage the cookstove. She describes sharing the cooking of supper the previous evening, she (the mother) cooked relish using the cookstove while her daughter (aged nine) cooked *nsima* using the open fire. When



asked why her daughter did not use the other cookstove, she replied that, 'I was afraid that a child is a child, maybe she would destroy my cook stove'.



Figure 5. 10: Mice hunters holding a cookstove

This idea of the cookstove as a precious item is also illustrated by one of her images which shows her son and her sister's son with a cookstove (see Figure 5.10), as discussed below:

'He went to the bush for hunting (for mice) and when he returned, he was saying he wanted to cook, "you should take a picture when I cook so that I should appear beside the cook stove".

'And I told him that he couldn't cook, then "alright just come and hold this side of the cookstove".

This child likes the cook stove very much. Since the day it arrived, he said that he wanted to cook, and I said aah is this how the cook stove is used; [he said] so even if you are denying me just let me hold the cook stove in my hands and take a picture of me.' (Female CTP V2)

This participant is the subject of Case Study 2; see section 7.2.3.2 for further discussion of this and other images.

#### 5.3.3.3.1 Playing with fire

During familiarisation and observation visits to CAPS villages it was common to see children cooking small amounts of food on open fires. A favourite food for this was corn kernels cooked on a shovel or a piece of metal (as illustrated in Figure 5.11) and images of this practice were collected by Photovoice participants but not



specifically discussed. In an environment where money and access to snacks is very limited it seems common for children to obtain and cook food in between meals.

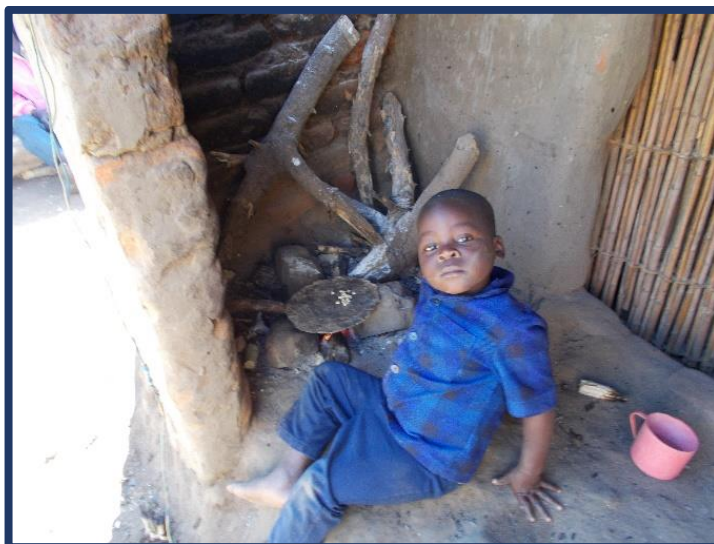


Figure 5. 11: Boy cooking corn kernels on an open fire

This was described in the FGD in Village 1 in an exchange that covered children cooking for themselves, and their roles as family cooks, and highlights both how cookstoves fit into these narratives and how men and women's approaches to children cooking may differ. A female participant started by describing an incident that seemed to be familiar to others in the group and was greeted with some amusement. She had found her pot had a hole; a reported issue with the intervention cookstove was that at high temperature, essentially turned up, it would cause this problem with local thin metal pans. On questioning the children, she found that they had found some pumpkins while at the farm and had brought them back to cook and managed to burn the pan.

'They had their pumpkins and burnt the pot while cooking. It was a big pot, I got worried so much that my children don't know how to cook on the stove I told them that, "you should not touch my stoves from today onward or I will hurt you". So, they do not use them, and they don't like cooking on them. They like cooking on the three stone fire they are playing with there (in a photograph).' (Female CTP V1)

The younger man in the group responds that he would like to 'advise these women properly that these children are not supposed to cook...they are young and can have an accident'. His specific concern is that they will get burnt, he thinks that they may

not 'carry the cooking stick very well (for stirring *nsima*)'. He says that this can happen with the cookstove, maybe the pot will fall, but generally with the cookstove there is some protection from the flames. Whereas the three-stone fire is even more risky. (Male CTP V1)

The women protest that this is not right and that it is important to start training children when they are young, like 'straightening a tree'. As one woman explains, otherwise 'when she grows up, she will not manage'. Teaching a child to cook is also helpful if the mother is ill as 'these days the neighbors don't help'. Whereas if she says "no, you will get burnt" then that is not allowing her to grow up. She compares it to saying that children should not go to school when they are young.

'For example, this little one (referring to photo), is 6 years old, one day when I fell sick...(Overlaps)' (Female CTP V1)

'So, can you make a 6-year-old child cook?' (Male CTP V1)

'...Stop, this 6-year-old saved me when I was asleep, when I was sick, and people were not there. She took her pot, fetched for fire and came and she added salt and prepared porridge, but she failed to take it down. She said, "Mother, wake up and take down your porridge and drink". I woke up and took the porridge down and drank it. That 6 years child saved me by cooking some porridge for me. That is why we tell these children that you should cook so that you can learn.' (Female CTP V1)

'The way you see it, maybe that is your opinion but still it is not good at all, maybe if the child is 11, 12 years and above then she can learn but for a child who is 6 or 5 years and you make her, you make her cook then that is abuse.' (Male CTP V1)

The other (older) male participant agrees that cooking by younger children can be risky and in particular using the open fire, as children can fall on it. This exchange shows a different perspective of men and women; they clearly have different lived realities due to gender roles. It is notable that while the younger man protests that the child should not have cooked for her mother, he does not suggest an alternative plan. His use of the term 'abuse' appears to be linked with changing perceptions of childhood. It suggests a syncretic perspective, that is, (as with gender) new "outsider" ideas may have been incorporated to varying extents with existing ones. The woman's story about the (female) child helping her and the analogy with attending school is an illustration of the socialization of gender roles. There is also a link with the idea of

*chidyerano* as something that happened in the past. It is suggested that previously neighbours would help if you were sick, but now there is a reliance on immediate family members. In the absence or indifference of men this means that women rely on their children. Teaching children how to cook both fills this “gap” and prepares them (it seems mainly girls) for their future societal role.

Taking the two narratives together, the mother who does not allow her children to use her cookstoves in case they get damaged and the mother who forbade her children to use the cookstoves when a pot was damaged shows that in an environment where children cook, their use and non-use of cookstoves needs to be considered carefully when appraising cookstove interventions. If children cook but are not allowed to use the cookstove then the resulting toxic air pollution from continuing to cook on a 3-stone fire may be overlooked. The idea that children below a certain age should not cook (as proposed by the male in V1) may also be persuasive but clearly in this environment children cook, if not in the home, then through “playing” at cooking and exploiting “found food” to fill hungry stomachs of growing children. The interest of male children in cookstoves and cooking in general (linked with their obvious and understandable search for food outside main meals) seems to be an unexplored area.

However, children are sometimes encouraged or allowed to use cookstoves under supervision. In the FGD in Village 1, a female participant describes the background to the image in figure 5.12. She says that her male child (aged nine) is able to use the cookstove to make porridge if she lights the stove for him. He is then able to prepare the porridge himself, switch off the stove afterwards and empty out the embers (as per the instructions). Other female participants agree that their children also use the cookstoves, one saying ‘I taught him everything’. (Female CTP V1) Similarly, an interviewee describes how left her cooking (to go to the toilet) and when she came back her daughter was stirring the *nsima*, ‘she just started stirring hard’. (See Figure 5.13.) She says laughing, ‘however, *nsima* prepared by a child is cooked to the standards of a child but will be eaten by an adult’, so she finished the cooking. When CK asks if she was worried about her young child using her stove, she agrees that ‘it can be dangerous’ but that her daughter is used to using the stove. (Female CTP V3)



Figure 5.12: Boy cooking porridge on a cookstove



Figure 5. 13: Girl stirring *nsima* on a cookstove

Children learn to cook whether through direct instruction and observation. Porridge seems a common “starter dish” whether cooked on an open fire or a cookstove. An interviewee from Village 3, describes her 7-year-old daughter cooking porridge on the cookstove and also her 5- year-old son saying that ‘he cooks very well so should we refuse him... and he boasts that these are my cookstoves so leave them I will cook myself’. (Female CTP V3) Smaller children may just ‘turn the cookstove on’, that is turn the knob to start the fan. Other children are reported to be able to light fires and stock them with wood but not to cook.

An example of the judgment used by parents and how safety and the convenience of children cooking is balanced, is indicated in by an interviewee in Village 1. She

explains that usually on a Saturday she asks her 10-year-old daughter to cook so that she can go to church but on the most recent weekend she ‘helped the child’ as she ‘thought it wasn’t wise to leave the child alone cooking due to the strong wind’.

Data from participant FGDs and IDIs thus shows how cooking by children in the household is part of the norm. How the cookstoves fit with this practice differs between households but whether children are allowed to use them or not, their presence in CAPS households contributes to the making of childhood roles and socialisation.

### 5.3.4 Household livelihoods

#### 5.3.4.1 Introduction

Chikwawa is a rural community and as such farming is a primary or secondary occupation of most, if not all CAPS participants. As described earlier in this chapter the growing and consumption of maize is also important. This does not mean however that all farmers in Chikwawa gain their household livelihood in the same way or have equal access to resources. In all communities where farming is an occupation, the impact of “bad” weather is a common concern and resilience to cope with adverse conditions is linked with *a priori* access to household resources and alternative ways of making a living.

As with household roles, the income generating activities available to women are gendered; household roles and economic opportunities (or the lack of them) are also closely interlinked. As detailed in the clean cookstoves literature (see section 2.2.4), women’s employment outside the home and the resulting income generation has been linked with both having the desire and the means to purchase and use cookstoves. Saving time through less fuel collection and reduced cooking times has also been theoretically associated with the financial emancipation of women.

In this section, the role of farming in household livelihoods will be examined, including the links with other occupations such as sugar cultivation and the sale of food as a business. In particular, the role of women in income generation will be explored. The issue of “saved time” and what this is used for will form part of this analysis. The overall aim of this scrutiny of the data will be to demonstrate that although farming and piecework are common activities of CAPS householders, this is a heterogeneous group. Links between household livelihoods, women’s productive roles and time saving, and the use and adoption of cookstoves are multi-faceted. It is important to explore this in detail to counter deterministic narratives of

cookstove interventions that suggest women's liberation and paid employment automatically results from such initiatives.

#### 5.3.4.2 Farming

As discussed earlier, most participants in this study say that they are farmers although some also have additional occupations (see Table 4.5). Although the term "subsistence farming" is commonly used, farming for many is one economic activity amongst others. This is indicated in Table 5.2 where CAPS participants report the various sources of the food that they cook which includes the market, passing traders, the field and the garden. Cash is also needed in Malawi for purchases such as school fees and uniform and for "extras" such as salt, sugar, tea etc.

In the village FGDS a wide variety of experiences are described relating to both arable and livestock farming. The discussions are at times confusing but it is clear that farming at various scales, from growing a small amount of vegetables in a home garden to commercial cotton farming, is carried out in the district. Certain crops such as tomatoes and rice depend on access to '*dambo*' (naturally irrigated) land. When it comes to livestock some have chickens, pigs and goats but others have none; images also show cattle, but this is not discussed, possibly because most participants appear to have little or no access to milk or beef. The consumption of chickens at home is discussed but pigs and goats appear to be for sale and consumption outside the home. More detailed examples of this complexity are seen in IDI discussions.

A farmer from (Female CTP V5) says that her family grows various crops including maize and tomatoes for sale and also gets income from the rent for 52 fields inherited from parents. Some of the land is in on higher ground and is used for maize but they also own land on the '*dambo*' suitable for growing rice and tomatoes. She says that 'she realised a lot of cash' from selling tomatoes. She describes an image which shows a relative who had come to ask for food for her family, had helped with 'removing maize grain' and then gone home with 'three basins'.

When conducting the interview in November, it was clear that this householder had set up a small shop next to her home as an additional source of income. However, she also reported that she sells a small amount of the family's maize crop so that she has cash for milling or to buy clothes. Her child is also registered with a charitable scheme 'for needy people' and the family obtained pigeon peas through this programme. Clearly, ownership of land is not a guarantee of a comfortable living

and while this householder was able to help out a relative, she was also in receipt of aid.

Other CAPS participants are in an even more precarious position as they do not own land. For example, when referring to a picture showing her child collecting green maize from a rented garden, a female participant (Village 2) says that she took this so her children would remember when they harvested it. She explained that she could no longer afford to pay the MK22000 (approximately £22) that it had cost to rent, especially as she only managed to harvest three bags of maize. As she describes, 'we just stopped after seeing that nothing is helping us, it is better just to keep the money other than spending the money on useless things', that is, rent for land. (CTP V2)

A similar situation is described by another female participant but in this case, she links the lack of success in harvesting with the weather. She explains that her family no longer rent a garden as they are afraid that 'with this sun' they will not be able to grow much; she says that they paid MK8000 which they decided was too much for an unreliable outcome. As she describes, 'my husband thought that it's a waste of money and they don't pay it back' when the harvest is meagre. (CTP V3)

References to the unreliability of the weather are many and as explained by the CoLT member in Village 5, this particularly has a negative impact on those with the least resources:

'There are uncertainties. For instance, one could grow crops in a garden and the sun could be too strong and ends up burning the whole field. While the rich person is able to cultivate a larger piece of land at once and they harvest enough crops to sustain their livelihood.' (C5)

'So, you have mentioned that one could grow crops, but the sun burns the gardens. So, doesn't the sun hit the so-called rich man's fields?'. (QRA)

'What happens is the rich have large fields and even when the sun is too strong, some crops survive. But for the others with smaller fields it is a different story, sometimes the whole field gets burnt and people are left with very little to harvest. So, the harvest is not enough to sustain the people.'  
(C5)

In the context of climate change the problems associated with unreliable weather are exacerbated. For example, when asked what she meant by the description 'the seasons have changed we are not harvesting yields like in the beginning', the CoLT

member from Village 2 explained that the rainy season is no longer reliable so that after planting the maize gets 'dry and burnt'.

There is however one specific reference to climate change from a young male participant in Village 1 who directly links cookstoves with deforestation and climate change as follows:

'As you can see here people didn't go far with school, so they are just cutting down trees carelessly and that brings climate change and is causing so many problems for example ESCOM [the Malawian power company] is having difficulties to supply electricity just because there is not enough water in the river [hydro-power], we are the cause of this problem, people are just cutting trees and that is why we are having less rain.' (CTP V1)

Watering crops may be possible but difficult. Water needs to be close by and 'even when [the crop] has grown very well, sometimes when the sun has started that's it, it dries on itself even when you are watering the water, you are watering daily but it just dries so the garden has ended there.' (CTP V3) Those who have *dambo* land are better off but even so the sun can scorch crops and poor soils are also an issue. 'We have sand here. Even if the rains fall in, when the sun shines twice, three times that's all of it gone.' (CTP V3) Naturally irrigated land is also subject to flooding, for example as in the description that some of these type of plots 'went with the waters'. (CTP V5)

Where possible, that is having sufficient land of the correct type and subject to weather conditions, families mix subsistence and commercial farming, as described by the CoLT member in Village 3. She describes how her family grows 'maize, millet and cotton' and sometimes also rice if there 'is enough water' and that it is only cotton that is sold, the other crops are reserved for family consumption. (C3)

There is evidence that farming can provide a better and more stable household income particularly in relation to the situation in Village 1. A young male CAPS participant explains that he gains his income from being a shareholder sugarcane farmer and selling the crop to the Illovo Sugar Company, who then sell it on the international market on behalf of the Kasinthula shareholders. He also has electricity at his home through the Fairtrade system. He described how he travelled to the UK to speak to people there about the benefits of Fairtrade. (CTP V1) Shareholders also have access to irrigated and ploughed fields. As described in the Village FGD, 'we irrigate maize, we cultivate twice a year as you can see and also cultivate beans, cabbage and sweet potatoes'. (CTP V1)



With regard to livestock farming, although this exists in Chikwawa many people struggle even to keep chickens; this can also be a precarious investment because of avian Newcastle disease which is very infectious and has a high mortality rate [329]. Ownership of larger livestock clearly is part of the agricultural economy as can be observed in villages, and many images of corralled pigs, goats and cows were collected. However, within the group in this study, livestock ownership seems to be largely aspirational and reserved for a small part of the population. For example, a 'good life' is associated with owning domestic animals, as then 'everything you want day to day, whatever you want' you can take a chicken or a goat and sell it', but 'it is not commonly found'. However, for 'those who don't have it is difficult' and 'they are the ones that steal from those that do have'. (C4) Livestock farming is also linked with other farming and the availability of land as described here; 'the rich also have animals to rear which they buy with the money from farm product sales' and other people 'who do not have these opportunities find it hard to obtain these animals to improve their livelihood'. (C5)

In summary, farming is a central part of the economy in Chikwawa (as it is in Malawi generally) but access to suitable land is not evenly distributed throughout the population. There is a mix of land ownership and rent with large scale landowners profiting from renting land to others. In Village 1, Kasinthula shareholders are in a unique position of having both a more secure position and access to "community premium" and other benefits such as irrigated and ploughed fields. There is a general perception that farming is more difficult now because of the changing weather with unreliable rain and periods of intense heat. As was indicated in the previous section with access to meat for consumption, livestock farming is reserved for a small part of the Chikwawa community and indicates the level of inequality that exists even within such a seemingly homogenous farming community.

For many CAPS participants, farming appears to be an important but unreliable source of income and is supplemented by employment which may be formal but is more likely to be in the informal sector. The emphasis in the next section will be on the overlooked role of women in this income generation.

#### **5.3.4.3 Female employment in Chikwawa**

The two concepts that were introduced in Section 5.2, that is, the importance of a steady supply of maize and the ever-present threat of food shortage, are both closely connected with the farming activities described above and the insecure

nature of other employment opportunities, including an over-reliance on casual or *ganyu* labour.

As explored in section 5.3.3, household roles in CAPS households are gendered and this links directly with the gendered nature of economic opportunities for women outside the home. For many men and women casual labour, known locally as *ganyu* labour is one way of earning income. Bryceson describes *ganyu* labour as 'a longstanding form of ad hoc casualised labour' that has become an important way that the Malawian rural poor cope with insecure livelihoods and as being 'intimately related to the worsening of both chronic and acute food insecurity' [330]. She refers to 'three main rural strata' defined as the "'well-to-do" who have sufficient food stocks to last 8-9 months; the "'a bit well to do" whose stocks may last 4-6 months and the "'have-nots" who usually have less than one hectare of land and harvest only one to two months of their household's food supply needs' and are particularly dependent on *ganyu* labour [330]. Bryceson describes how this latter group can become trapped in a day to day search for *ganyu* to buy food which takes them away from their own gardens and fields at crucial times of the year. Women are also particularly disadvantaged as they earn less and generally take part in *ganyu* close to home due to 'social propriety as well as childcare responsibilities' [330].

This gendered aspect of women staying closer to home and also the downplaying of women's contribution to the household is illustrated in the following CoLT member description (bold added by transcriber):

'For us to find money my husband is the one who runs here and there, maybe building houses, then maybe he will find piece work to do maybe for 2 weeks or I week then he comes back. If it happens that I have found a [way to make] a little money then I should run up and down also to do a **gain**, but not that kind of **gain** consisting of a lot of money and going up no. It's just maybe to find salt...(laughs). I maybe cook doughnuts, sometimes I do the same with small fish and sell' (C2)

A female CAPS participant explains that both she and her husband take part in *ganyu* but whereas he builds houses and mends shoes, she draws water for people who want to wash clothes or mould bricks. (CTP V3). Although another female interviewee says she and her husband both need to seek *ganyu* as 'we don't even own goats, we don't have cows, we don't have anything'. So, they may 'say today let's go and cut firewood for charcoal so that we can be helped' or leave home 'while you are still dirty' (that is without bathing) to find any way of getting money. Her husband helps with

building (she makes clear that he doesn't know how to build a house, just to help) but they both 'do business'. As she describes 'yes, both of us do business, one goes somewhere, the other one goes to a different place, we then meet in the evening'. (CTP V2)

At the other end of the spectrum a CAPS participant interviewee (Female CTP V3) is reported as having an occupation of 'business lady'. She describes how she previously owned a shop, but it closed down in 2011 (for reasons that are not clear). She and her husband now sell maize; they buy it in Ntcheu (around 3-hours' drive away near the border with Mozambique) and she sells it in the village, 'closer to home', while he does so at Dyeratu (the local trading centre). The comparatively high rate of income for this family is indicated by discussion of the purchase of offal for lunch (referring to a Photovoice image) and a description of the previous day's evening meal being shared with three builders working at their home. The family also has a freezer shown in images although this is no longer working. It is interesting to note that this 'business lady' is keen to make a distinction between selling maize in the village, that is at her home as opposed to at Dyeratu (which is adjacent to this village), perhaps congruent with the narrative that only men work away from home.

Although there are several references to selling food as in the account from the CoLT member in Village 2 above, in general these are not discussed in any great detail either in FGDs or interviews. However, when spending anytime in Chikwawa, it is clear that many women earn income through selling food. This may be from selling their own produce, for example tomatoes or mangoes (when in season) or from selling cooked food such as doughnuts, samosas or roasted corn. There are many examples in the images collected by Photovoice participants both of such food being prepared and being sold. The lack of emphasis given to such activities mirrors the association of women's participation in *ganyu* as an "extra" contribution to the main income of men that can be combined with their perceived primary role as mothers.

The gendered roles of women within and without the household are linked with their responsibility for 'both social reproduction and production' [331]. Women have responsibilities for growing food to feed their families, spend many hours collecting fuel and in meal preparation while also caring for children. Working outside the home may also be part of this "mix". However, as Henn describes, the historical definition of African women's roles as including 'food production, storage,

processing, and preparation; the manufacture of pottery, baskets, mats, and clothing; care of children and the sick; and personal services, especially for their husbands', has an important legacy. That is the idea that African women are responsible for 'feeding their families' which 'sets the parameters and the constraints of women's economic life' [105] When women's responsibilities are seen to encompass both 'care of their family' and 'economic support of their children' and they have an insecure financial position (as Avotri and Walters found in Ghana) then their economic activity may be necessarily piecemeal and limited and added to their already heavy workload [331].

As explored earlier in this chapter, there does seem to be some flexibility in household roles in Chikwawa and acceptance that changes in gendered roles is possible and maybe desirable. As discussed in some detail in Chapter 2 the idea that cookstoves will have a transformative impact on women's economic potential is deep-seated although evidence is hard to find. In this study we therefore asked CAPS participants who largely reported that cookstoves were good because they saved time, what they used this "saved time" for and this will be the focus of the next section. My supposition is that the uses of this saved time are also highly gendered and context specific. In the case of Chikwawa the context is one in which economic opportunities for women and men are severely restricted with a reliance on a combination of *ganyu* work and marginal agriculture.

#### 5.3.4.4 Uses of saved time

A vivid description of how the CAPS cookstoves were beneficial because they sped up cooking is given by a female CAPS participant. She said that 'the cook stoves are good... because they are fast, you are cooking fast, and you are like a hero'. (CTP V3) In the FGD in Village 1 a participant describes how the cookstoves compare to other forms of cooking available as follows:

'On the three stone fire, the food takes a long time to be ready. The charcoal stoves make you to be too late because [it needs to] catch fire and when you are cooking food on its fire for it to be ready is a lot of work while that one which has a fan [the intervention cookstove] , when you just do wuu [turn up the knob for the fan] for a short period of time the water is warm, even *nsima* porridge is ready in a short time, in 2 minutes you have prepared it'. (Female CTP V1)

An older female participant is not so keen, and she thinks that cooking on the open fire is quicker for her but that her daughter 'feels like the cookstoves are fast'. In her

case, and presumably in others, familiarity over many years with open fire cooking means that when feeling rushed, for example in the morning when ‘sometimes the little child would cry because of hunger’ she finds it quicker to revert to a cooking method she knows well (open fire). (CTP V4) In general, however, fast cooking as a benefit of the cookstoves is repeated in the village FGDs, participant and CoLT interviews. For example, as reflected in statements such as ‘the main benefit which I saw is that aaa food was ready in a fast way comparing with before we received these cookstoves’. (C4)

CAPS participants also save time by using two cookstoves at once or in combination with other cooking methods. In this way cookstove users in the study practise “stacking”, that is concurrent use of cooking methods. For example, as explained in CoLT member interviews: ‘things go fast, they will put water on the one stove and cook breakfast on the other stove’ (C3) and ‘they now cook quicker, because you can cook relish here and *nsima* there (C5). CAPS participants confirm that they also find this useful particularly when they are running late, for example using two stoves ‘so that children will find food ready when they get home from school’ (CTP V5). A female CAPS participant from Village 1 describes an image she took specifically to illustrate this benefit as follows:

‘...it really helps me’ [when I need to be ready by a certain time and] ‘I wanted people to know that if you are in a hurry you should do the way I did [using] a stove here and the other stove here also’. (Female CTP V1)

When it comes to discussing what “saved time” is used for, there is a lot more uncertainty in responses and even some confusion. For example, ‘we finish fast so then we take care of the stoves and put them back in the house’ and after considerable prompting ‘I do other household chores’ like washing clothes or drawing water. (CTP V3) Other responses include ‘I sleep on the mat - waiting for the evening to light the fire again fire and cook supper’ (CTP V5) and ‘nothing, if you have taken your food you are supposed to rest for easy digestion’ (CTP V1). A male participant suggests that he and his wife could go back to the field or do work at home and more specifically that his wife might ‘go to fetch water, wash dishes, taking care just the way it happens at home’ and that she will say ‘I can go back to the work that I left as the food was prepared fast’. (CTP V4)

To try to gain more understanding of this issue, CoLT members were asked a general question about how Chikwawa households spend their time including leisure

time. Responses included references to children playing and 'relaxing and chatting' for adults. (C2) The female CoLT member from Village 3 says that some men:

'stay home and rest...others they go to chat with friends and drink beer, others they go somewhere to play bawo<sup>7</sup>, for those who doesn't like all these they just stay home'. [Her husband] 'just stays home and chats', [maybe drinks beer if he has money. When she has spare time, she stays at home and] 'chats with her children' (C3).

It appears that uses of spare time are limited by lack of options and funds. A male CoLT member agrees that the main benefit of the cookstoves was that they cooked fast and that with the spare time men:

'most of the times either we find our friends and chat or we play bawo or draughts... sometimes we just take our radio and listen, just staying idle' [and women] 'the same they find their friends and chat...or others teach each other something or go to church'. (C4)

Cooking fast then is a benefit not because it frees up women to earn more money, but because it allows more time to carry out household tasks or to rest. The latter is important in the context of rural Chikwawa where women's daily lives are already full of the 'continual drudgery' of household tasks [332]. Gendered household roles are not transformed by cookstoves but instead, the uses of freed up time reflect current gendered social norms that assign responsibility for household matters primarily to women. However, there is another aspect of time saving that comes out strongly from the data, that is of timeliness, the idea that the cookstoves are beneficial as they facilitate people either being on time for an appointment outside the home or that they contribute to household harmony by enabling speedy meal preparation.

As described by a male CoLT member this feature was very useful when coming back from the garden for lunch as 'we saw that once we are back from the garden, within 10 minutes 20 minutes everything is ready'. (C4) In addition, fuelling and lighting the cookstoves is easier as it can take 20 minutes to get an open fire going if firewood is not in 'good condition' whereas 'when we return from the farm and we are hungry and want to eat fast, we also do not need to start looking for firewood but can use small pieces we have set aside'. (CTP V4) Cooking fast is also useful 'if the husband is hungry' and the cookstoves allow 'the children to go to school, and the

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<sup>7</sup> Bawo is a common board game in Malawi played with stones or other small objects on a four by eight board

husband to go to work in good time' and 'that is the reason why we like it'. (Female CTP V1) A male CAPS participant describes how the cookstoves are very useful when he and his wife need to get to afternoon school classes as they:

'leave the farm at 11 o'clock but need to be ready to leave home for school by 1 o'clock 'sharp'. 'So, it helps us to eat and bath on time, and also depart in good time, if we use an open fire, we may be late'. (Male CTP V1)

In summary, time saving of cookstoves is described as a benefit by CAPS participants because it allows them more free time and to be on time. It can contribute to family harmony for both these reasons but also because it allows hungry people to be fed quickly. There is no evidence however that women were encouraged to seek employment outside the home or to carry out additional income generating activity because of this freed time (as suggested in the literature discussed in 2.2.4). In any case options for female employment in the area are severely restricted, partly by gendered expectations of their role but also more generally. Women are also limited by the necessity to provide care of their children particularly infants and the significant burden of household labour in a low-resource setting.

#### **5.3.4.5 Research as a job**

This last section relates to how being part of a researched community or a study participant also provides a "loose" form of employment. This is most immediately apparent in a CoLT member's description of the way that he earns a living as below:

'About me, I do different jobs, I work in the garden, I am a volunteer for Malawi-Liverpool Wellcome Trust. I am also a volunteer for the district hospital. I assign time for each of these jobs respectively, I know what to do at a given time. I feel that my works as a volunteer are very interesting because they concern issues about health. I take these jobs so that we have a good livelihood and I would like to have more research projects coming here to our village. Because many people have taken part a lot, and they wish they could be part of a research group like this one. So, I would you to consider me on such issues, that you assign more tasks to me when other research projects are coming up, so that I could involve more people.' (C5)

Another female CoLT member says that she earns money through farming and being a volunteer and that her husband is also employed in research (as a security guard). (C3) The CoLT member from Village 1 gives some indication of how

research can be financially attractive for participants when referring to issues with a CAPS trial process that involved lung function testing for which no recompense was offered. This was compared unfavourably against this qualitative study for which MK2500 was offered as compensation for time and inconvenience. As she put it, the participants were comparing notes and when hearing that Photovoice participants received a 'gift' then others were 'complaining that they also needed' the same.

Swidler and Watkins suggest that in areas where there are many 'NGO projects' combined with marginal agriculture and insecure employment this engenders something close to 'hunting and gathering' as residents seek to supplement their precarious sources of income [333]. That is, they seek employment or other benefits through participating in development initiatives. My suggestion is that this same scenario is found in highly researched contexts such as Chikwawa. This will be explored in more detail in Chapter 7.

### 5.3.5 Household Decision Making

The earlier discussion of "doing gender" and how this is reflected in household roles indicates that men largely expect and gain "respect" in their role of the head of the household. That is not to say that women are passive and that flexibility in household roles does not exist; see for example the involvement of boys in household tasks. As described in the previous section, analysis of the data also showed that the income-generating role of woman is down-played in line with the suggestion that men are the head of households and responsible for earning money. However, it was clear that women do work outside the home and that both genders take part in productive activities. This links with the suggestion made in Chapter 2 (Section 2.4) that simplistic assumptions about household decision making, obscure the complexity of social and power relations within the household. The idea that men are expected to make decisions on behalf of their household, including about cookstove use is however pervasive and worthy of exploration.

Data collection with participants did not specifically address this issue and it did not emerge as a theme during inductive analysis of participant data. However, analysing fieldworkers' responses about gendered household roles provided an alternative view to this dynamic and complex arena. The approach of this group is clearly different; they are concerned with recruitment of participants and their continued involvement in the trial.

In the female fieldworker FGD, the group agreed that the main beneficiary of receiving cookstoves was the women. There was a dialogue about the problems



they encountered recruiting CAPS participants. It was an issue when 'the woman decided to participate while their husband was away, when he comes back there was confusion and he says you have to give them away, I don't want this, and I am the head of the house'. (FF4) Other women check with their husband when they get home and then may withdraw. The male fieldworkers largely take a different approach to the "problem" of CAPS enrolment and compliance. They are of the opinion that it would have been better to involve men and women in sensitisation activities from the outset as 'when it comes to make decisions a man is at the forefront; I think it's our set up here and maybe Africa as a whole'. (FM7)

Regarding the decision to obtain a cookstove, a female fieldworker suggested that the role of women is to 'convince the husband' and that if a woman sees that her neighbour has a cookstove and it is fast then she 'can influence her husband to buy the cookstoves because most of the times the money will come from the husband'. Another female FGD member goes further to suggest that 'it is the lady's duty' to persuade her husband to buy a cookstove if she wants one. However male fieldworkers conclude that women could not pass the message on and 'convince their men' because the men 'supersede' them and would therefore not heed them. That is, in the African 'set-up', 'a man has got power to make decisions in a family' and this includes both participation but also regular use of the stove: the man may say 'please I want fast food use the open fire I want to eat and rush for work'. The male fieldworkers agree that part of the "problem" is the inability of women to pass on instructions regarding cookstove use as 'not all of them have sufficient level of literacy to understand them'. However, widows are considered to be head of households and can make decisions about cookstove purchase. Married women who earn money will however hand this over to their husband and he will decide how it will be spent. (F2 IDI)

Matinga collected household data and conducted group interviews in Malawian villages in 2012 to 'assess the socio-cultural acceptability of improved cookstoves (ICS)'. In this case the cookstoves were "low-tech" mud stoves (including the *chitetezo mbuala*) and a locally made charcoal stove. Some of these stoves were distributed by NGOs, others were made in the villages and all were within the financial reach of most villagers. She says that while men were 'the majority decision makers', they were also 'supportive of ICS and in 78% of households that bought stoves without persuasion from NGOs, it was men who bought these stoves' motivated by a reduction in the burden of wood collection for their wives. One of her conclusions is that 'promoters have not effectively exploited these motivations or

men's roles as majority household heads and decision makers to promote investment in, and use of ICS' [67].

This call to include men more in cookstove dissemination has been made by other authors, for example [103, 334] and in the female Fieldworker FGD it was also pointed out that the timing of sensitisation activities meant that most men could not attend as they were away from the village working or trying to find work. Muneer and Mohamed caution against generalisation about household decision making as they found that even in the 'typical patriarchal society' of Sudan the 'male head of the household' is not the sole decision maker on all matters including cookstove purchase and use [104].

With specific relevance to decision making in Chikwawa, Mbweza, Norr and McElmurry found that couples in Southern Malawi used a combination of 'husband-dominated, wife-dominated and shared' approaches to decision making on a wide variety of areas including money and food [335]. The authors introduce the idea of 'cultural scripts' to refer to the ways in which 'decision-making rationales' were defined and conceptualised. They found that 'husband-dominated' cultural scripts were most evident in discussions about money whereas 'wife-dominated' largely referred to reproductive and domestic issues including food. However they concluded that while gender and marriage tradition (patrilineal and matrilineal) impacted on decision making, decision making approaches were varied and included 'non-gender cultural scripts', for example 'maintaining harmony' [335].

Decisions about cookstove purchase and use, clearly straddle the areas of money and food. Building on Mbweza, Nor and McElmurry's work above, in CAPS participant discussions of household roles and responsibilities, similar 'wife-dominated' narratives vied with 'husband-dominated' narratives at times, although maintaining harmony also seemed important. However, the assumptions of both female and male fieldworker that men in Chikwawa are the primary decision makers appears overly reductive. If the aim is to encourage equitable decision making, the suggestion that men should be involved in cookstove dissemination activities appears to be a useful one. Nevertheless, assuming that stoves will not be used unless men agree, downplays the nuanced and complex nature of household decision making.

### 5.3.6 Conclusion

In this section I have explored how gender is conceptualised in Chikwawa and how this is linked with household roles, decision making and livelihoods. Women are

shown to contest gendered, power-laden social norms that are flexible enough to allow them to help with men's work but limit men's involvement in household tasks and particularly, cooking. Men seem more willing to cook outside the home in the context of paid employment but mostly only assist at home when their wife is sick. Both boys and girls are involved in household tasks but for the former this is more optional. Ideas of gender equality are not generally dismissed but are often viewed and actively represented by some, as something from outside which may or may not be relevant to the Chikwawa context.

However, promoting gender equality could be associated with "modern" ideas. Swidler and Watkins describe (with reference to the work of Englund [132]) how the 'acquisition of NGO jargon' allows people subject to development initiatives, to show that they are 'cosmopolitan' [333]. It is also important to note that both women and men are reported to mock those that step outside the expected gender roles. Referring to the pervasiveness of the idea (in the Global North and South) that women are responsible for 'foodwork', Meah suggest that women may be reluctant to surrender these responsibilities and effectively can use this kind of derision to 'defend' their position [146]. Compliance with gendered norms can also be part of what Kandiyoti refers to as a 'patriarchal bargain', a strategic approach that optimises security but also has the potential for 'active or passive resistance' [336].

It has also been suggested that the role of children as household cooks has been overlooked. Their participation ranges from "playing with fire" to being responsible for producing meals and their skills are developed over time. Their lack of initial expertise led to some female cooks restricting or disallowing use of the precious cookstoves. In the context of the CAPS result this suggests two important possibilities. Firstly, that the "clean air" impact of the intervention was "diluted" by children continuing to use open fires for cooking while the primary cook enrolled in CAPS used the cookstove. Secondly it is also possible that the reduction in serious burns in the intervention group was observed as fewer children in those villages cooked (as they were not allowed to use the cookstoves).

The links between household roles and decision making was explored primarily through analysis of fieldworker data and showed that female and male fieldworkers agreed that men were the primary household decision makers and saw this as largely unchangeable. The suggestion made was that men should have been included more in dissemination activities. It should be noted that taking this

approach could undermine attempts to “empower” women through cookstove initiatives.

The household livelihoods section linked back to the discussion of food insecurity in the first section through an examination of the importance of farming in Chikwawa, but it also illustrated the range of activities and economic circumstances that exist in a seemingly homogenous “farming community”. For women farming is often combined with household tasks and insecure informal work. In this context the cookstoves are seen as beneficial as they save time to do “more of the same”; there is no indication of transformative economic empowerment of women as indicated in the cookstove literature. This may be connected with existing gendered norms but is also clearly linked with a lack of good quality employment opportunities in the area and alternative childcare options. When women are employed outside the home in low-income settings this can lead to the transfer of care onto older children, particularly girls, which can have a knock-on effect on their education and opportunities for rest and play [332].

Finally, the idea of research as a “job” that is added to the list of precarious income opportunities for Chikwawa residents, is introduced. This has been included here to highlight the close connection between the gendered household roles, decision-making and livelihoods described here and the “research environment”. In this context, research activities are not simply “added-on” to everyday Chikwawa life but are an integral part of the social relationships and economic context and the shifting power dynamics that this entails.

## 5.4 Overall Summary

In conclusion, the use of cookstoves is closely linked with gendered insecure livelihoods in Chikwawa and it seems likely the same would apply in similar contexts.

The necessity of viewing cookstoves as part of the “foodwork” system seems clear. However, many studies of the cultural acceptability of cookstoves focus on efficacy of the new technology to produce “traditional” dishes and on taste [67, 337-339]. In contrast, this data indicates that ongoing concern with sufficient and equitable access to food permeates foodwork and everyday life in Chikwawa. Winther’s experience when conducting long-term research in Zanzibar offers a possible explanation of why taste may not always be a primary concern when choosing cooking technology [252]. She describes how her repeated attempts to comment on the “tastiness” of meals was met with bemusement and concludes that ‘discourses

of taste in food' did not exist in this context. Her suggestion is that rural Zanzibaris avoid differentiating between different households on the basis of what they eat and that 'food habits are not social markers of distinction' [252]. She links this with a reluctance to draw attention to the lack of resources of others and with the maintenance of family and community harmony [252].

Similarly, in Chikwawa, while CAPS participants often talked about how their dishes were prepared and cooked, the emphasis was not on taste but on nutrition and of different ways of using a limited set of ingredients. There was also an emphasis on the sharing of food and of different members of the family and community getting a "fair" share. While this was a concern of men as well as women, the primary responsibility for ensuring children received sufficient and nutritious food was clearly seen as a mother's role. Overall there appears to be a "food imperative" that is linked with **equitable** access to food.

There is also a linked "economic imperative" of everyday life in Chikwawa, that is the ongoing search for funds to purchase food in a context where farming is largely an insecure occupation and not sufficient to cover needs in a cash-based economy. Examining uses of "saved time" has highlighted how limited avenues for gaining more income are in this context. If, (hypothetically) women were able to use time freed up by cookstove use to gain employment outside the home then this opens up other challenges, such as childcare, and "productive" employment may simply be added to the burden of "reproductive" work.

There are indications in this study of use of cookstoves and of cooking generally, by men and children, but it appears that the responsibility for meal production lies with women. For men and boys, cooking is generally an "optional extra". The finding that in this context children cooking is the norm, whether for themselves, as part of "playing house" or as part of their household role, is important to note and indicates that research into cooking practices should not just concentrate on the "primary cook".

It is also the case that someone in the household must cook several times a day, due to lack of refrigeration and other food storage options. Caplan suggests that the preparation of time-consuming dishes that must be freshly cooked before eating 'is testimony that the woman has spent her time in suitable fashion' [340]. She refers to Murcott's study of what constitutes a 'cooked dinner' and the supposition that 'the cooked dinner in the end symbolizes the home itself, a man's relation to that home and a woman's place in it' [341]. Although the context of Murcott's work is quite

different (South Wales, UK), the preparation of *nsima*, similarly appears to have symbolic meaning and a task passed on largely from mothers to daughters.

The discussion of “doing gender” clarified how gender roles are part of gender power relations and therefore resistant to change. However, the introduction of cookstoves into the household may possibly represent a “moment” in which power shifts may occur, in the context of wider contestation of gendered social norms. While the involvement of other family members in cooking activities may be positive in some cases, even “empowering” for women, it could also constitute a threat to a woman’s role in the household. In Europe, the kitchen was the source of much technology for food preparation and cooking but this quickly passed from the control of female cooks to male experts [252, 342]. This links with Crewe’s suggestion (Chapter 3) that the development of cookstoves is largely in the hands of male “experts” which overlooks and downplays the role of women. In this study, the interest of men and boys in the intervention cookstoves and potentially greater involvement in cooking may be viewed positively or negatively. Similarly, the suggestion of fieldworkers that men should have been more involved in CAPS from the outset as they are the “decision makers” needs careful consideration. This analysis shows that power relations and empowerment surrounding cookstove use are complex, contested and locally situated. Men cooking more could be seen as empowering to women or disempowering, depending on who is interpreting and in what context. It is possible that in the context of Chikwawa, where opportunities for women’s economic autonomy are limited, that attempts to engage of men in cooking activities could potentially be problematic and contested by women.

Leaving the issue of “empowerment” aside, this analysis shows that cookstoves are seen as beneficial for women and their families. Speedier cooking appears to have three main benefits. Firstly, it allows more free time for completion of household tasks or for rest and secondly, it helps family member be on time for school or work. Finally, but not insignificantly, fast cooking seems to contribute to family harmony by allowing meals to be prepared quickly after returning home, for example from the field.

Another benefit explored in this chapter is linked with the modernity and value of the cookstoves which in some cases appears to enhance the prestige of households and their primary cooks. This is indicated by women prohibiting or controlling use of cookstoves by children so that they are not damaged.

In general, there are few indications that the technological nature of the equipment is a barrier to use and that CAPS participants are resistant to innovation and change. On the contrary, Chikwawa residents live with uncertainty every day through their dependence on insecure farming and piece work and appear open to exploring opportunities that improve their lives. However, the “food imperative: what shall we eat?”, must necessarily take precedence over the “cookstove imperative: how shall we cook?”, in the mundane but complex activity of sustaining families.

This chapter sets the scene for the next chapter which will explore perceptions of the health benefits of the CAPS cookstoves.





## Chapter 6 – Syncretic Narratives of Health and Technology

### 6.1 Introduction

In this chapter, syncretic narratives of health and technology will be explored building on Hausmann Muela et al.'s suggestion that health information is not simply transmitted but 'co-exists, interacts and merges' with existing knowledge and understanding [167]. This includes local socially determined definitions of "good health", as compared to health messages explicitly and implicitly communicated through the trial. As the focus of the trial was pneumonia, syncretic narratives also include many references to the disease and the links between pneumonia and cookstoves, including the suggestion that "pneumonia has gone" because of CAPS. In addition, the unanticipated idea of "blowing air" as being detrimental to health will be explored in some detail.

As discussed in Chapter 3 there are influential beliefs in Malawi and throughout SSA about witchcraft, satanism and blood taking. The terms satanism and blood taking will be used in this chapter to encompass these ideas in the local context, in an exploration of how they are also linked with the development of syncretic understandings of health and technology. These terms will be used as at an early stage in data collection, that is, during the female fieldworker FGD, a clear distinction was made between witchcraft and satanic beliefs with the suggestion that the latter and particularly ideas about "blood-taking" were commonly expressed. Whereas Hausmann Muela et al. illustrated medical syncretism through the 'interdigitation of malaria and witchcraft' [167], the emphasis in this chapter will be on how occult beliefs in satanism and blood taking, both reflect and contest, unequal power relations between researchers and trial participants. Concurrent with Fairhead et al.'s findings in the context of medical research in the Gambia [169] (see more detailed discussion Chapter 3 section 3.4.3.3) this was linked with the continuum of MLW research and not just CAPS, specifically with regard to concerns about blood sample collection in a previous trial.

The chapter begins with an overview of how health messages were "officially" communicated in the CAPS trial, that is, through wide dissemination and on enrolment. The media for these messages includes the SLBs as discussed in Chapter 3 who exercise both discretion and stereotyping in their everyday interactions with participants. In the next section general understandings of health in Chikwawa are explored illustrating a social model of health as opposed to the

biomedical “message” of CAPS. This is followed by an exploration of how health narratives were transformed by CAPS. The final section is a discussion of narratives about occult beliefs relating to the cookstoves, air monitoring equipment and the CAPS trial in general.

The chapter concludes with an overview of the ideas explored and a discussion of the wider relevance of the findings to cookstove trials and other technological interventions in the African context. The focus here, informed by a medical syncretic model, is on ‘what happens when new health information is introduced into a community?’ [167].

Abbreviations used throughout the presentation of data to indicate the role of study participants, their location and the source of quotations are the same as in the previous chapter (see Table 5.1).

### 6.1.1 CAPS health message overview

As a clinical trial, the Cooking and Pneumonia Study both communicated health messages to the Chikwawa community and introduced new technology and scientific concepts. The name of the study alone, communicates the possibility of a link between cooking and pneumonia. In addition, all participating households were resident in villages where community engagement activities were carried out, including theatrical performances, a well-established communication method used in Malawi [343]. Consent was obtained at the district level through gaining the permission of a Traditional Authority leader for the area and at the household level [9]. Within the household a parent or guardian of an eligible child either read or listened to a CAPS fieldworker reading a three- page information and consent form with the following heading ‘An advanced cookstove intervention to prevent pneumonia in children under 5 years old in Malawi: a cluster randomized controlled trial’ and with the following introductory text:

‘Burning biomass fuels (dung, crops residues, wood, and charcoal) in open fires and basic cookstoves creates smoke that can be harmful to health. We need to develop affordable and effective ways to reduce exposure to smoke and the harms it causes. One way of doing this is to burn biomass fuels in an advanced cookstove instead of open fires or other basic cookstoves. Advanced cookstoves may have health benefits but we do not know for sure. We are doing this trial to find out whether an advanced cookstove called the Philips fan-assisted stove has health benefits and particularly whether it reduces pneumonias in young children [13].’

This health information “script” reflects the messages the study intended to transmit. It may also be salient to reiterate at this point that in the context of Chikwawa households where the most common technological device owned is a radio or simple mobile phone and incomes are generally low [50], the cookstoves and associated solar panel were novel and noteworthy. The wider context for the study includes not only the history, economic status and geographical location of Malawi and Chikwawa but also the social relationships within and without the household. These relationships include those with the CAPS fieldworkers and researchers, the wider MLW organisation and their representative CoLT members. These CAPS representatives were also a source of information about CAPS, pneumonia and the cookstoves, as were other Chikwawa residents, whether CAPS participants or not.

## 6.2 The disconnect between good health and cookstoves

The aim in this section is to lay the groundwork for the exploration of how syncretic beliefs were developed within CAPS. These data show that even within a biomedical clinical trial, a social model of health (as described in 3.4.2) predominates in discussions about what makes a healthy life. These narratives are linked closely to those in the previous chapter where concern about obtaining sufficient and nutritious food took precedence over how food was cooked, and participants described their daily struggles to find employment and provide for their families.

In all cases when CoLT members and the HSA were asked ‘What is “good health” for someone living in Chikwawa?’ there was no mention of pneumonia, or of the health benefits of cookstoves. Instead, they said that good health is linked with various factors as described below.

Firstly, having access to enough food of the right type. For example, a healthy person is ‘someone who is working, maybe on the farm, who has surplus food at his house’. (C1) Conversely, someone who is unhealthy, ‘maybe we can say that the woman, children or the man they may not be healthy as it is also hard to obtain food in our area’. (C2) If money is available then those who ‘use it properly for their health are well...when buying your food, you should consider all six groups of food’. (C4)

To obtain food, people need to be able to work, to grow or buy food and other items. Someone is healthy when ‘looking at their home, looking at how they live, they don’t lack anything in the household’ and this is achieved by a good livelihood ‘firstly one has to have land to cultivate and secondly you should be employed or start a business’. (C5) To be healthy people, ‘should have enough food and if possible, should also have livestock’ as ‘livestock can also assist by providing meat to

improve health and it can also provide money which can help find different things which can also improve life.’(HSA)

The inability to provide for families is also linked with “ignorance” with the suggestion that it helps people to have a healthy life if they go to school and are therefore able to make better decisions and to look after their children. A person who attends school:

‘thinks better than that one who has not been there’ [and is able to plan a family], ‘saying I want to have about this number of children so that I can manage to feed and teach them’ (C3).

Whereas an unhealthy life happens when people have:

‘dropped out of school long time ago maybe because of their parent’s ignorance on the importance of school so ...even if they can work hard on their own, they cannot manage’. (HSA)

Two of the respondents also mentioned hygiene and cleanliness as contributing to good health; ‘as for health there should be a toilet, bathroom should be there, households should have a pit latrine and a plate drier’ (C1) and to prevent sickness ‘you need to be a clean person, have a pit latrine....bathing now and again and also washing hands with soap after visiting the toilet’ (C2).

All the interviewees referred to the importance of cohesive families with marital disharmony seen to be linked with ill-health. Quarrels within the family were seen as detrimental to health and this was also connected with having many children and financial insecurity. For example:

‘So maybe we should say that the healthy life is that one which does not have another thought [that is, no worries] and also maybe your children are few, you have given birth to few children then it means the food is enough at the home so then they say this lady is healthy’. (C2)

‘Some wives are not getting on well with their husbands...so they have worries. So, when a person is worried you can’t eat nsima well. It’s like you are full with worries’. (C3)

‘First, worries causes a person to be in bad health because you think too much...you cannot eat because you are thinking too much. For those in marriages it can be quarrels, maybe the husband or wife is having extra

marital affairs so once they start thinking about that they think too much and even about hanging themselves'. (C4)

These ideas of 'thinking too much' and 'worrying too much' were also used by Ghanaian women in a study that aimed to capture women's own descriptions and explanations of their health problems [331]. Avotri and Walters found that three quarters of their interviewees reported 'psycho-social' health problems, which also included physical symptoms such as insomnia, headaches and body pains, and suggest that the value of such accounts is how 'they highlight the social roots of their problems' [331]. The authors link these findings with Doyal's concept of 'idioms of distress' [344] and Nichter's case study of how 'Brahminic values, norms, and stereotypes of women' resulted in a particular 'culturally constituted expression of distress' [345]. Such idioms are also seen in the west where they may be described as "nerves"; a common factor is that they 'express forms of distress that are linked with the material and social circumstances' of people's lives' [331]. In Chikwawa livelihoods are precarious and opportunities for greater financial security is limited (as discussed in the previous chapter).

These ideas also align with the findings of Greco et al. who used focus groups with women in rural Malawi to develop a quality of life measure based on Sen's Capability Approach [256]. The authors found that the women that participated in the study focus groups had 'complex and highly nuanced perceptions...of their life and wellbeing' that extended beyond the meeting of their need for food and shelter, although these were often lacking. Well-being was instead 'highly dependent on complex feelings, relations and social norms' [256]. Greco et al. found that wellbeing as defined by the study participants was composed of six elements: physical strength, inner wellbeing, household wellbeing, community relations, economic security and happiness, and that health was explained as the ability to carry out work activities including in the home, that enabled the family to thrive [256]. Bates et al. have similar findings in their study of the contribution of palliative care to well-being in urban Malawi, that is, 'emotional wellbeing, social functioning and contribution' were important elements of well-being [346]. The authors also described the close link between the ability to work and well-being, and the stigma and discrimination that may occur when people are too ill to carry out their normal productive activities [346].

Although both female and male CoLT members referred to the importance of marital harmony for health there is also a gendered element in that marital instability may

be more detrimental for women than for men; the “stakes are higher”. That is, women’s household and family responsibilities are many, but they often lack the ‘control and resources they require in order to achieve a measure of economic independence and predictability’ [347]. In this context, concern about harmony within the household may be linked with women’s social and economic dependence on men. As demonstrated in the previous chapter, economic opportunity in Chikwawa is limited, particularly for women, and social and economic support from spouses and other family members is clearly important in the context of precarious livelihoods.

These responses to a general query about good health are also indicative of the multiple roles that CoLT members and HSAs have in Chikwawa. As discussed in more detail in Chapter 3, the “go between” role of SLBs provides many challenges. In the case of CAPS, CoLT members were tasked with liaising with the study participants but as will be discussed in more detail in Chapter 7, they may also have taken on an “overseer” role, checking that the intervention stoves were being used. In addition, they arranged and attended dissemination and other CAPS related events in their respective village. Despite being “embedded” in CAPS in this way, they did not automatically connect health and cookstoves. For example, in quite detailed discussions of the benefits of cookstoves, who benefits and whether the benefits are long or short term, only one CoLT member mentions health and that is specifically in relation to small children and comes after other benefits, as below:

‘Children benefit also because they want to do things quickly the time they are going to school. So, things will go fast they will put water on the one stove and cook breakfast on the other stove. So, they do it quickly and go to school quickly. Eeeeh if they are young then they are prevented from getting pneumonia.’ (C3)

This is related to Matinga’s findings of perceptions of South African programme managers and nurses about the harmful impacts of open fire wood collection and smoke exposure [348]. She concluded that her interviewees who were all women, had ‘multiple identities’ including their ‘western-informed biomedical’ professional role and the gendered roles within their own community and families, and that narratives related to these roles were interwoven into their interviews leading them to dismiss or downplay the health impacts of cooking on open fires [348].

These data show an even more marked “disconnect” as CoLT members were specifically tasked with implementing trial processes that linked cookstoves and

pneumonia but when asked about good health their responses indicated that their concerns and priorities were deeply rooted in their everyday lives and not within the clinical trial process. This links with Hausmann Muela et al.'s suggestion that there is a practical focus to the health knowledge of frontline workers and that this knowledge is the 'result of a syncretic process' [167]. The conflict inherent to the SLB role of CoLT members as both representatives of MLW and as community members is reflected in the social nature of their descriptions of good health as opposed to a biomedical linking of cookstoves and health.

It seems however that some "public health" messages are disseminated and assimilated by Chikwawa residents. For example, nutritional guidelines about food groups. In addition, concerns about hygiene and recommendations about how to improve it were common as described above. As described by a male fieldworker interviewee, part of the role of HSAs is to visit homes in the three or four villages that they are responsible for, that is, 'they go to each and every household' checking hygienic facilities including the availability of toilets and that if the situation is bad then 'they just convene the meeting for the whole village and explain to them this village has these problems' that need to be resolved. (IM1) As with information disseminated about food groups, the links between hygiene and disease seemed to be well established and formed part of Chikwawa health narratives whereas the connection between cookstoves and health was more tenuous. That is not to say that references to pneumonia were not found in the data, but this appeared to be new information that merged with what was already known to become something quite different from that intended, as explored in the following section.

## 6.3 Transformation of health narratives within CAPS

### 6.3.1 Introduction

In the previous section, local understandings of health were discussed, and it was shown that even in the context of a clinical trial that specifically linked cookstoves and pneumonia, concerns about health were situated within the local social and economic context.

This section has two main themes. Firstly, that perceptions of pneumonia were changed by the trial with the development of syncretic narratives, built on existing knowledge but significantly different in emphasis. Related to this is the idea that interpretations of health issues such as pneumonia may differ from that intended by researchers. In the case of CAPS, the negative result of the study is important to factor into these discussions. If the trial had showed that the cookstoves reduced the

rate of pneumonia in under-fives, then establishing a strong relationship between the equipment and less pneumonia would have been valuable. However, as no such link was established, there is the possibility that such links are problematic or even harmful.

The second part of this section explores an unanticipated benefit of the cookstoves from the perspective of participants, that is, that the integral fan saved the “breath” and energy of cooks. This discussion highlights not only that large-scale and complex interventions may have unanticipated consequences, but also that the priorities of research participants and researchers may differ considerably.

### 6.3.2 Perceptions of pneumonia

The discussion that follows brings two sets of narratives together beginning with the idea that pneumonia has “gone” due to the CAPS intervention and explanations of why this might be the case. This then leads to an exploration of the fieldworker data relating to how these ideas about pneumonia have been syncretically developed in ways unintended by researchers. For brevity, these sub-themes are referred to as “pneumonia has gone” and “lost in translation”.

#### 6.3.2.1 “Pneumonia has gone”

In the Photovoice village-based focus groups pneumonia was referred to specifically in three of the five villages and in these cases, it was agreed by most participants that because of the cookstoves pneumonia had gone or been significantly reduced. This discussion was prompted by asking whether there were any advantages or disadvantages of the cookstoves and below are some typical descriptions of the benefits of the cookstove including less pneumonia:

‘Now we have the stoves there is no more pneumonia’ (CTP V2)

‘With the coming of this research we saw that pneumonia has decreased...Yes, we can say that all of us present here can give testimonies...Yes, when all the women received these stoves, we have not heard of any children ill with pneumonia’ (CTP V3)

‘The other advantage, ever since these CAPS stoves came, maybe 100% of the women here agree about the pneumonia issue, I think it has really reduced’ (CTP V5)

In the follow-up discussion of how and why pneumonia had “gone away” or been reduced, explanations were limited and not very clear. For example:’



Because when people are cooking on the three-stone fire there is a lot of smoke, so a person is attacked more often with pneumonia ... now illnesses are headaches or other things' (CTP V2)

'All the smoke goes here, in the heart and a person starts coughing' (CTP V3)

'There are still coughs, but the only disease mentioned is malaria' (CTP V3).

As noted in the Photovoice pilot work [207], when considering the benefits of cookstoves, health did not predominate and in general the “stories” that people told about their images were not about lung health or pneumonia, despite the obvious association that could be made between cooking and pneumonia within CAPS. However, when pneumonia was mentioned there seemed to be a standard message that because of the cookstoves it had now “gone”.

This issue was probed more deeply in the IDIs with CTPs when the topic of health arose or as a prompt question: ‘Do you think using the intervention cookstove has had an impact on health and safety? If so: How? Why?’. As the interviews were carried out 4 months after the village FGDs, an added complication was that participants were not just comparing the pre and post intervention stages, that is, before and after they received cookstoves but also pre and post the cookstoves not working due to battery and maintenance issues. Interviewees reported that pneumonia came back after the cookstoves stopped working or were used less due to maintenance issues.

This idea of pneumonia “going” and “coming back” was common and there were various ways that participants expressed this, including ideas of pneumonia ‘forgetting’ the participants or ‘going far away’. It is not clear whether these descriptions are metaphorical or describe the literal “distancing” of pneumonia. For example, one participant says that when using the cookstove ‘the pneumonia forgets us’ (CTP V5) whereas another says that ‘diseases are far from us’ and ‘pneumonia is not close’ (CTP V3).

When asked how it was clear that pneumonia had “gone”, participants referred to their own experience of their own children or those in their community not getting pneumonia while they used the cookstoves and the illness re-occurring due to maintenance issues. For example:

‘Since we were enrolled in this study up to this time not one of my children were diagnosed with pneumonia’ (CTP V4)

'Now that use of cookstoves has been "abandoned"... when going to the hospital...you will hear that children are being diagnosed with pneumonia' (CTP V5)

The two CoLT members who mentioned pneumonia (in a discussion about how CAPS differed from other trials) and the HSA also agreed:

'The participants began to understand because it was explained to them, that it was a study that aimed at eliminating pneumonia...and then they started using the cookstove, pneumonia or some other things, especially after they had started cooking using cook stoves, pneumonia cases declined'.  
[Previously] 'children could get sick maybe 2 or 3 times in a month, especially when the weather changed' (C1)

[The cookstoves are beneficial as] they 'prevent children from getting pneumonia and other diseases so I see that it was helpful to their families' [and] 'if they are young then they are prevented from the pneumonia' (C3)

'Myself for example, my child hasn't been sick from pneumonia ever since I got the cookstoves' [and more generally] 'even in the wards, it was found that most of the children who had the stickers were not been diagnosed with pneumonia' (where CAPS stickers in child's health passport indicate enrolment) (HSA)

However, at times the cookstoves are reported to reduce other diseases besides pneumonia, suggesting some kind of "magic bullet" effect. There was also the suggestion, the receipt of the cookstoves seemed to be key and not use:

'Since I received these stoves my child stopped being sick, [whereas] before I had these cookstoves I was visiting the hospital with my child frequently, but soon as I receive these things this changed' (CTP V3)

'Ever since [we received the cookstoves] the child has never been diagnosed at the hospital with either pneumonia or malaria or any other disease' (CTP V4)

'Since we received the cook stoves. We have not been admitted to hospital with a child because of malaria or pneumonia. But when I was cooking in the open fire, my child was frequently being admitted to hospital' (CTP V2)

Linked to this is the common response when asked how the cookstove prevents disease, some interviewees merely respond by saying that the cookstove “protects us” in an unspecified way.

Others make the connection between the different types of smoke emitted from open fires (or charcoal stoves) and cookstoves suggesting both the smoke from cookstoves is not just less but also “good” and even protective:

‘Because the smoke from the charcoal burner and that from the cookstove is different. The smoke from the charcoal stove is hazardous and causes diseases. The smoke from the cookstoves does not cause any disease...it protects from diseases’ (CTP V5)

‘Yes, because the stove does not produce much smoke and since it has a fan then it blows air on the fire itself the smoke ends right inside it’ (CTP V2)

‘Mostly when a woman is cooking, she is with a child, so when the cookstoves came even though some were cooking while with a child, it was with protection because of the smoke, yes the smoke was coming but wasn’t that harmful to the child like when we cook on the three stone’ (CTP V4)

Other descriptions are not so easy to link with a lessening or eradication of childhood pneumonia as they refer to the cook blowing on the fire to light it and keep it going. As described in the previous chapter, children do cook but this is not a task carried out by small children and in any case these responses seem to link directly to benefits for mainly adult cooks. For example:

‘Because when you use the cookstove it helps with pneumonia since when you are blowing air to set the fire ablaze you start to suffocate for the fire to be ablaze, so it is a big job. While when using the cookstove you don’t blow much air you just switch on and it doesn’t use any air and also you don’t receive any bad air in your mouth. So, it means you can’t have pneumonia’ (CTP V1)

[The cookstove is better because] ‘it is different from the open fire where we blow the fire with our mouths when we are using firewood. When we blow the fire, a lot of tears start coming from our eyes. But when we use the cook stoves, tears do not flow from our eyes, everything becomes fine. So, this is a very good method of cooking which does not cause diseases to human beings’ (CTP V2)

A CoLT members reference to blowing on the fire and the link with pneumonia gives another interpretation although what is meant is not very clear:

[People were] 'using the cookstoves because it was no longer necessary to "blow the air"' as with the open fire and 'this was a clear indication that pneumonia was decreasing' (C1)

These exchanges show that participants construct a narrative of health benefits beyond the reduction of pneumonia, in discussions with researchers associated with MLW. There will be more discussion of the advantage of not having to blow on the fire in the next section. They do however attempt to link this benefit, the "not blowing" with pneumonia in a way that suggests they are trying to say the correct thing; that is, if the main aim of the study is to reduce pneumonia then it may be important in discussions with researchers to link this useful feature with the disease.

Underlying these various lines of reasoning about pneumonia going and the reasons why this may be happening there two possible interpretations are suggested that are not mutually exclusive, Firstly, that there is a level of trust in researchers and MLW as an institution. This links with the decision-making process described in more detail in section 6.4 where it appears that participants weighed the pros and cons of joining the trial, essentially possible blood taking against obtaining cookstoves, a solar panel, pots and approval from trial co-ordinators. Once this, at sometimes difficult, decision making process had been completed, then putting trust in the researchers to provide cookstoves that did prevent pneumonia may only have been a small step. Once again, the link with the previous study was also there with references to the cookstoves also preventing malaria.

On the other hand, these data may also indicate that participants are trying to fulfil their part of the "research bargain". They had been asked to join a study that trialled a cookstove that may prevent pneumonia and were indicating their compliance through strongly suggesting that this hypothesis was correct. As mentioned in the introduction, obtaining such expensive equipment would not be achievable for the majority if not all the participants. In the context of this clinical trial, participants had been provided with items they found useful and they understood to be good for their health.

The below quote is from a young male participant in Village 1:

'I: Okay, so if there is any study coming to your village what advice will you give your friends?

CTP: If there is any study coming to our village, the advice I can give is that they have to remain calm because there are more benefits concerning their health

CTP: These studies are just good for our health it prevents us from diseases because of following what we have asked to follow'

The strong suggestion here to future research participants is that they should be comfortable in putting their trust in the researchers, that is they should 'remain calm' and comply with what is asked and in this way their health will be improved. The suggestion that people should remain calm may be referring to "blood-taking" rumours that will be discussed in section 6.4.

In linking the discontinuation of stove maintenance and replacement by CAPS with pneumonia, CTPS may also have been strengthening their case for continued support in the short term. Without local expertise to fix broken cookstoves, solar panels and chargers or the resource to replace them whether through lack of money or unavailability in local market, CTPS have little option but to stop using the intervention cookstoves. This was referred to explicitly by one of the interviewees (CTP V2) who said that because of the improved health she has noted, she wishes that the study would continue and not go 'backwards'. She expresses concern about her one remaining stove which is malfunctioning as she has no way to fix it without the assistance of the disbanded CAPS team.

CTPs references to pneumonia declining could also be explained by something akin to a "Hawthorne" or a placebo effect, that is the modification of behaviour by research participants under scrutiny. In this case the CTPs were in receipt of valuable equipment which they had been informed may improve their health. As these became unusable it is perhaps understandable that claims for the efficacy of the cookstoves were strongly made by some; their narratives had a purpose. As indicated by Wickstrom and Bendix in their critique of the use of the term "Hawthorne effect", 'human relations' are a key part of any study and it is now 'generally accepted that all people reflect on their situation and react to it when they consider this appropriate' [349]. Concluding that CTPs either convinced themselves that the cookstoves prevent pneumonia or that they reported this link for personal benefit belies the complexity of such understandings. There appear to be clear indications that CTPS were carefully considering how cookstoves may prevent pneumonia and that these deliberations took place in the context of scarcity, inequity and an overarching "powerful" research environment.

### 6.3.2.2 “Lost in translation”

The view of fieldworkers on shifting perceptions of pneumonia provides an alternative view. As discussed previously, their role was closely aligned with the trial, as employees of MLW and designated CAPS fieldworkers they were the people responsible for the conduct of the trial “on the ground” and this included communicating with the participants about the possible link between cookstoves and pneumonia.

In focus groups with CAPS fieldworkers there was clearly good understanding that the cookstoves may prevent, but will not necessarily prevent, pneumonia and that any negative health impacts of biomass smoke would occur over the longer term. It seems however that the potential for the communication of a message that cookstoves **do** prevent pneumonia was entirely possible and/or that the speculative nature of the link may be “lost in translation”. Hausmann Muela et al. highlight the distinction Downie, Tannahill, and Tannahill [350] make between ‘comprehension’ and ‘interpretation’ and how this is relevant to the development of syncretic understandings of health. That is that people may comprehend the health information they receive but that their interpretation of that message is shaped by the background of the individual and their “thinking framework” [167]. The authors also suggest that interpretations of health messages may be influenced by the idea that biomedical solutions are infallible and with relevance to the discussion that follows, ‘insufficient comprehension’ of participants may actually be ‘misinterpretation’ by research staff [167].

In the male fieldworker focus group, there was agreement that both at the consent stage and throughout the trial, that the aim of the study ‘seems so scientific’ (FM7) to the trial participants. In addition, there was consensus that the trial participants did not readily mention pneumonia when talking about the benefits during regular field visits. Although one focus group participant said that those ‘with a little bit of knowledge’ said that the cookstoves produced a certain kind of gas that was circulating in the house that prevented the children from catching pneumonia’ (FM7). This was described by another member of the group as participants ‘devising their own understanding’ and rationalising things in their own way. Others were told about the possible links between the cookstoves and pneumonia, but it was ‘so scientific’ that they could not ‘believe it as truth’ (FM1).

This idea of a protective gas emitted by the cookstove links with the view of many participants, as described above, that the cookstoves actively prevented pneumonia.

The reference to information about the trial being 'so scientific' for the villagers to comprehend suggests that fieldworkers perceive that there is a divide between the biomedical world of MLW and clinical trials, and Chikwawa village life. That is that the trial and the cookstoves are from outside and are brought into a community who struggle to accommodate these ideas into their own knowledge systems. The juxtaposition of science and truth highlights this gap suggesting that the participants may see truth as existing outside of the scientific discourse and to be local and social.

These ideas were explored in more detail in the IDIs when one of the questions asked was 'What do you think CAPS participants understand by the term pneumonia?' and responses indicate how understanding of childhood pneumonia, often gained through painful experience, has been shaped by participation in CAPS. As detailed below the interviewees reported that there was generally more awareness of the disease and evidence of increased knowledge but also the development of ideas and concepts that may not promote timely healthcare seeking for pneumonia.

For example, IF1 thought that CAPS trial participants know that lots of children suffer from pneumonia and through being told their own child has pneumonia they understand that it is a disease and it can 'take their child's life' (IF1). Another interviewee stated that through being part of CAPS, the CTPs can now identify pneumonia at an early stage whereas previously they would only identify it when it was at the severe stage where the child is 'breathing fast and whistling' (IM2). It seems clear that pneumonia is not a new concept to Chikwawa residents as many will have had direct experience of it as evidenced by the high rate of childhood deaths from the disease. Enhanced knowledge of the symptoms and how pneumonia can be treated could potentially be beneficial and even lifesaving.

The links between CAPS and understandings of pneumonia were further described by the male interviewees. One saying that 'I think the word was mostly used when they are talking to us' and that he estimated that 60% of the villagers now associate the intervention cookstoves with pneumonia although all know the diseases 'very well' (IM1). The other male fieldworker said that CAPS resulted in the participants linking cookstoves and pneumonia whereas beforehand 'they were taking these two as things that are different, as different entities'. He thought that through 'sensitisations' they learnt that pneumonia is a disease that children from 0 to 4.5 can get and is 'mainly caused by the presence of carbon monoxide'. He suggested

that if you asked any CAPS participant, they would be able to tell you about the relationship between the cookstove and pneumonia (IM2). This brings us back to the key question of whether CTPs perceived that the intervention stove “prevented” pneumonia or “may prevent” pneumonia.

The opinion of one of the female fieldworkers was that because this is a study of cooking and pneumonia then once some participants ‘heard’ pneumonia in connection with cookstoves then this is ‘the end of pneumonia’, that is that pneumonia “had gone”, as described by the participants. She thought that other participants based their judgement on a comparison between before and after receiving the cookstoves and observing a reduction in pneumonia, ‘they really see the change’. However, she linked this with confusion between pneumonia and other diseases such as malaria saying that some CTPs ‘just believe that the cook stove prevents them from getting pneumonia’(IF2) However, the other female fieldworker thought that CTPS were able to differentiate between pneumonia and other diseases.

There is a link between malaria and pneumonia in that both have symptoms of fever. Ewing et al. found that fever in Chikwawa could be attributed to various diseases with similar symptoms or to generic “fever” and that this was a factor in delayed treatment seeking for malaria [168]. If participants disassociate fever from pneumonia (as pneumonia has “gone”) then this could also result in a further lack of clarity about when to seek clinical help for childhood illness.

The fieldworker data reiterates the findings from CAPS participant understandings of pneumonia are varied, mutable and could have a direct impact on health. That is, if CTPs think that the intervention cookstoves “stop” pneumonia then this may prevent or delay access to medical assistance for potential pneumonia symptoms of disease. Also, if “blame” for pneumonia is assigned to other causes, such as, malaria, then the causes and treatment for common Chikwawa diseases may become confused and lead to less effective prevention and treatment. There are however indications that increased knowledge about pneumonia symptoms and treatment seeking options may be helpful in some cases.

### 6.3.3 Cookstoves are healthy as they save breath and strength

As detailed above the idea that cooking using cookstoves was preferable to using an open fire, because it is not necessary to blow on them, was expressed by trial participants and CoLT members. Fieldworkers also agreed, with a female fieldworker saying that cookstoves are seen by the participants as healthier than the



open fire as 'if they want to light the fire they say that they have to use a lot of energy to blow the air, so they use energy, the lungs they became painful if there is a lot of smoke' (IF2). A male fieldworker explains further that when lighting the open fire 'you just take in the smoke you start coughing' but the 'it's the cookstove which blows' and that not having to blow was seen as beneficial 'especially to the mothers' and 'entices' them to use the stove (IM1). Figure 6.1 shows an older woman blowing on the fire.



Figure 6. 1: Blowing on an open fire to light it

The aim in this section is to explore this benefit in more detail including how this idea is linked with local understandings of the body and health and how not needing to blow air as a potential benefit of cookstoves has wider implications beyond CAPS.

In the village FGDs there were many descriptions of this benefit including (as below) how the cookstove fan was helpful when lighting and stocking the fire. There were some references to smoke being breathed in and a possible link with lung health (as in the second quote) but the main emphasis was on how much better the cookstoves were as they "blow" themselves.

'Those ones [the open fire] need us to blow air into while the other ones blow themselves... We will just be taking our firewood and see that the fire is going down then add in our firewood while that one even when the firewood is ending, when we want to add the firewood it will still blow it.' (CTP V2)

'The first advantage of the CAPS stove is that it saves firewood. The second is that we do not wrestle with blowing air because there is not much smoke, it blows itself so when the fire has gone down, we just add the firewood while

on the three- stone fire the smoke ... comes down the throat. It is found that after the removal of the three stone, ever since have been cooking on those stoves I have never had cough I just see everything fine, because the fan blows itself, so the advantage that I see with these stoves is what, is this one....it lights on its own without blowing.' (CTP V5)

Lighting and fuelling an open fire with material that may not be ideal (for example in the rainy season) is a skilled and arduous task. As the image (Figure 6.1) illustrates, the cook needs to lower the head almost to the ground and blowing out expends energy. This physical strain must necessarily be more difficult for those who are infirm. Pregnancy can also result in less flexibility and tiredness with a female trial participant describing her own experience of not having to bend or stretch when cooking during this period and the benefit of the cookstove 'blowing the air for me until I gave birth'. (CTP V2)

In an interview with a CoLT member, a direct link was made between blowing on the fire and pneumonia. When asked why he thought that pneumonia had declined, he responded: 'I believe because the parents were now using the cookstoves, because they no longer blew the air. They no longer had difficulties to blow fire. There was no smoke'. (C1) Other CoLT members agreed that blowing on the open fire was tiring and physically challenging. In another village a woman was cooking on an open fire just in front of where an interview took place and the CoLT member referred specifically to the difficulty the person observed was having 'fanning the fire' through blowing with her air' and how difficult this can be for cooks with ill-health. (C5)

There is also some indication that as well as problems breathing out to light the fire, smoke inhalation is a problem, as reflected in the quotes above and references to the 'no smoke' and how smoke 'comes down the throat'. Of course, the two actions are part of the same physiological process, it is not possible to "blow out" without first inhaling air. However, throughout the data the emphasis was largely on how breath and energy was expended when tending open fires by exhaling and much less on smoke inhalation.

This benefit is not one that has been reported in the published literature but appears to be greatly appreciated by CAPS participants. In general, anticipated benefits within the cookstove field are more "ambitious", for example reduced rates of pneumonia, enhanced economic power of women, mitigating climate change. This observation that not "blowing" is an advantage to the cookstoves is situated in practice and resonates with calls by some researchers for an increased emphasis

on the “mundane” in clean energy interventions [29, 351]. In addition, this finding draws attention to the difference there may be between the priorities of research participants and researchers and how the latter’s more powerful position may result in research that has, or appears to have, little direct benefit to those who take part.

Matinga’s concept of “hardiness” is also very pertinent. In her study of firewood collection and use in rural South Africa she describes how respondents were stoical about the negative health impacts of wood collection and cooking as they saw little alternative to the status quo, and how in parallel this stoicism became part of their social identity. She compares the more common concept of resilience which is related to the ability to deal with shocks and stressors and often emphasises the positive, with hardiness which ‘can mask suffering and block action’. Hardiness results from the need to deal continuously with adverse conditions and through ‘lack of choice’. [63]. Related to cooking on open fires and the immediate health impacts of chest pain and tiredness experienced by cooks, ‘hardiness’ and the lack of options for change “hid” this potential benefit from view. It is only through the introduction of the cookstoves that this “problem” became evident and more importantly it became clear that there was an alternative. The benefits of not having to blow out are immediately apparent to users as opposed to the longer-term potential health benefits of cleaner cookstoves.

An exchange in an interview with a female CoLT member refers to a different process than cooking on an open fire but illustrates how ideas about expending breath and energy are linked. She was explaining her anxieties about ancillary studies to CAPS, that is the air monitoring study (involving home and personal monitoring) and the Adult Lung Health Study (involving spirometry lung function testing of women).

‘They are saying that when they are putting on the bag [which contains the personal air monitor], since that thing does breathe right, it produces air, so when they are also doing a spirometry test, they are saying that its taking all their energy. While this one [household air monitor] also its sucking their breath when they are sleeping. So, when you are trying to tell them that this is the procedure and it works properly, we still not agreeing’ [although] ‘some do understand that yes this is true, it is just research.’ (C2)

In her view this was linked with the lack of additional recompense for these two additional CAPS studies as opposed to the compensation offered for participating in the CAPS Qualitative Study. That is people are ‘assisted’ by being given a ‘gift’ just

for having a chat but when researchers are coming to 'exhaust our breath' we do not receive anything. She thought that people 'don't think about their health but that you are exhausting their breath'. This became so much of an issue that she wrote a report about it for the 'office'. (C2)

Whilst the cookstove saves energy through not needing to blow on it, these other procedures show the opposite, that is the taking of someone's breath and energy. The value of retaining this energy is indicated in the complaint about lack of recompense. Breath and energy are seen as something that can be taken from research participants and in this case the benefit is one-sided, the participants lose something but with no gain. The CoLT member indicates that she might take a longer-term view, that is, that the research may benefit the participant's health in the longer term but is clear that it is the immediate loss of breath and energy that exercises the research participants who complain to her.

This discussion links back with local understandings of health discussed in the first part of this chapter and concerns about providing for families in Chapter 5. In a context where hard physical work is part of everyday life and tasks such as farming, water carrying and labouring are carried out in the absence of machinery and motorised transport, energy is a valuable commodity to be conserved. Returning to the benefit of the cookstoves with an integral fan, as discussed, it is mainly women who are the primary household cooks and men only cook on occasion. In Avroti and Walters' vivid description of the impact a heavy daily workload has on the health of the workload of Ghanaian women, the authors suggest that a focusing on medical or disease based health issues 'obscures the experience of women and the way in which low level psychosocial health problems as well as physical aches and pains can influence women's daily lives and sense of well-being' [331]. They conclude that paying close attention to women's own accounts of health related matters can indicate the 'social roots of their problems' and how these are linked with the gendered dimension of the power inequity of women [331].

#### 6.3.4 Conclusion

As Hausmann Muela et al. indicate, the two divergent terms of comprehension and interpretation are very useful when exploring the development and consequences of the development of syncretic narratives of health [167]. The intended "message" that CAPS communicated, through various trial processes such as consent forms and dissemination events was clearly that this was a trial of a cookstove that could possibly, but not necessarily, have an impact on pneumonia. As detailed in Chapter

3 (3.4.1.3) and indicated in this study, comprehension of clinical trial processes can be challenging and the “filtering” of this information through fieldworkers and CoLT members (through SLBs) adds additional complexity. Interpretation then adds another level of complexity with the potential for misunderstandings and unexpected consequences.

In this case, this process led CAPS participants to interpret the cookstoves as devices that prevented pneumonia, although an element of trial compliance and “saying the right thing” cannot be discounted. Descriptions of how this prevention worked were unclear which was telling, for example the mixing up of malaria and pneumonia, but the potential impact of this interpretation is clear. That is, there may be a negative impact on treatment seeking for pneumonia. It is true however that the links between cookstove use and ill-health including pneumonia are well established and, in a context, where cookstoves were a viable sustainable option, the establishment of this link may be useful to encourage more adoption. However, in the context of rural Malawi where the cookstoves were largely defunct, there appears to be little benefit to associating cookstoves and “no pneumonia” in the near future, and the potential for harm.

Whether CAPS participants perceive that pneumonia has actually reduced or they report this link to signal their acceptance of the trial and their willingness to be involved in future research, trust in MLW as an institution appears to be an important part of this syncretic narrative. The emphasis on biomedical solutions of health within the research environment may lead to the idea that they are infallible [167] and that part of the “bargain” in long term research relationships, such as exists here with MLW, is the provision of effective health services [169].

As discussed previously, this trust exists in the context of an unequal power relationship between participants and researchers. In the case of the second “transformed” health narrative discussed in this section the priorities of participants came to the fore. That is, in the case of the benefit of “blowing out” cooks perceived that there was an unanticipated health benefit of cookstoves. This finding is situated in the local context of ongoing hardship and daily physical labour and linked with ideas of bodily humours and the preservation of strength. I would argue that this type of benefit could not be identified in a laboratory or field-testing environment but is situated in the arena of everyday mundane practice and linked intrinsically with a recognition of the knowledge and skills of cooks in Chikwawa and similar settings. This finding also shows clearly that the many benefits of cookstoves (as introduced

in Chapter 2) may not be fully inclusive and that the priorities of cooks have not been sufficiently explored. This links back to Crewe's work in Chapter 3 (3.3.1.4) and her suggestion that female cooks in low income settings have been 'silenced' as 'expatriate', particularly male, knowledge is seen as superior [133]. This study has therefore provided a way for the real experts to be heard and for the identification of a novel benefit of forced-draught stoves. The syncretic model of health has been used to show how narratives of health are merged and created and how these are both situated in and have an impact on practice.

## 6.4 Syncretic narratives of satanism and blood-taking

### 6.4.1 Introduction

As detailed in Chapter 3 (3.4.3). in sub-Saharan Africa there are widespread links made between blood taking in clinical trials and nefarious intent. The aim in this section is to show how satanic beliefs and ideas about blood taking, shaped and were shaped by the CAPS trial, leading to new syncretic narratives, and understandings of health and cookstoves.

The possibility of a link between the CAPS trial and beliefs about illicit use of blood was considered at the design stage and care was taken to include the following statement in the information and consent sheet, 'At no time, during the CAPS study, will we be required to draw blood or take any blood samples'. This action positions these potential concerns on the part of 'study populations' as resulting from lack of knowledge, as something to be acknowledged and managed as part of the trials process [175] (see also Chapter 3, 3.4.3.3). It also indicates a lack of awareness that CAPS participants may view their participation as a continuation of their interaction with MLW as an institution and not on a trial by trial basis, as Fairhead et al. found [169].

My personal introduction to satanic beliefs in the context of CAPS occurred in April 2016 while carrying out observation of a meal being cooked in Village Five. A female neighbour came by wearing a CAPS t-shirt; she was a tall confident looking woman who began what appeared to be a jokey discussion with the female householder who we were observing. This discussion was translated in real time by CK, who explained that the neighbour was talking about her daughter who had been part of the ACTia malaria trial when she was younger. The neighbour said that people had warned her that if she participated the researchers would take her daughters blood, as they were Satanists. She had been worried when the researchers gave her daughter sweets in case they were poisoned. She then went on to say that she had

seen me before in the hospital and that I had been carrying a baby, a sum of MK5000 was mentioned although it was not clear whether this was a gift or payment for the baby. However, the neighbour did conclude by saying that this showed that I was open-minded and kind.

CK explained that the wearing of the CAPS t-shirt indicated that the woman was enrolled in the Adult Lung Health Study<sup>8</sup> which was closely associated with CAPS. There had been complaints from CAPS participants that ALHS participants had received t-shirts, but they had not. The neighbour also mentioned that as her children were too old, she could not enrol in CAPS, which might also have meant that she thought she had grounds for resentment as she would not receive any cookstoves.

On reflection, this unsettling experience brought many important factors inherent in narratives about satanic intent and blood taking to the fore and indicated the key part that social relationships have in the dynamic interplay of these rumours and narratives. In this short exchange, the neighbour introduced the idea of outsiders with possible evil and/or hidden intent, in this case a white woman taking a child and others stealing blood and poisoning children. She also expressed concern about participating in research while it was clear she had participated in both ACTia and ALHS suggesting that she had a transactional view of the process and balanced these disadvantages against the benefits. It also seems likely that she was speaking directly to her CAPS participant's neighbour to perhaps suggest that participation in the trial was not without risk.

The following section explores these ideas in detail, beginning with the persistence of rumours about blood-taking within CAPS, moving on to the seemingly transactional nature of trial participation and tensions between those inside and outside the study. Development narratives of progress are also shown to be enduring and throughout the data issues of trust and distrust between trial participants and MLW are pervasive.

#### 6.4.2 Persistence of blood-taking rumours

In the fieldworker FGDs, the link between blood taking, research studies in general and ACTia specifically was discussed in some detail. It was noted that CAPS is a different type of study than ACTia as it did not involve taking blood; participants

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<sup>8</sup> An ancillary study to CAPS that explored the prevalence and determinants of non-communicable lung disease in adults

'were excited using the cookstoves rather than that one of taking blood'. (FF3) There was general agreement that villagers sometimes feared researchers as they think they 'suck blood', but that sensitisation<sup>9</sup> was helpful. This led to many not agreeing to participate although some 'came round', as they wanted free pots that were distributed. (FF4) It is part of the fieldworker role 'to find the degree of it' (FM1) and fieldworkers used monthly cluster meetings to allay these fears. Even so people still suspected that the cookstoves were able to take their blood, resulting in 'a lot of rumours'. (FF1) Rumours about blood taking were therefore seen by the fieldworkers as to be expected although present to different degrees within studies and over time. The need for fieldworkers to engage more regularly when such rumours disrupt the research process suggests that they can also be a form of resistance, whether intentional or not.

The persistence of such rumours in the absence of any blood collection for CAPS was clearly explained by female fieldworkers. They described how in ACTia (the previous study carried out in Chikwawa) the blood taking narrative was straightforward, as in 'they take blood from our children and sell it'. (FF1) Whereas with CAPS, these ideas were closely related to the previous study and events such as the death of a child enrolled within ACTia. This led to the belief that researchers found an indirect and invisible way of taking blood, as demonstrated through the following exchange in the female FGD:

I: 'So when it came to the cookstoves it was built on the problem before do you think?

FF4: Yes because we are the same people

FF1: Yes people said "they have brought another instrument of taking blood"

FF1: [They said] they don't want us to see them directly taking blood but the cookstoves will still be taking blood from us

FF1: At the end we will get them, get their blood and use for something else.

All: (Laughing)

FF2: It's all about the literacy level.'

These "satanic" and "blood-sucking" beliefs were described as quite distinct from witchcraft and the fieldworkers were clear that what the CAPS participants was describing was the former and not the latter. To be clear, the suggestion was that

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<sup>9</sup> Sensitisation in this context refers to the science communication activities that proceed clinical trials



the CAPS participants may believe in witchcraft but that this was separate from concerns about the trial, as below:

FF4: 'Yes, they also believe in witchcraft'

FF3: 'But they associate us with satanism not witchcraft'

These narratives about blood-taking persist as villagers think of researchers/fieldworkers as 'those malaria people' who draw blood and therefore participation in CAPS depended on whether they viewed ACTia positively and whether they had heard 'stories' (IF1) but are not fixed. Change occurs over time with some people being concerned that the cookstoves were 'taking the children's blood' but after using them 'they saw that they were good'. (IF1) Fieldworkers also described how such beliefs impacted on initial recruitment but may also lead to withdrawal at a later stage. A particular example given was of women enrolling in the study but withdrawing due to pressure from the husbands. (IF2)

The development of a more positive approach to the study and a reduction of blood-taking concerns is described by a fieldworker. He explains that 'I remember previously even the vehicle itself could not go to the village, if we did we would find that everybody is locked in his/her house fearing the vehicle, saying this is a study vehicle they want to draw blood from us, but now we can go to the village and the children surround the vehicle'. (IM1) This links with Geissler's definition of "kachinja" people who drive along the tarmac road at night in big white Land-Rovers, and if they meet you there ... they catch you and drain your blood and leave you in the bush' [186].

As explored in detail in Chapter 3, the connections between witchcraft, satanism and blood taking are complex and dynamic. In this context, the fieldworkers appear to be connecting disquiet about CAPS with a similar "blood logic" to that described by Fairhead et al. [169] and with ideas about vampiric strangers seeking blood to enhance their power [177, 186]. It is noteworthy that they also confirmed that the issue was not the cookstove itself but the association between the equipment and the CAPS trial. The female fieldworker group agreed that if the cookstoves had been bought from a shop then there would not have been these beliefs/rumours, as they would trust the seller which strongly indicates a lack of trust within the research/trial environment. Taken together these two points are indicative of narratives that reflect and contest the power inherent in the research context of the trial. They also suggest that participants are aware that researchers may gain more from the research process than they do themselves.

Although the CAPS fieldworkers reported that links between CAPS and satanic blood-taking were common it is notable that in the village Photovoice FGDs discussion centred around the images did not result in any discussion of these matters. As detailed in Chapter 5, this discussion was very valuable for gaining in-depth understanding of cooking practices and household roles but was less useful for investigating occult beliefs. This can partly be explained by the general and very practical nature of the topics provided for image collection, that is: what they ate; how this food was cooked; who cooked the food; who they cooked and ate with. In addition, other researchers have found that “intangible” concepts need further probing in Photovoice studies. For example, when Bates et al. explored well-being of palliative care patients in Malawi the study co-researchers agreed that discrimination was an important theme but a ‘difficult area to illustrate using photography’ [346].

To encourage discussion of occult beliefs linked with CAPS an open question was included in the photovoice and observation interviews: ‘What have others said to you about participating in CAPS?’. This prompted two types of response, either respondents reported not hearing anything negative about CAPS or freely talked about rumours of satanic practices. There seemed to be no pattern to this either by village or gender; one of the two male interviewees around half of the female interviewees and at least one interviewee in each village reported that a link had been made between CAPS and satanism.

#### 6.4.3 The transactional nature of trial participation

Typical discussions of “rumours” of satanic intent indicate how CAPS participants weigh up the risks and benefits of trial participation and how pressure to not participate may come from those not eligible to be included. For example, an observation participant describes vividly how worrying these rumours could be and how she made the decision to participate in CAPS:

‘The negatives rumours were huge, [people said] if you take part in this study, they will suck your blood; there is no benefit in the study and those people are satanic. Why would they spend all this money and then give us these items for free! In those times we were a bit frightened. But maybe people said this as they were illiterate, so we just ignored them as MLW can’t be stupid, they can’t get bad things and give them to us?’ (CTP V4)

In one village it was notable that all the interviewees described openly how others had discouraged their participation in CAPS through reference to harm that would

result from satanic “blood-sucking” but that they had dismissed these claims and were not concerned by them as described below:

‘There are some you actually tell you that when you participate in the study, they will take a lot of blood from you. I don't bother about that because every individual is responsible for his/her life. I participated in the study because I wanted to know the purpose of the study so when I enrolled it was for my own good. The same people who were telling me lies...were put to shame.’  
(Female CTP V3)

The obvious expense of the cookstoves also led to concerns about ulterior motives of researchers. As described by a CoLT member, suspicion of researchers developed in the absence of an obvious motive, besides blood taking, for providing such expensive items. (C1) A male fieldworker described how he thought that trial participants linked being given the cookstoves and blood, he said that trial participants had reported people saying to them, this study ‘is satanic, they are giving you the cookstove because they want it just to suck blood from you’. (IM1) That is there must be a reason why such valuable items were distributed, and one explanation could be that blood will be taken in return. He said that this led to some only agreeing to enrol after seeing the study going on for 3 – 6 months and observing fieldworker visits and others using the stoves. What appears to be suggested here is that the participants ideas about research include a form of exchange underpinned by an unwritten contract. It is clear to the participants what they gain but not the price that they need to pay, leading to suspicion of researcher motives. As with Fairhead et al.’s experience in the context of the PVT in The Gambia uncertainty about the specific “transactions” in this relationship leads to suspicion and misunderstandings [169].

When rumours were reported, interviewees indicated that negative views of participating in CAPS largely came from those not in the study or from those in the control group that had not yet received their cookstoves. Similarly, some of those that reported hearing no rumours of satanism, did say that their friends and neighbours complained that they had not received the cookstoves as they were not eligible or were in the control group. When residents of CAPS villagers who were not eligible to enrol in the trial (as they had no children under-5) raise issues of satanic intent of researchers this could be viewed as a form of resistance, a riposte to the perceived unfairness of the trial. Scott suggests that rumours and ‘malicious gossip’ are ‘symbolic resistance’ and indicate intent; these actions are not neutral but ‘a partisan effort’ [352].

The CoLT member from the same village where all interviewees talked about satanism matter-of-factly reported that people made a link between the noise that the cookstove fan made and rumours of blood sucking. Her opinion was that these rumours came from non-participants who were envious, 'they wanted to discourage their friends' but really they wanted the cookstoves themselves. (C4) Another CoLT member reported that there were no 'anxieties' about the cookstoves, only with the previous study ACTia when people were complaining that researchers 'were extracting a lot of blood from children' and 'becoming rich by selling that blood'. Her opinion was that it was the non-participants that 'were frightening the people'. (C2) Whereas with CAPS she said that she had heard no adverse rumours from study participants who welcomed the study.

These ideas of rumours about blood taking and satanic intent resulting from envy was also raised by fieldworkers and a straightforward explanation of jealousy does seem to be plausible. However, it is notable that both CAPS participants did not generally just dismiss the concerns of their non-participant neighbours but considered them carefully and were often worried by them. The narrative that developed can be summarised as "we will see for ourselves" and is not denying that satanic intent is possible or even unlikely. There are clear indications of tensions between participants and non-participants in the context of transactional views of trial participation. Part of the balancing of risks and benefits by trial participants therefore involved negotiating these "rumours" and their own concerns about their part of the "research bargain". This entails putting trust in MLW not to 'get bad things and give them to us' (CTP V4) and the ongoing relationship with MLW and the overall trust in the institution is also part of the decision about whether to participate.

In addition, the impact of such rumours is downplayed with references to illiteracy and people becoming more knowledgeable over time. For example, the female fieldworker suggestion that beliefs that the cookstoves take blood are because of 'the literacy level' (FF2) and the CAPS participant suggestion that people spread worrying rumours 'as they were illiterate' (CTP V4). A male CAPS participant suggests that illiteracy can be "overcome". He initially describes rumours resulting from the use of air monitoring equipment in some homes, with concerns that the equipment was 'pumping blood' when running overnight. He made light of his own experience of wearing an air monitor in the field and sleeping with it in his house saying that nothing bad happened. He thought that the same kind of ideas led to suspicions of cookstoves:

'When it's in the house and we switch it on the fan makes a noise yes, so because of illiteracy [people thought] that the fan inside which goes around and provides the air...is pumping blood. Yes, but when the people became literate, they saw that it does not pump blood.' (CTP V4)

The male fieldworker FGD group are quite dismissive of satanic rumours suggesting that they are in every study at differing levels and less in urban studies and that part of the fieldworker role is 'to find the degree of it'. (FM1) However, when discussing whether there was any resistance to using the cookstoves the suggestion was made that this was linked with ignorance and 'so we had to polish out that ignorance in them'. (FM5) In addition some women were seen as incapable of understanding information given to them 'as not all have the literacy level' (FM6) and larger and poorer households were also seen as less "literate" and compliant with the trial. (FM2)

As described in Chapter 3, Englund found that in Malawi that illiteracy is seen as a marker of general ignorance and as seen as a contributing to the "misunderstandings" of marginalised people [132]. He explains that this is in part linked to illiteracy being a synonym for ignorance in the Chichewa language but is also a factor in the perpetuation of elitism in Malawian society [132]. In these data it seems that what is meant is ignorance or lack of knowledge about CAPS, as demonstrated by the statement 'when the people became literate' and that what is reflected in these statements is the downplaying of subaltern experience and a promotion of the "modern".

Even those who associated rumours with "illiteracy" seem to be suggesting that an understanding that the cookstoves and other equipment were harmless needed to be developed and was not taken for granted. At the core of these narratives is the concept of trust, in CoLT members, fieldworkers, researchers and in MLW as an institution. The existence or development of trust that the cookstoves were not a mechanism for blood taking, clearly varied between individuals, families and villages and over time.

This is reflected in the findings of Fairhead et al. who described how the specific 'intra-household' and 'intra-village' related circumstances of individuals, contribute to their decision making about the risks and benefits of trial participation [169]. The authors also found that trial participation was often a source of contention between husbands and wives with the former generally being more negative and women

more likely to emphasise the possibility of improved infant care [169]. While in CAPS there was mention in fieldworker data of husband's disapproval leading to trial withdrawal in general CAPS participants of both genders described similar risk assessment processes. Although it must be remembered that only CAPS participants, that is, those that decided the "risk" was worthwhile were included in this study.

#### 6.4.4 Conclusion

The first conclusion that can be drawn from this analysis is the persistence of blood taking rumours in the absence of any blood collection in the trial and how this is linked with trust in MLW. A syncretic "blood logic narrative" was constructed about the cookstoves (although also influenced by contact with air monitoring equipment) to "explain" how blood may be collected by researchers without any obvious enabling mechanism.

Secondly, an important part of decisions about whether to be part of CAPS were individual and communal dialogues about the risks and benefits, also linked with trust. Participants generally appeared to take the risk of satanic intent seriously but weighed this against obtaining cookstoves (and pots) and with the continuation of a positive relationship with fieldworkers and the wider MLW institution. This "transactional" approach to trial participation is at odds with the biomedical ethical information and consent process but has been observed in similar settings, for example [169, 175]. An important part of these narratives was the idea of being "inside" or "outside" the study with tensions resulting from the exclusion of ineligible neighbour contributing to negative rumours.

Thirdly, these data show the persistence of development narratives of progress, here related to the idea of understanding and acceptance coming from literacy and the end of "ignorance". This was particularly notable in fieldworker data, for example in the downplaying of rumours in the male fieldworker FGD and CoLT members were also but was also found in participant interviews. This highlights the intermediary SLB role of fieldworkers and CoLT members and the suggestion made by Englund (see section 3.1) that people in such roles may seek to distance themselves from their charges in order to maintain their own more powerful position [132].

Finally, referring back to the initial encounter in Village 5 that started this exploratory journey into the role of satanic rumours and blood taking in the development of syncretic narratives. The CoLT member from this village was very clear that there

had been no problems at all in his village and directly linked this with a call for further research as below:

I: 'So, do you know anything about what the people said concerning this study?

C5: The people said they wish the study like this one CAPS was extended.

Many people admire this study. Yes, so could you please extend our request that "people here want to be involved in a research like the CAPS study"

I: Where there any criticisms that you heard concerning this research?

C5: Aaa, here at (V5), I shouldn't lie I did not come across any criticism. The people are so grateful, and some people come to me asking when another project will be introduced, they are looking forward to taking part

I: But you didn't hear anything, even in the beginning?

C5: They were just happy'

This was also the same village where the CoLT member's attendance at the Photovoice FGD created tension and participant interviews were strained and perfunctory (see Chapter 4 section 4.3.4.4). The point here is not that satanic and blood taking rumours and beliefs were "hidden" in this village but to highlight the complexity of such narratives which makes them both difficult but interesting to explore. The "local" social relationships within families and villages are intrinsically linked with the wider relationship with MLW mediated through the trial "SLBs" and underpinned by issues of power and trust.

## 6.5 Overall summary of chapter

In this chapter, I argued that CAPS did not and could not stand alone. In the perceptions of many of the participants it did not just follow ACTia but was a continuation of it. As blood was taken in ACTia, the link between CAPS and the satanic idea of blood taking was therefore established at the outset. This highlights the pervasive influence of the research context.

In addition, by accepting the trial particularly into their households, participants were demonstrating their trust in MLW, via the fieldworkers, CoLT members and researchers. They needed to be able to rebut rumours and insist that the cookstoves were not satanic and did not suck blood. Ideas of blood sucking were used by non-participants as a form of resistance and of demonstrating that the trial was not fair,

that is, that not everyone received cookstoves. Resistance is not always targeted at the at the source of oppression and as in this case can have an impact in the form of changes in practice such as additional visits from fieldworkers [353]. The rebuttal of rumours was also a process of negotiation within the community. The participants were not saying that satanic beliefs are impossible or nonsense, just not they were not applicable in this case because MLW could be trusted not to do any harm. They may also have weighed up the pros and cons of participation and decided that from a transactional perspective, it was worth the risk.

This trust appears to be linked with the idea that pneumonia has gone. By accepting that MLW could be trusted and rumours could therefore be dismissed, participants may then have extended this trust to encompass the belief that pneumonia “had gone”. Although on the other hand, these narratives may have a strategic purpose. If someone brings cookstoves because they “fix” pneumonia, then by saying this is true and that this should continue, you may gain more cookstoves or other valuable items. In any case, suggestions that the cookstoves eradicated pneumonia are unhelpful and potentially harmful.

The unanticipated benefit of cookstoves as not needing breath for lighting and use but instead “blowing themselves” was identified. Physical strength and stamina are very important in a community that relies on farming, collecting wood, walking long distances, and when people may be hungry. Participants link good health with being able to provide for their family and whereas strength is traditionally said to reside in the blood, it is also linked here with “blowing air” and the physical demands this makes on bodies, particularly those of women. The physical effort of blowing on the fire with your head almost on the ground can be considerable and is more difficult for pregnant, disabled or older women. Therefore, a feature that saves energy is prized. This finding also emphasises the benefits of taking the views of “illiterate” cooks into account and highlights the missed potential that can result from paying insufficient attention to indigenous cooks and promoting the priorities of the powerful.

As a final point I would like to return to the social model of health described by participants in the first section and particularly the emphasis on harmony and good health within Chikwawa households and community. As discussed in the Chapter 5, insecure livelihoods and poverty contribute to emotional distress and in this chapter, we have seen how issues of power and trust can contribute to distressing rumours about satanism and blood taking. Clearly clinical trials that exclude some of the



population have the potential to cause disagreements and resentment [169, 172, 354] and has been shown in this chapter to foment rumours of satanic practice. Many participants in this research study, CAPS participants, CoLT members and fieldworkers took the opportunity in IDIs to advocate for more or maintenance of cookstoves on behalf of others, usually when asked if they had any final words. For example, the CoLT member in Village 2:

‘My additional comment is that now that this CAPS study has ended, they should have found a way that these stoves should come again and everyone in this kind of village not excluding anyone should be given cookstoves. It means everyone would be cooking on the cookstoves and maybe we would see a change, maybe on the side of our health.’ (C2)

The design of CAPS (and other RCTs) has the potential to disrupt social relations within communities and claims such as the above, for equity and fairness, provide another example of the differing priorities and perceptions of researchers and research participants and the dominance of the social model of health in Chikwawa.

The concept of medical syncretism has facilitated a rich exploration of perceptions of health within the CAPS trial that challenges the dominance of the biomedical approach and suggests that a greater emphasis on wider narratives of health in research communities, would be valuable.



## Chapter 7 - Photovoice, Ethics and Power

### 7.1 Introduction

The groundwork for this chapter was set in Chapter 3 where selected theories of development were described and the concept of hierarchies of knowledge was introduced. The links between knowledge and power, and the idea of power as a pervasive presence in social relationships was explored. In Chapter 4 the participatory nature of Photovoice methodology including the idea of “giving voice” was critically examined and the idea of a participatory continuum which emphasises the power shifting basis of participatory methodologies was introduced. It was suggested that the theoretical basis of Photovoice and its emphasis on the raising of critical consciousness should underpin all Photovoice research but that the shifting of power is challenging and often limited [355, 356]. This dilemma is reflected in the third research question:

‘What are the challenges and opportunities from an ethical perspective of using the participatory methodology Photovoice, in the context of a large-scale clinical trial of a cookstove intervention in a low-resource setting?’

In this chapter I will explore the emancipatory potential of Photovoice in this context in two main areas: **representation and advocacy**; and **“empowerment”** as outlined in Chapter 4, section 4.4.3. These discussions are under-pinned by the ideas of visible, hidden and invisible power as introduced in Chapter 3, and the Foucauldian concept of power as having positive as well as negative potential [136]. A common thread throughout the chapter is how power and resistance is expressed through narratives of CAPS participants and SLBs, and how attention to these narratives highlights opportunities for positive change and is an integral part of ethical research.

The next section will have an emphasis on the power dynamics demonstrated in narratives of both SLBs and CAPS participants. As introduced in Chapter 3 and discussed in relation to livelihoods and perceptions of health in the previous results chapters, the power of MLW as a research organisation was conveyed through the CAPS fieldworkers and village CoLT members.

In section 7.2.3.2 case studies will be used to illustrate how three selected Photovoice participants approached Photovoice and explore their narratives with emphasis on expressions of participant expertise and autonomy. These narratives also suggest how the Photovoice methodology and particularly the selection and

discussion of participant images can highlight the power relationships inherent in the research process and within communities.

In section 7.3, data relating to the exhibition of participant images will be explored through community response to village level exhibitions in the form of a series of questions collated by the MLW Science Communication Team.

The overall aim of the chapter is to explore the ethical basis of the use of Photovoice in the context of this study with emphasis on how participants were represented and the possible ways in which this may be “empowering”.

## 7.2 Narratives of power in the context of CAPS

### 7.2.1 Introduction

Although social relationships and power dynamics within the household are important as discussed in Chapter 5, the wider context also needs to be considered. CAPS participants resided in study villages. That is, their village was randomised to be either an intervention or a control village. Enrolment into the study was firstly at the village level requiring authorisation from the village chief and then at the household level. As has been described, fieldworkers worked with CoLT members throughout the trial, from initial “sensitisation” through enrolment and during regular monitoring.

In previous chapters the participant view of CAPS as being closely linked with previous MLW based research, as part of an ongoing “research contract”, was discussed. The emphasis in the first part of the following section will be how trial participation in this context is a community activity and on the role of fieldworkers and CoLT members as the intermediaries between CAPS participants and MLW. The narratives of these SLBs will be explored to deepen understanding of underlying issues of trust and power that impact directly on recruitment and retention of CAPS participants, and on the ethical basis of research.

In the second part of this section, three case studies of CAPS participants will be used to explore how their narratives are also indicative of power dynamics within the trial and the community. These narratives resulted from the participation of the case studies subjects in Photovoice activities and this section will begin the exploration of the challenges and opportunities of using Photovoice in this context.

## 7.2.2 Positionality and power in CAPS villages

### 7.2.2.1 Overview

The starting point of CAPS and most clinical trials is “sensitisation”. Dierickx et al. describe this process as community meetings that are a ‘first step in getting access to’ communities to share study details [357]. They describe how it is not necessary for everyone to attend but important to have ‘key figures’ present who can explain the research to others afterwards [357]. In the context of CAPS, sensitisation meetings were held in each of the CAPS villages after receiving agreement from the village Chief. An internal MLW document also states that the responsibilities of CoLT members include ‘sensitizing households about a specific study they are working in’ (A Guide for managing a Community Liaison Team, 2015).

A female fieldworker (in the female fieldworker FGD) makes clear how villagers might have felt compelled to sign up for CAPS after village enrolment and sensitisation. She explains that there may be a ‘problem of the Chief giving them pressure’ and how before any study starts the Chief is visited and if agreeable for his or her village to participate will ‘mobilize the people in the village’.

‘So, some of the Chiefs, it’s like their culture they say, “OK, if you are not participating in this study then if another one comes then you will not be able to participate as you refused this one”. So, it’s their tradition, it’s there, I think nobody can stop that, it will still be there.’ (FF1)

The idea of individual participation in trials bringing community benefit also came out clearly in the IDIs with CoLT members. For example a plea for further involvement in MLW research for his village ‘so that lives can change’ (C5) or how CAPS may lead in the longer term to cookstoves being distributed to everyone and ‘our life will then go well’ (C2).

My own experience of community sensitisation illustrates the “black box” element of this process. I observed a theatrical presentation about the CAPS trial at the northern Chilumba site that was greatly enjoyed by the village audience but found it very difficult to discover what exactly was communicated during the session. In general, there is also little research about the impact of community sensitisation on decisions about whether to join a trial [357]. In a study of ethical dilemmas in research in the context of a rural research centre in Kenya, Molyneux et al. found that community leaders described their role as one of giving advice and easing of ‘mistaken fears’ and not of making decisions on behalf of others in their community [155].

Several studies have highlighted the ethical challenge of research participants enrolling in studies to gain better healthcare [155, 157, 169] but this does not appear to be the case with CAPS where health benefits were more indirect. CAPS was also a novel study in Chikwawa because it involved the distribution of cookstoves, solar panels and cooking pots, that is, participants gained something tangible. The ideas expressed by fieldworkers and CoLT members above indicate that CAPS villagers saw the research as part of a continuum and that some were keen to be seen as “good” research participants who actively engaged with the research process, not just their own benefit but also for the benefit of the community.

It appears that in the context of CAPS, Chiefs and other community leaders, can influence not just community but also individual study participation through their positions of power. The concept of sensitisation is also indicative of unequal power dynamics and of the idea of research as a biomedical and controlled process. As a verb it is defined as ‘to cause (someone or something) to respond to certain stimuli’ [358] and seems largely about imparting knowledge which will then lead to “correct behaviour”. Absorbing and acting on this knowledge as designated by the overarching (and powerful) research institution MLW may then lead to community and/or personal benefit in the present or in the future.

In the next part of this section, the positionality in the power system of CAPS fieldworkers and CoLT members (SLBs) will be explored. This analysis will be informed by street-level bureaucracy theory with the aim of gaining a richer understanding of power dynamics expressed in SLB narratives.

#### ***7.2.2.2 CAPS Street level bureaucrats and power***

In Chapter 3 street level bureaucracy theory was introduced and critically examined. It was suggested that the SLB group of CAPS workers have often conflicting demands due to their intermediary positions and need to make decisions on the ground. The emphasis in the following discussion will be on how their own narratives illustrate the power dynamics inherent in their SLB roles. The suggestion is that these narratives indicate ethical dilemmas in implementing CAPS requirements and how SLBs seek to preserve their “powerful” positions, including through communication, including sensitisation, and monitoring.

A male Fieldworker FGD participant explained that CAPS was different from other studies that he had been involved with as it involved ‘apparatus’ and was therefore ‘more challenging’. He suggested that some CAPS participants were not able to

differentiate between the CAPS cookstove and others distributed by 'relief' organisations leading to them 'misusing them, even up to the point of selling them'. This refers to the distribution of basic clay *chitetzo mbaula* cookstoves after floods in Chikwawa. A female FGD participants suggests that CAPS participants were not able to use the cookstoves 'according to the protocol'. These ideas of 'misuse' and participants not following instructions illustrate the "gap" between "policy" and reality on the ground that is inherent to SLB theory. The specific difficulty with CAPS appears to be that fieldworkers were trying to control everyday activities and not those that might be considered to be in the biomedical arena, such as vaccinations or administration of drugs. In other examples of MLW research, such as the previous ACTia trial, the intervention was directly conducted by field workers or clinicians but in this case the intervention relied on specific behaviours by community members in their daily lives.

The fieldworkers tried to manage this discrepancy through 'sensitisation'; this had to be done 'time and time again so it was tough going' (FM5). They referred to the difficulty of communicating exactly why the cookstoves were provided and what participation in the study entailed. One of the female fieldworkers described in detail the problems encountered on 3-month check visits. The field workers became aware that some participants were just using their cookstoves around the time that their regular visit was due; they would 'start polishing them up' then. She said that it helped if there were stove use monitors (SUMS) on some cookstoves as participants thought that use of that cookstove was automatically reported to the fieldworkers, 'there was a rumour that it speaks'; in reality data was downloaded when the SUMS was collected. With other participants, different strategies were used such as threatening them with withdrawal of the stove or by saying that the fieldworker would return 'maybe next week or the day after tomorrow' and would expect to find the cookstoves charged and being used (FF4). Another member agreed that 'spot checks' were useful and that 'even the CoLT members were checking' (FF2).

A male CoLT member from Village 1 provides an interesting description of his supervisory role. He says that 'the study went on very well, because I was able to monitor the participants' and that he 'played a big role. Because I was able to do what the bosses at office would want me to do.' He reports that initially people were reluctant to use the cookstoves but when he started 'monitoring and encouraging', they started using them. He describes this process as 'more like forcing them' until 'little by little they started using them and then they realized that the benefits of using

them were huge'. He expands on this further by saying that sometimes he would 'drop from his bicycle' when passing households if he saw them cooking on a 3-stone fire. (C1) His attitude is paternalistic suggesting that he knows best, and that increased cookstove use shows that his advice was correct.

Fieldworkers also described the difficulty of confronting participants about non-use of the cookstoves and of changing behaviour, but they agreed that they had to do this 'to improve the quality of the data' (FF3). In the male fieldworker FGD a participant described how introducing cookstoves was difficult because 'we are trying to convince somebody to stop what he has been doing since childhood through to adulthood. So culturally to adapt from what you have been used to, to keep on with something new, sometimes it can be difficult to change... and happens gradually' (FM2).

There was also general agreement that 'ignorance' and 'illiteracy' contributed to problems getting participants to use their cookstoves consistently and as noted by Englund (see section 3.3.1.3) and discussed previously, these two terms appear to be conflated. For example, a male fieldworker said that he had noted when visiting participant homes, that it was the more literate householders who were using the cookstoves, 'so one of the contributing factors was literacy level and the environment of the household'

As Englund describes, the "professional" language of research workers in Malawi is English this and their higher rate of literacy than the general population may "separate" them from the general populace [132], in this case from the CAPS participants. However, even in the exercise of their own power, CAPS fieldworkers were indicating that their own position in the power "network" requires them to act in certain ways. Their success in their fieldworker role and most likely further employment depended on managing CAPS participants "according to the protocol". Fieldworkers also have precarious livelihoods as they generally employed for the duration of a particular study and continued employment may depend on meeting the study aims. It appears therefore that part of the challenge for CAPS fieldworkers is both their distance from and their closeness to the community they work and live in. This aspect of their role is common to CAPS CoLT members specifically but also Community Health Workers (HSAs in Malawi), as has been explored in many studies [359, 360]. For example, in a Malawian study into how interpersonal relationships of HSAs impacted on their practice and performance, the authors



found that their 'intermediary means that they have multiple relationships to manage and build with implications for their performance' [361].

Common to both CHWs generally and CAPS SLBs is that living amongst study communities presents ethical challenges. This links with Montgomery and Pool suggestion (introduced in 3.1) that recruitment of clinical trial participants is not simply a scientific process but also has social consequences [134]. CAPS fieldworkers and CoLT members have to navigate ethical dilemmas on behalf of MLW and may also bear the brunt of community dissatisfaction. Kingori suggests that 'frontline data collectors' including fieldworkers have 'numerous competing interests which they must reconcile in their practice of bioethics' [362]. She describes how data collectors in Kenya, were expected to implement ethical research as interpreted by others and how in practice this resulted in them valuing 'justice and beneficence over autonomy'. Kingori explains that this discrepancy is not because due to differences in "African" and "Western" cultures' but because of their position at the 'coal face of implementing' research procedures [362].

The female CoLT member from Village 2 also describes how she had to deal with requests for cookstoves from those in her village who are not eligible (no children under-5) and for participant cookstoves to be fixed. This task extends beyond the official end of the study which also brings with it questions about the study results and whether more studies and cookstoves will be forthcoming. She explains that when CAPS ended 'most people had anxieties that this is the way it is now...will they give us more stoves again, and now that the study has ended like this, are we going to hear the results?'. (C2)

Similarly, a female fieldworker passed on the concerns of people who had been excluded from CAPS as they did not meet the selection criteria including 'old women, old men' and explained many in this group had asked how they might prevent pneumonia without cookstoves. She asked that in the future these people should also be remembered. (FF5) One member of the male fieldworker group suggested that not 'handling' these questions well, 'can bring in distrust'. He also identified one of the 'gaps in most of the research at MLW' as not bringing the results back to the community in a timely manner. He suggested that not coming back with the outcome of CAPS would 'do harm slowly' and could have a 'huge impact in the future' as 'slowly, slowly people will start losing trust'. Also, that if this was not done then researchers in the future would have difficulties finding research

participants. (FM7). Note that this discussion took place before the CAPS dissemination film was shown in enrolled villages as described in 4.3.4.4.4.

By November when the interviews were conducted, cookstoves had been distributed to the control villages and a male fieldworker suggested that this will make future studies easier as CAPS villagers have 'started believing in us because we fulfilled our promise', and that this has 'built confidence between the MLW and the community' and in that way CAPS was a 'great achievement'. However, he also thought that 'confidence will be even stronger than before' when the CAPS result is disseminated and then he will be 'will be happy to be around at that time and deliver the results to the community'. (M1 IDI)

The role of fieldworkers fits closely with the "classic" definition of a street-level bureaucrat. The fieldworkers were tasked with "translating" the study protocol into fieldwork activities and this was clearly challenging and called for the exercise of discretionary power and of improvisation. They had to make pragmatic decisions, for example inserting impromptu visits into their schedule and there are indications that some participants (the "literate" ones) were viewed more positively than others. Kingori found that as the 'frontline data collectors' in her study were village based, their day to day contact with participants, visiting homes and witnessing challenging living conditions 'altered their ethical imperatives'; they needed to be more than research employees 'but rather to be human and emphasise with those in need' [362].

This is reflected in an interesting and positive "side-effect" of the need to spend more time in village households reported by two of the fieldworkers in their IDIs. A male fieldworker said that he had been brought into closer contact with the community and that this had been beneficial.

'I would say that through CAPS I have learned a lot, how to communicate with community ...I am now well known in the village in the community because of CAPS unlike the other studies which you can just go to a very few selected households but CAPS it was like almost half or 3 quarter of the village we need to go to. .. by the end of 24 months follow up I have visited almost each and every household which makes me so happy and sometimes it's like when you are in the market people say, "aa are you still around?", yes so I say ooh people still recognise me (laugh).(IM1)

A female fieldworker makes a similar point, saying that the additional householder interaction required for CAPS, was enjoyable and 'it was really nice that we learned from people in the villages'. (IF2) In both cases these fieldworkers stressed that their interactions with participants were gratifying and also that the experience had been educational. In some ways, the learning aspect is surprising as the role of fieldworkers depends on close contact with participants but on reflection the difference appears to be (as Kingori indicated) that CAPS took them inside people's homes.

CoLT members have an even closer relationship with residents of CAPS villages as they themselves live there and may also hold the dual role of CAPS participant. As researchers in Malawi [152] and in Zambia [363] have noted, the stated role of CoLT members and other community advisory board (CAB) members, to represent their communities and to minimize the harm from research studies, can be compromised by their instrumental role in the research process. CAB members may also be called upon to build trust within research trials but may lack power in relation to researchers 'to influence the research agenda' and 'reduce the potential for exploitation' [363]. The role of CoLT members in the recruitment and retention of CAPS participants highlights this tension between representing community interests and carrying out monitoring tasks that were also seen as part of their remit.

This "surveillance" role could be understood as part of the productive power of biomedicine resulting in the creation of new subjectivities. There are also links with the Foucauldian idea of disciplinary power. Foucault used the metaphor of the panopticon to illustrate that even if surveillance is 'discontinuous' it may still result in 'a state of conscious and permanent visibility' and the 'perfection of power' [364]. In relation to CAPS, the oversight (or potential oversight) of fieldworkers and particularly CoLT members of activities within or close to participant's homes could be seen to have just such an effect. Using Foucault's framing, although MLW may be at the head of the pyramid, the whole research environment is a 'piece of machinery' that 'produces power' through a 'network of relations' including between SLBs and study participants. However, Foucault also said 'where there is power, there is resistance' [365] and the methods used by SLBs to "enforce" compliance with the trial, for example introducing extra visits, are a clear indication of 'petty acts of insubordination' [143] of trial participants, a "hidden resistance" to hidden power.

References to other MLW studies in relation to CAPS shows how the trial is “embedded” in the MLW research environment and is taking place in a highly researched environment. CoLT members are on the “frontline” when the requirements of research studies clash with local desires and norms. If an ideal scenario for CoLT members is that they provide a “conduit” between communities and researchers, their closeness to the community and the demands of research studies may also mean that they are “squeezed” from both sides.

Nyirenda et al.’s study of the role of community advisory groups (CAGs), provides useful insight into the role of CoLT members [26]<sup>10</sup>. The publication was part of a wider research study about community engagement in health research and focused on the recruitment and functioning of Community Advisory Group (CAG) members, now known as CoLT members. The authors describe the background to setting up CAG and CoLT groups. They suggest that these types of groups are seen as a vital part of ethical research particularly in low income settings where community engagement helps researchers to ‘design research that responds to concerns in a community, improve trust, relevance, success and sustainability of interventions’ [26]. They report on evidence from literature on challenges with such groups. These include ‘limited understanding of health research, monetary expectations, dependence on researchers for finances, and lack of authority to influence decisions concerning research’. They concluded that:

‘The intended role of the CAG members to MLW Science Communication was to identify potential harms and represent community concerns to researchers. Some research staff, however, engaged CAG members to facilitate communication towards the communities and help in implementation of research [26].’

Most participants in this research said that they were ‘the bridge’ between researchers and community members, as illustrated in the following quote. “I was chosen to be the eyes and ears of health care workers, researchers and community members”. However, this was largely reported as a one-way “bridge”, CAG members saw themselves as accountable to researchers but did not think that researchers were accountable to them; ‘they defined their role as a form of employment or hierarchical duty where the orders came from above’ [26].

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<sup>10</sup> All the CoLT members interviewed as part of this study had initially been recruited as CAG members in 2009 when the programme was initiated

The authors suggest that 'CAGs were not effective in representing community interests or ethical relevance' and therefore 'can be categorised as tokenistic'. They say that their findings 'are consistent with other research which showed that CAG or CAB members struggle to perform the expected roles of reducing exploitation during research but see their membership in CAGS as a form of (possible future) employment' [26]. See also section 5.3.4.5 where CAPS CoLT members clearly communicated that they saw their role as employment, albeit of the same insecure nature as other employment opportunities available to them.

Pleas for information about what will happen to cookstoves now that the study has finished and for the results to be brought back to the community were common throughout fieldworker FGDs and interviews with fieldworkers and CoLT members. This illustrates the tension that Lipsky and other identified as inherent in the work of SLBs. Gilson suggests that in the health sector workers are often assumed to act in the best interests of their charges. However, the two mindsets identified by Lipsky, 'the professional involving discretion and autonomy and the bureaucrat, compliant with supervisor's directives' results in compromise [151] and pressure on individual SLBs. It is notable that in this qualitative research study which provided the opportunity for SLBs to share their concerns, there was evidence of bureaucratic motives and actions but also 'professional' concern for CAPS participants.

### **7.2.2.3 Summary**

In summary, this exploration of the role of SLBs within the CAPS trial has highlighted how issues of power and trust are inherent to the context. The process began with the recruitment of trial villages through consultation with the Chief. Both fieldworkers and CoLT members then monitored compliance with the trial, with the ultimate sanction that participants could be excluded. Although both groups clearly valued community harmony and the building of trust, this conflicted with their "paternalistic" guardianship role which emphasised enacting trial protocols and facilitating the collection of data.

The analogy of SLBs providing a bridge between CAPS participants and MLW (as described previously with reference to CoLT members) is a useful one, as is the question whether this is one-directional. Both groups have avenues to raise issues of concern about CAPS participants, that is, to promote participant concerns and needs but in the context of the CAPS trial this may compromise their own "elite" position. The narratives described above indicate how SLBs exercised discretion

and power through their roles in CAPS but how their autonomy and power was limited by the wider trial context and challenged by trial participants.

The relevance of this discussion to the ethical basis of Photovoice in the context of CAPS relates to the areas of representation and advocacy, and “empowerment” in the following ways. The SLB narratives in this study are congruent with the development discourse that equates illiteracy with ignorance and with trial participants as largely passive and is also part of the biomedical power system. SLBs provide a bridge but there appears to be limited learning or communication “upwards” in the power system. There are indications that the closer relationship that developed between fieldworkers and participants was positive for fieldworker’s wellbeing and also encouraged a more positive view of them as a source of “learning”. This could in turn result in increased trust in MLW which benefits the institution. However there appears to be little opportunity for fieldworkers to share their increased appreciation of participant knowledge with their employers.

If the aim of Photovoice is to circumvent or break-down existing hierarchical power relationships and to bring the strengths and concerns of the less powerful to those with more influence, then the intermediary role of SLBs is important to consider. This was highlighted during the pilot Photovoice study that preceded this research in which fieldworkers expressed unwarranted doubt about the ability of CAPS participants and particularly women to use cameras and actively participate in Photovoice activities.

### 7.2.3 Three Case Studies

#### 7.2.3.1 Introduction

The purpose of this section is to explore three different narrative approaches taken by Photovoice participants when discussing their images in interviews. This exploration is supplemented by demographic information provided at the sampling stage, field notes, data from observation for case studies 1 and 2 and from the village focus group for case study 3.

The below table shows brief details of the individuals included in the case studies. With regard to occupation, all the individuals described are also subsistence farmers. The final column indicates activities carried out with each person.

Table 7. 1: Case study details

Case study	Village	Initial	Gender	Age	Occupation	Activities
1	1	DK	F	30	Shop owner	Observation Photovoice training and image collection Photovoice FGD Interview
2	2	MH	F	27	Piece worker	Observation Photovoice training and image collection Photovoice FGD Interview
3	4	EM	M	36	Charcoal burner	Photovoice training and image collection Photovoice FGD Interview

In both cases the female participants took part in observation; there were no male participants in observation sessions. All case study subjects took part in Photovoice training, image collection and focus group discussion, and were interviewed. The aim here is not to compare the circumstances of the individuals in the case studies but to illustrate how Photovoice provided opportunities to explore complex power dynamics through individual narratives collected during the research process. The case studies were chosen purposively through considering how representative they were of the sample of 14 Photovoice interviewees but also pragmatically; all three were enthusiastic participants in the Photovoice process as reflected in their thought-provoking narratives. The two female participants were both keen users of the cookstoves but live in quite different circumstances both economically and geographically. Village 1 is notable because residents benefit from electricity access and is quite close to the trading centre, whereas Village 2 is much more remote and has few facilities. The case study subject in Village 1 is better off than her counterpart in Village 2 and appears to have a more stable “nuclear” household while the participant in Village 2 is in a polygamous marriage and lives in much poorer circumstances. There were only two male Photovoice interviewees, but it seemed important to provide gender balance as much as was possible. The male case study subject is from a different village from the females (Village 4) whereas the other possible case study was from Village 1. His occupation of charcoal burner was also of interest. Charcoal burning involves the collection of large amounts of wood which is then burnt to produce a lighter and more compact fuel that is particularly in demand in urban areas. It is an environmentally destructive and

largely illegal practice which is often carried out by low-income rural dwellers with access to forests.

### 7.2.3.2 Case Studies

#### Case study 1 – Female shop owner from Village 1

DK is a 30-year-old woman married to a schoolteacher. She has four children, two girls of school age and twins aged 30 months. Her home is well-built and situated in a brick-walled compound and includes the main house with a large veranda and other small buildings. These include a small cookhouse which is open on one side and across the courtyard from the house. She has electricity access including to the cookhouse.

She owns a small shop and also has income from livestock (goats, cattle, pigs, chickens). Her parents live nearby and raise chickens as a business which allows them to employ a 'houseboy'. Her demeanour is of a healthy capable woman and she clearly impressed the QRA when she received her cookstoves as she carried both away on her head, while also carrying her twins (then a few months old) on her front and back. During the observation session one of her older children returned from school wearing a smart school uniform and the twins (and their visiting friend) are washed and re-dressed in clean clothes before going inside the house for lunch.

DK is able to continue using her cookstoves even after the batteries stop working as she has access to electricity and uses them plugged in. She has a large stockpile of wood (she says enough for 1.5 years) outside her compound that was purchased in bulk from some local labourers who prepared and transported it for her. She is also able to buy maize flour in bulk, that is, by the sack, at the cost of 10,000 MK (approximately £10).

The emphasis of her narrative during her interview could be described as instructional. She describes how images of eggs and chicken rearing were taken to show others that eggs are an affordable and easy to cook relish and that rearing chickens provides both food and income. She appears to be targeting audiences inside and outside her community. For example, she wants to show that 'black people' can be self-reliant and to 'tell our friends' that Chikwawa people are only 'alive' because of maize.

She also takes images to illustrate that the stoves use less wood and that it is possible to use 2 at the same time so that meals can be prepared more quickly. She has strong views on the portioning of food and uses separate divided plates for family members. Her selected image (during interview) is related to this and shows 3 children, with 1 at the back eating from a plate. At the front is one of her twins who is washing his hands prior to eating. She explains that if they were sharing a plate then there would be nothing left for the younger child and if this happens a few times then malnutrition could arise.

When asked what she would say to others offered the opportunity to participate in a cookstove trial like CAPS, DK is clear that speaking against new things is a bad idea, she says that people 'are developing through innovations' and that it is best to welcome new things and not 'despise them' before trying them out. She makes the strong statement, 'this is our chance, so we better use it'.



## Case study 1 – Illustrative images



**DK selected image**



**Twins with their own portions**



**Cooking hut with power socket**



**DK and her bicycle**

## Case study 1 – Text associated with DK selected image (top left)

DK: This one yes as you can see this one, this older child is eating, the other one is delaying with washing hands, so he will find that the nsima is about to be finished...Which means the other one will not be satisfied but the older one will be satisfied, so that's why I said that if there is food it's good that each one should eat in separate plates either it's more or less but it's good to be giving them separately so that all the people should have equal share, but if you say let's eat as a group this is what happens, one is already eating the other one is washing hands...Which means the other will be malnourished if this happen twice or thrice...The other will grow but not the younger one who will be malnourished...(so will lead to) going to the hospital, the younger one will be sick because of lack of enough food because of eating in groups

## Case study 2 – Female pieceworker from Village 2

MH is a 27-year-old female in a polygamous marriage. Her husband's first wife has four children and she has three aged 11, nine and four. Her home is very basic, made from rough hand-made bricks, with a straw roof. She cooks on open ground next to her house or on the very small veranda. Like most Chikwawa residents, she has no access to electricity. She earns money through piecework as does her husband. She describes how they both leave home separately to see what unskilled work such as wood cutting or building labouring that they can find. Previously they rented land, but this was not economically viable, they spent 12,000 MK (£12) on rent but harvested only three sacks of maize<sup>11</sup>. She says that they do not even 'own goats' and 'we don't have anything'. Her parents and other family members live nearby and help out when they can. Her demeanour is of a strong cheerful woman, but she clearly lives in very difficult circumstances. During the observation session she cooks a very basic meal of mice and nsima (maize-meal porridge) and after sharing with a group including her son, she puts the food away for later, causing her son to cry inconsolably. She also explained that her oldest son could not attend school as she could not afford the uniform.

MH is very anxious that her cookstoves will stop working and takes great care of them. She will not let anyone else use them although the children are very keen to do so. She shows during the observation session and through her images, that she always empties the embers from the cookstove to prevent overheating and battery damage. She collects wood for cooking herself from close by and does not have a stockpile. The maize she cooked the day before her interview was obtained from the Dyeratu trading centre, she bought two basins at MK1200 each and walked to and from her village as she could not afford a bicycle taxi.

During her interview it is clear that she values and uses the cookstoves, but she is not specific about why (although she mentions health when prompted); she simply says that she is 'filled with happiness everyday' when she uses her cookstoves. She is keen to show that she cares for them and uses them correctly. In her narrative, she could be said to be presenting herself as an ideal participant and/or one of the "deserving poor". Her precarious financial position and lack of status is also made clear. For example, when referring to a picture of chicken being prepared for cooking on National Day, she describes how she made great effort to obtain it as even children 'will not allow' the eating of vegetables on this special occasion when neighbours are eating chicken. She says that her children also want new clothes like their friends but that this is not possible.

MH refers to several of her pictures as being in celebration and taken to preserve memories, including remembering when she had a camera and also taking images of the cookstove in use to show that she was happy. Her favourite picture is one of herself cooking, one of a series with the same pose but wearing different smart clothes. She explains that she took it as she was 'proud' to take part in this research and wanted it to continue' so that she would continue 'to be happy' and so things would not 'go backwards'. Her final comments in the interview are to reiterate how 'proud' she has been to participate and to make a plea for more cookstoves and in particular, for the newer steel-based ones that were distributed to the control group. This plea is not just for herself but others. 'Those are my additional words, I wish to have those, and several other people would like to have them.'

<sup>11</sup> Assuming this is a 50 kilo sack, 3 sacks would last a family of 4 for 4.5 months according to <http://www.thenewhumanitarian.org/news/2009/02/18/all-about-price-maize>

## Case study 2 – Illustrative images



MH selected image



Emptying embers from cookstove



Celebration chicken (National Day)

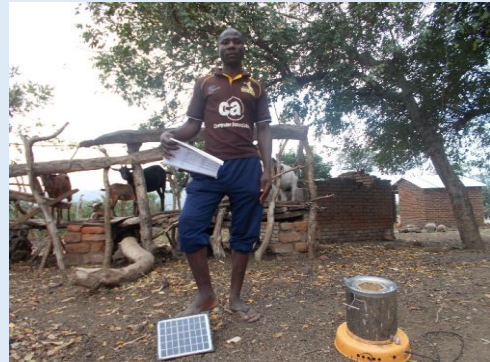


Image of desired 'new' cookstove

## Case study 2 – Text associated with MH selected image (top left)

MH: It should be this one. Because here I am cooking. I like it that I am cooking

Interviewer: What did you like?

MH: I was well dressed, while I was cooking using my cook stove. I was very proud that this research should not stop and that it should go on. Because it showed a good display while I was seated and cooking using one hand

Interviewer: Why did you dress like this on this day?

MH: I was showing that I was proud

Interviewer: You just dressed like this?

MH: Yes, I just dressed...I wasn't going anywhere. I was celebrating that these lessons should not stop. So that people should continue being happy in future. Because these organizations are very beneficial.



### Case study 3 – Male charcoal burner from Village 4

EM is a 36-year-old married man with four children, he also provides for his brother's two children and shares food with his mother. He lives in a basic brick build house with a small veranda where cooking takes place and he has no access to electricity. His main occupation is subsistence-farming with additional income from charcoal burning (according to sampling information). He explains that he took on responsibility for his brother's children as his brother's marriage broke down and it was hard for his brother to look after them. He mentions his farming activities very little during the interview and charcoal burning not at all. When asked how he may gain funds for bigger purchases he mentions growing cotton or piecework. This may be because charcoal burning is illegal in Malawi (although widely practiced).

EM was keen to show that he grasped use of the camera during Photovoice training. He volunteered to stand at the front of the village group and repeat instructions for camera use and for collecting images. This confidence is reflected in the interview content, particularly in the discussion of his images where he says that he can explain any of them. He appears to have approached the Photovoice data collection seriously and with two specific aims in mind. Firstly, to illustrate the impact of poverty, for example, by taking images of vegetable relish being prepared and eaten, and through his chosen image which is of children sharing small fruits that they have found. He is clear that 'the big problem is poverty' and that that it is wrong that the children are hungry and need to extract the small amount of nutrition from the *mfula* fruits. He makes a very interesting statement when describing his chosen image in 'it is the issue of poverty that is making us not to be changing'; this implies a view that people are not behaving in the way the researchers want them to.

His second main aim is to show how the intervention cookstoves are no longer working and therefore people have gone back to cooking on open fires. He wants to tell 'the bosses' that there is a problem with the cookstove batteries and that some people also do not have working solar panels. This is an issue he has clearly given much thought to, (possibly also a subject of discussion within the community) as he also says that if he could have a cookstove he would choose the intervention one and not the newer control stove. This is because, although the latter has additional valuable features, he thinks that the batteries are under-powered and that this will lead to problems. In the village focus group EM also raises issues about the solar panels being 'underpowered' and his disappointment that the planned training of villagers in cookstove maintenance did not materialise. He also often takes the lead during the focus group, at the image sorting stage and throughout the discussion. When it is realised that printed copies of his images are not available, he welcomes the opportunity to view them electronically.

His approach and narrative in the Photovoice process is in some ways investigative, he goes outside his home environment to find the stories behind what he sees, saying that 'in the midst of taking pictures, I was finding out more' and says that he wanted to collect pictures to show life in Chikwawa. His reasons for liking the cookstoves are not very clear; in the focus group he first said that this is because they were given as a gift, although when prompted by a female participant he also mentions that they cook fast and use less wood, referring to the issue with local pots he says that although the cookstoves 'destroyed a lot of pots' they were still helpful. It is interesting to note that EM's interview reveals less about him personally and that he generally looks outside his household. This may be linked to his lack of direct involvement in cooking activities.

### Case study 3 – Illustrative images



**EM selected image of children sharing fruit**



**Demonstrating camera use to the group during training**



**Sharing vegetable relish and nsima with wife and 2 youngest children**



**EM explaining the story about one of his images displayed on the laptop**

### Case study 3 – Text associated with EM selected image (top left)

EM: I can say that all of these pictures interest me because I was taking them with a reason ...the ones about cooking and the like, like vegetables relish etc. because I said that a lot of those showed vegetable relish, it is the issue of poverty that is making us not to be changing right. But also, there is a picture right here. I took that picture, if you can see clearly the children were hungry that time. So, if you can see the children clearly, there is *mfula*, do you know *mfula*? Yes, certain fruits, they break and eat. Yes, so this picture interested me because this was happening because of poverty just because of the season.

Interviewer: So why did you take this picture?

EM: Yes, it's the way I have explained the big issue about the picture taking, because when I came close to the children and saw what they were doing that time aaa I felt sympathy, although we eat the fruits, but I saw that it's not on. So, when I asked the children, they told me that they were eating etc, it is when I took a picture, before taking the picture I also asked them if I can take it and they accepted.

### 7.2.3.3 Case study analysis

These three case studies illustrate various uses of narrative in the context of Photovoice and illustrate that participant “voice” is presented clearly and purposively.

In Case Study 1, DK’s narrative suggest that she values the cookstoves because they are faster and allow her to be on time, they are convenient. She also has less concern about the battery issues as she has access to electricity. The cookstoves fit in with her life which is busy and help her to provide nutritious meals for her family which she clearly sees as important. In her narrative, her role as a capable wife, mother and community member is reinforced by the cookstoves. DK is better off than many others in her community. She lives in a sizable compound, her family have livestock, she owns a shop and her husband is a schoolteacher. Village 1 benefits from the opportunity of employment with Illovo Sugar and the Fairtrade community premium has allowed community improvements and electricity connection. This is an example of how in an area characterised by high levels of poverty, villages and the households within them are not homogeneous.

In a large-scale study which attempted to understand poverty from the perspective of the poor, participants reported that failure to meet social norms and participate in celebratory occasions was painful [366]. The authors concluded that this can lead ‘to a breakdown of social relations’ and that clothing and poor housing function as a ‘powerful social marker’ [366]. As Green suggests poverty can lead to ‘hopelessness, powerlessness, humiliation, and marginalisation’ [367].

This is reflected in case study three where MH’s narrative positions the cookstoves as a way of enhancing her life. Her selected image (1) is striking and revealing and can be compared with her struggle to meet social norms in the form of special food and clothes for National Day. Through displaying her expertise with the cookstove wearing her best clothes her narrative seeks to counter the negative psychological impact of poverty and as such this narrative strategy appears to enhance her self-confidence and well-being. It could also promote the idea that she “deserves” the cookstoves. She also indicates that taking part in Photovoice research was a positive development for her, it enables her to ‘preserve’ evidence of her advancement. Her anxiety about the cookstoves becoming defunct and her concern for looking after them through not allowing children to use them and always following instructions, is very clear. It seems that if the cookstoves stop working then she will lose more than just a useful item, she will also lose some of her precarious social

capital. Having an image that shows how 'proud' she was is therefore of value in the future and highlights her awareness of the precarity of gains, that can easily be lost.

The differing approaches to the cookstoves of these two women can be compared to that described by Wang and Bailis with reference to cookstove adoption in India (described in more detail in 2.3.2.3) where the authors found that lower caste women adopted clean cooking more readily, discontinuing use of older stoves whereas higher caste women used both as was convenient [368]. The authors conclude that cookstove adoption may allow those most marginalised in a community to gain a measure of 'social ascendancy' [368]. The same reasoning could be applied to the involvement of the more marginalised members of a community in Photovoice research, that is, being treated as an expert and actively participating through collecting images is more valuable for those with the least power. This group may seldom get the opportunity to express their expertise and to participate in novel and interesting activities.

In Case Study 3, the male participant also has a precarious financial position and unlike EM he cannot even stretch to buying meat on National Day (as he described in the Village FGD). In his narrative, his reasons for valuing the cookstoves are however more opaque. He appears to value technical items and welcomes the opportunity to display his technical prowess in the camera training session. As the image shows, the audience for this was primarily the largely female group although the camera trainer, a younger man from Blantyre was also of course present, as was I. In the focus group and interview he again emphasises issues around technical specifications and maintenance of the cookstoves. His dominance during the focus group was quite noticeable; he advises others about where to place their images during the sorting phase and plays a very active role in the discussion. As shown in the image in the case study, discussing his images on the laptop did not cause him any concern.

This approach and narrative strategy links with the androcentric bias of cookstove development identified by Crewe [133] and previously discussed in Chapter 3. EM appears to be positioning himself as having expertise in the technical side of cookstoves and of valuing them more for their technical attributes than for their efficacy in the home. He appears to be using his narrative and the Photovoice process to reinforce his gendered position as the person who is cooked for and not the cook. He is "doing gender" by aligning himself with the technical aspect of cookstoves and also of the Photovoice research process. His confidence is in direct

contrast to MH's yearning for enhanced status although he is also one of the poorer members of Chikwawa society. He is of course a man in a patriarchal society where heads of households give permission for their wives and children to be enrolled in CAPS. As was shown in section 5.3, men are also expected to be more outward looking, to go outside the home to earn money.

His case study shows the intersectional nature of power. A poor man who cannot even afford meat once a year appears to have more social capital than a poor woman and this is reflected in his approach to cookstove use and to the Photovoice process. His narrative strategy is also one of increasing his social capital by presenting himself as technically knowledgeable, which is one of the social resources available to him as a man. He appears to be using Photovoice as a narrative strategy for maintaining and/or enhancing his status. He also seems to be using the process as a conduit for getting messages to 'the bosses'; it is clear that as a researcher and representative of MLW, I had better access to the "bosses" than him and potentially the power to convey a message that will get things done.

As detailed in the case study, EM uses his interview and particularly the photo-elicitation phase to communicate two clear messages, firstly technical faults with the cookstoves and solar panels, and secondly food poverty, particularly over reliance on vegetable relish. DK also emphasises nutrition but in her case the emphasis is on efficient sharing of food to ensure that more vulnerable family members are not neglected, and on how a nutritious diet depends on growing and eating a variety of foods. As a poorer man suffering from food insecurity, EM uses the opportunity of taking part in a Photovoice study to advocate for more food for himself and his community whereas DK's images are primarily to show how others in her community could be helped by following her example. She is also keen that outsiders are aware of her own capabilities and resources and those of her community. The impact on MH's life of participating in this Photovoice study seems to be the most marked. She consistently says in her interview that having the cookstoves makes her happy and proud and refers to being involved in the Photovoice study as receiving a 'prize'.

It is interesting to consider who might be the intended audience(s) for these narratives and what this says about power dynamics. There is a contrast between the two less well-off participants (MH and EM) who appear to be appealing to more powerful outsiders and DK whose narratives invite the "audience" (in the local community and beyond) to appreciate her competence and resilience. Each of these three Photovoice participants had their own approach to image collection and the



'stories' that they communicated through these. These approaches appear to emerge in relation to their social positionality, including their economic status and gender. If the ultimate aim of Photovoice is to shift power, then it is important to understand that unequal power relationships exist not just between researchers and research participants but between participants. These narratives have illustrated the role that Photovoice can play in drawing attention to power dynamics but also how the methodology provides opportunities for self-expression and the communication of strengths and challenges to new "audiences".

Returning to the origins of Photovoice, Freire espoused the expansion of personal knowledge leading to conscientisation and the realisation that structural inequalities shape people's lives, leading to 'collective action for change' [369]. That is, through the sharing of personal experience, people see connections between these and are able to relate issues to their 'root causes' and develop 'solutions and strategies for change' [233]. This combination of individual "empowerment" and group action exposes tensions inherent within many Photovoice studies. Sanon et al. suggests that many Photovoice researchers overlook the original community level orientation of Photovoice 'social justice actions' and focus on the individual impact of the methodology [244]. Whereas as Wang and others have identified, congruent with the participatory roots of Photovoice, the emphasis should be on the building of both collective and individual capacity [242]. This links with previous critiques of the idea that cookstoves alone can lead to the "empowerment" of women without impacting on the wider socio-economic arena.

In the context of this research, the key question here seems to be whether anyone is listening; the Photovoice participants clearly have a "voice". These narratives indicate that there is an intended audience but the scope of this may be limited in practice to the research team and/or MLW. Ethical Photovoice research depends on expanding the range of knowledge dissemination to 'reach policymakers' [217]. It is useful however to consider a range of actors with power to create economic and social change which of course includes but is not limited to policy makers. These actors include MLW which raises a question of accountability, specifically whether MLW feels accountable to study participants in terms of their priorities and how Photovoice may enhance this sense of accountability. The next section will begin an exploration of this issue through an analysis of the question of conscientisation as expressed in the case studies.

#### 7.2.3.4 *Towards conscientisation?*

These three case studies provide a snapshot of the knowledge and expertise of the Photovoice participants and show they use narratives to communicate their priorities and position themselves as having agency. However, assessing steps towards conscientisation is not so straightforward. This is because conscientisation does not happen “naturally” in the process of Photovoice or other participatory methods but needs to be actively facilitated, for example through participatory problem analysis [370]. It was not possible or ethical to do this within this study, as I was not able to support the participants to act on the outcomes of such an exercise due to the limited nature of this short-term PhD project.

The issues that concern DK, MH and EM are similar, they all appreciate the cookstoves but realise that they are for the most part unaffordable and unobtainable in their community. The shortage of and the sharing of food is also an ongoing problem and the case study participants express this clearly and demonstrate their own strength and resilience in the process. The missing part of the “picture” is the audience for their concerns and how positive social change might be achieved.

Their explanations for selecting their favourite images are perhaps most indicative of critical reflection and also highlight how representation of Photovoice images needs to be carefully considered. In the case of MH, I have fieldwork images taken during observation, showing her normal daily dress which is much less smart than in her chosen image. She also took several images of field mice being prepared for the pot and cooked which is an uncommon practice in many parts of the world. Publication of such images may show the “reality” of her daily life but could also lead to attributional bias (see 4.4.3.2) and would clearly misrepresent MH in this case. That is, the image of mice prepared for the pot would draw attention to her poverty, locally as it indicates her family relied on this “free” protein source, but especially more widely in contexts where consumption of mice may have negative connotations including revulsion. The image she chose to represent herself showed her smartly dressed, using her up to date cookstove.

The selected image of EM is powerful because of the juxtaposition of the text with the seemingly innocent scene of children playing and DK’s image shows that she has clear ideas about how malnutrition could be managed in her community. She appears to be challenging the “othering” nature of development discourses that privilege northern narratives about poor communities, by highlighting the value of local knowledge and expertise.

All of the chosen images illustrate why Wang and Burris were clear when formulating the methodology, that considering images without their associated “stories” contradicts the ‘essence of photovoice’ [217]. However, this provided a challenge when organising an important part of the Photovoice methodology, that is the holding of exhibitions of participant images. This will be discussed in more detail in 7.3.2.

#### 7.2.4 Conclusion

This analysis of these three narratives shows how power relations within CAPS extend beyond both the gendered household dynamics discussed in previous chapters and the researcher/participant power relationship. Both sections show the complexity of this context and how the research environment, of which CAPS was a part, both shapes and is shaped by these power dynamics. The conflicted role of the SLBs sets them clearly in the middle of this maelstrom, trying to manage “mis-behaving” participants and meet the study requirements. The participant case-studies show how a clinical trial approach that positions the Chikwawa community as a homogenous group is flawed but also how these different “voices” are seeking audiences that can support moves towards positive social change.

In the next section the ethical challenges of presenting these “voices” to different audiences will be explored.

### 7.3 Using and exhibiting Photovoice images

#### 7.3.1 Introduction

As introduced previously the idea of situated visual ethics was used to inform decisions made in the study about dissemination of participant images. In line with the aims of the Photovoice methodology to use images to advocate for the needs and concerns of study participants, I attempted to facilitate the use of images in two ways. Firstly, to highlight the challenges and strengths of the Photovoice participants and secondly to draw attention to air pollution from cooking as an important issue detrimental to health.

Examples of image use include the publication of a fieldwork image and accompanying text in the Lancet [274] and the publication of both fieldwork and participant images in the LSTM Annual Reports for 2016-2017, 2017-2018 and the Global Asthma Report 2018. In these cases, I worked with colleagues at MLW to confirm the identity of the photographers, seek verbal permission for use of the images and to provide copies of the relevant publications to the photographers.

However, it was not until April 2018 that it was possible to work with Photovoice participants to select images for exhibition. These activities responded to the opportunity offered by plans to show a CAPS dissemination film in selected study villages and were organised and carried out by the MLW Science Communication Team; by this point the CAPS fieldwork team had been disbanded. Each of the five study villages were visited and meetings arranged with Photovoice participants to select ten images for village exhibitions. At the same time, two participants from volunteered to go along to the village exhibitions and explain their village's Photovoice images to the exhibition attendees. These exhibitions will be the main focus of this section.

I was not able to be present at the stage when images were selected for exhibition; this activity was planned and carried out by the Science Communication Team. However, I was present for two of the village exhibitions that took place in May 2018.

## 7.3.2 Village Photovoice exhibitions

### 7.3.2.1 Feedback from CAPS participants

A report about these village Photovoice exhibitions was produced by the MLW Science Communication Team. Information from this report has been included below verbatim (with small grammar corrections for clarity) from the section 'Most questions raised from communities'; that is, the most frequent questions raised during the Photovoice exhibitions collated into a list. Numbers have been added to the tables to allow easy reference in discussion and do not indicate ranking.

Table 7. 2: Photovoice exhibition questions

Most frequent questions raised by attendees at village Photovoice exhibitions	
No.	
1	What is the relationship between the Photovoice Study and the Cooking and Pneumonia Study?
2	What are the benefits that the Photovoice Study can bring to the whole community at large e.g. will the project consider food security and nutrition issues in near future?
3	What are the direct benefits of the study to study participants?
4	What are the benefits (on the part of study implementers) of conducting this study and using expensive devices like cameras?
5	Will the communities be able to access their photos in near future?
6	Why did it take so long to engage them from the time of project closure?
7	What is the way forward after collecting the images from these villages/ after bringing to light the challenges of the communities such as food security and hygiene?

### 7.3.2.2 Discussion

The above findings are problematic in some ways, in that it was not possible either for me to attend the sessions when images were selected for exhibition or to get a more detailed record of discussions at both the image selection and exhibition stages. It is also not clear what responses the Science Communication Team gave to questions. However, both the questions, and the observations and recommendations indicate how those involved in village Photovoice activities (not just the core 50 participants), critically engaged with the process and this was certainly my observation during the Photovoice exhibition sessions I attended in Village 4 and Village 5.

In each village the Photovoice exhibitions were held prior to the showing of the CAPS dissemination film. The exhibition content consisted of a two-sided free-standing board with prints of the participant images on each side. At each of these “stations”, the two village representatives stood and explained the images to those crowding around (see Figure 7.1 below).



Photovoice exhibition in Village 4

Photovoice exhibition in Village 5

Figure 7. 1: Images showing village Photovoice exhibitions

The questions raised in Table 7.2 illustrate the power inherent in the research process and how this is challenged and resisted. Questions 2 (benefits of Photovoice to larger community) and 7 (how to take action on challenges identified) are similar and make clear that the villagers have their own research priorities which they feel are not being met.

On the other hand, these questions also indicate the sense of powerlessness of the questioners. Food security nutrition and hygiene are all closely linked with lack of economic power and the lack of facilities and opportunities in Chikwawa; that is with the marginalisation of the community. The link with MLW provides an opportunity for change when other options are limited. Possibly the power of this group to effect change is limited to bringing these matters to the attention of others with more power. This is a point made by Wang referring to early Photovoice work with women

in Yunnan, where she suggested that the process resulted in women being able to communicate their needs to policymakers but did not allow them to have any impact on that policy. In social accountability terms this would be framed as enhancing “voice” without enhancing “teeth”, where the latter is the willingness and capacity of more powerful actors to respond [371].

Arguably Photovoice may impact at least on the willingness of those in power to act in response to the voices of the less powerful. This is congruent with Wang’s suggestion that ‘one reasonable objective of photovoice’ may be a shift in how policymakers view the ‘importance and legitimacy’ of the concerns of community groups and that the community groups themselves may also ‘change in how they perceive their ability to influence what policy-makers do’ [234]. As mentioned earlier, fieldworkers who doubted the ability of CAPS participants to use cameras were undoubtedly proved incorrect. This was in part “proved” by the pilot Photovoice pilot study which involved a smaller group (four households). In the post-pilot feedback session with the CAPS team in August 2015, the group was positive and there was general agreement that using the methodology to explore perceptions of cookstoves would be fruitful [207]. This suggests that involving a larger and more diverse group in Photovoice in this study, may also have encouraged the idea that there is untapped potential in the Chikwawa community. In addition, both fieldworkers and CoLT members observed that even those who were not “literate” could play an active and valuable role in research through sharing their knowledge and expertise. This links back to the data discussed in section 7.2.2.2 where fieldworkers described how they had learnt from participants through spending time with them in their homes. As Berger suggests, the images collected ‘bear witness to human choice being exercised in a given situation’ [372] and to the autonomy of the participants.

Question two and seven also suggest that in Chikwawa people see themselves as part of a distinct community that has challenges in common. Question five is also very interesting; ‘Will *the communities* be able to access their photos in near future?’, (italics added for emphasis). The inference behind these queries is that it is not just the Photovoice participants as individuals that took part, but the wider community. This links with how in this study Photovoice appeared to be in many cases a communal activity. It was clear that the cameras were not just used by the “participants” but also by other family members, friends and neighbours. There is of course a practical reason for this, in that participants often wanted to collect images of themselves carrying out cooking related activities. However, there were also examples such as with an older female participant in Village 4 who had very little to

say about “her” images and eventually says that ‘it was my younger daughter who works for Water for People who was taking these photos’. In general, however the communal approach seems to be reflective of the nature of life in Chikwawa. Some homes are within compounds, but as Photovoice images and data make clear households are rarely “self-contained”. At the interview stage when participants were asked who they ate with the previous day, several included other family members, neighbours and children’s friends in their descriptions. (This sharing was generally on a reciprocal but informal basis as discussed in 5.2.3.) Most houses within Chikwawa do not have a specific boundary and food preparation and cooking activities commonly take place outside. What constitutes a household in the physical and personal sense is therefore fluid.

This is not an issue that is discussed (as far as I am aware) in the Photovoice literature. There is generally an assumption that individuals collect images which are then discussed communally; in this case image collection also appears to have been more of a collective activity. Viswanathan et al. suggest that within participatory research, communities can be considered as ‘collaborators’ (other researchers use the term co-researchers) and that ‘people associate through multiple and overlapping networks with diverse linkages based on different interests’ [373]. This leads them to conclude that ‘the strongest potential for collective power to negotiate the production and use of knowledge’ lies with the community [373]. This is supported by my analysis of the three case studies where all of the participants positioned their needs and strengths within the context of the wider community.

Questions three (benefits to study participants), four (benefits of conducting study and using expensive cameras) and six (why so long between research and exhibition) are also linked in that they are indicative of and a challenge to, the unequal power relationship between researchers and research participants. Question four highlights an issue around trust that came up in the male fieldworker FGD (discussed earlier in this chapter) where delayed dissemination of results was linked to a breakdown of trust. A similar point was made during the interview with the CoLT member from Village 3 who when asked about the benefits of CAPS, said that the study wasn’t beneficial because when it ended the researchers did not come back and ‘talk to the women... they should say thank you like they did in the past study,’ even though the participants said ‘thank you from our mouth’ for being accepted into the study. On reflection she concedes that there may be a wider benefit ‘to the whole world’ and maybe also the Malawian government will concentrate more on the issue of childhood pneumonia. However, she finds it



difficult to pin down the direct benefits to the community except in the form of the cookstoves, many of which were defunct at that stage (November 2016). Question four also links with previous discussions of satanic practices and the idea that researchers may have an ulterior motive for bringing expensive equipment into the community. Although there is no direct allusion in the question to “blood-taking”, the suggestion is that (as with the cookstoves) a possible reason for using cameras was for personal gain of some sort and not for the benefit of the community.

Regarding the question of the ethical use of Photovoice and the possibility of shifting power and promotion of participant “voice”, the exhibitions and the collection of related questions and comments is I think a small step but also novel in the context of MLW research in Chikwawa. There are many “sensitisation” and science communication activities that take place and issues may be raised during these activities. However there currently appear to be few mechanisms for feeding back concerns and promoting the health-related priorities of villagers. As detailed in section 7.2.2.2, CoLT members do provide a liaison role and can act as spokespersons for the community, but this is largely related to specific studies and the flow and uptake of information from community to MLW is also constrained

### 7.3.3 Other exhibition opportunities

In ideal circumstances I would have liked to have been present when the Photovoice participants selected images for the village exhibitions, to have more details of the stories behind the images and to have worked with the participants to develop descriptive captions in their own words. However, the collection of a sub-set of participant images with descriptions provided by the MLW Science Communication Team (see Appendix 1), encouraged me to seek possibilities for their wider dissemination beyond the local context.

In October 2018 there was an opportunity to put forward five images for a Photovoice exhibition as part of the Health Systems Research 2018 (HSR2018) Symposium. The five images submitted were from the sub-set selected by the participants, but I wrote the captions and explanatory text (as required for submission). This entry can be seen on the HSR2018 website [374]. Three of the images, their captions and a digested version of the entry text was used on the exhibition board (see Appendix 2). I also worked with the LSTM Communications Team to create a short film about the Photovoice exhibition that was shown at the Museum of Liverpool with the aim of sharing this and the other Photovoice research outside the symposium context [375]. The exhibition boards created for the

symposium have also been used at exhibitions at the Fabric District Festival 2019 and in Toxteth Library as part of Black History Month (both venues in Liverpool).

#### 7.3.4 Summary

This discussion of the challenges of exhibiting Photovoice images in this study illustrates the use of visual situated ethics in practice and the imperfect nature of using a participatory methodology as an adjunct to a large-scale clinical trial. This type of research has a specific start and end which does not fit well with the more open-ended nature of participatory research, as most activities conducted by MLW are organised around the structure of individual trials. As discussed earlier, “empowerment” is a process and does not fit neatly into a specific framework. Likewise, although opportunities to advocate for Photovoice participants can be set at the outset of a study, other avenues may open over time.

Although the process of selection of images for exhibition by participants was in some ways frustrating as all attempts to discover precisely why they were chosen, “the story” behind the image, were unsuccessful, it was an important step forward. The existence of a set of participant-selected images and of the exhibition board created for the HSR2018 Symposium provides other opportunities for ethical representation and advocacy.

This chapter will conclude with a discussion of the potential advantages of using Photovoice in this study with reference to the table introduced in Chapter 4 (section 4.4.3.3).

#### 7.4 The power shifting potential of Photovoice as used in this study

Table 7.3 reproduces Wang’s list of potential advantages of Photovoice in the left column [218] and with an additional column (right) specifically related to this study. The aim is to summarise the potential advantages of using Photovoice for the participants and others involved in this study in order to encapsulate discussions of ethical Photovoice in the preceding sections.

Table 7. 3: Potential advantages of Photovoice in this study

From Wang and Burris 1994	Within this study
<b>Potential advantages to all participants</b>	
Contribute to effective, healthful change	Sharing knowledge of nutrition and strategies for fair food distribution amongst family members with other community members and more widely; Identify community priorities that can be communicated to MLW and may influence future research
Improve political, social, material, or scholarly status	Improved social status of participants from using cameras; Improved material status from photos for themselves (for memories) and for others; Improved scholarly status of researcher
Exchange new ideas, methods, and resources for making a difference and improving the quality of life	Introduce a novel methodology to participants, fieldworkers and other MLW staff; Distribution of cameras so that study villages can use collected images to highlight issues
Gain increased credibility by virtue of affiliation and collaboration	Applies to participants, fieldworkers and the researcher; Participant images are a resource that enhances credibility of publications etc.
<b>Potential advantage to participants with most power</b>	
Learn from local people's expertise	Photovoice was used to explore expertise of participants in depth
Do work valued by others	Through learning from participant expertise research outputs are enhanced
Innovate in a community context	The innovative nature of Photovoice was useful for the researcher in this highly researched community
Recognize others as persons and thereby enhance one's own humanity	This is an important factor in this study, the individual and community stories make personal connections that encourage ethical research
<b>Potential advantages to participants with less power</b>	
Participate in representing and enhancing one's own community through a vivid and specific way of taking pictures and telling stories	This was certainly achieved. Through their personal input participants could reach out beyond their immediate context to share community challenges and strengths
Enhance self-esteem and peer status	As indicated in the case studies this seems to be the case for some participants, particularly the most marginalised
Express appreciation, forge new ties, and give something personal and tangible to others in the form of photographs	Photovoice in this context was a community activity The village exhibitions were very popular as villagers enjoyed seeing themselves and this community in the images. The photographs were valued both for personal use and to give to others
Increase access to power	Maybe not increased opportunity to access power but "potential access" Process was limited by the clinical trial context and lack of resources but some movement along the "empowerment continuum"

The scope of benefits to **all participants** is wide. Photovoice allowed participants to share their knowledge and expertise regarding providing nutritious meals for their families in the context of insecure livelihoods and the ongoing ‘food imperative’ [319]. The importance to participants of this area of concern is clear from the questions raised during the Photovoice exhibitions as discussed in 7.3.2. The collection of set of user-selected images also provided the opportunity for wider dissemination.

There are indications that participating in Photovoice research; being given cameras and collecting images improved social status as discussed in the case studies. Participants also gained 20 photographs that they could use to “preserve” memories or to share with other family members and friends. The scholarly status of the researcher can potentially be enhanced through conducting this research; as discussed in Chapter 4, Chambers suggests that the use of participatory methods can facilitate more rigour when researching complex and multi-dimensional issues [191].

Photovoice was a novel methodology in the Chikwawa context as was the use of cameras to the vast majority of participants. The fieldworkers and CoLT members were introduced to a different type of research than the quantitative clinical based research that was the norm in the context of CAPS and with previous studies such as ACTia. The five villages that took part also received communal cameras that they could use to collect images going forward, if they chose to do so.

The use of Photovoice methodology can also enhance the credibility of participants and other involved in the process not least through the production of images. Becker suggests that although these cannot be considered ‘evidence’ they do ‘assure us that the entities of the abstract argument, the generalized story, really exist as living people who come from and work in real places’ [297].

The potential advantages to **participants with most power** relate in part to the suitability of the methodology for exploring the taken for granted everyday nature of cooking. As previously discussed, an instrumental approach to Photovoice can be to use it in this way as a tool to obtain rich data. It is certainly true that the innovative nature of the methodology, the use of cameras and discussion of images was useful in the context of a highly researched community, where a certain amount of weariness about “another” research study might be expected. However, the final potential advantage of enhancing ‘one’s own humanity’ is I think helpful in

encouraging a deeper consideration of ethical issues particularly in relation to reducing power inequities.

A consideration of the potential advantage of Photovoice to **participants with less power** is as described in previous sections a key aspect of ethical use of the methodology. Participants were provided with a mechanism for sharing their stories and elucidating their own concerns and strengths, and of their community. Through the local and global exhibition of images the participants were able to 'participate in representing and enhancing' the Chikwawa community from their own viewpoint. This contrasts with descriptions and images of their community which often emanate from more powerful researchers and from MLW. Photovoice participants (for example Case Study 2) described how their self-esteem and peer status was enhanced through the Photovoice process and how personal photographs could be used as "evidence" of this albeit temporary "advancement". Having the ability to collect images of family and friends and retain these images was also an advantage. As described in the discussion of the village Photovoice exhibitions, the wider community also appreciated seeing people they know and aspects of their everyday life, reflected in the displayed images.

Last but not least, is Wang's suggestion that a potential advantage of participating in Photovoice for those with less power, is increased access to power. As was introduced in Chapter 4 and explored in this chapter the "empowerment" potential of Photovoice is difficult to achieve and assess. The literature discussed in Chapter 4 about the wider challenges of "moving along the participatory continuum" is a useful point of reference when considering the "empowerment" and therefore ethical basis of the use of Photovoice in the context of this study. In particular, the ideas proposed by Cornwall of 'optimum participation' [246] and of the open-ended nature of empowerment [299]. In this chapter, I have sought to describe how 'situated' and considered ethics were used in attempting to represent and advocate for participants and to promote positive change. This was very much a process of "optimum empowerment" and is still an ongoing process; the participant selected images provide the means for activities to continue. The idea of a continuum is also useful as this reflects the real-life ambiguity and complexity of power relations. As this research study was conducted, I developed a deeper understanding of the challenges of "empowerment" and of the importance of the ethical imperative to seek all opportunities to "move along the empowerment continuum".

## 7.5 Overall Conclusion

When thinking about how “participatory” this Photovoice study was, Wang and Burris’s review of their ground-breaking study in Yunnan is revealing [234]. The first implementation of Photovoice took place in the context of an established programme and over an extended period with most women collecting images over a 12 month period and discussing at weekly meetings [234]. However, maximising the participatory methodology was challenging, with the participants being involved in collecting and analysing images but not in planning, dissemination or policy development. As Wang et al. also point out, the time and effort needed to fully participate may be too much of a burden for some Photovoice participants [234].

The approach taken in this study was limited by time available in the field but benefitted from a long-standing relationship between the participants and with MLW that allowed me to extend the scope of Photovoice activities over time. This allowed me to keep in touch with the participants and to return for the Photovoice exhibitions. However, a fully participatory process was not carried out, that is from the research design to the dissemination stage. This would not only have been impossible within the time and resource constraints of this study but would indeed have been burdensome for CAPS participants and with limited returns due to lack of resources for an action phase.

The question raised in the feedback “what are the benefits for the participants of participating in Photovoice” however still remains, but I hope is open-ended. That is that the inclusion of expert participants has led to rich data that as Wang and Burris suggested has revealed the hidden in everyday life [232] and can contribute in the future to more sustainable clean cooking research and implementation. Potentially also to the widening of the MLW agenda to consider issues that participants prioritise such as food access and nutrition. In general, this approach is a challenge to MLW’s disease-focused approach and highlights the value of more equitable approaches to research in Chikwawa.

As Viswanathan et al. describe, the participation of local people in research ‘does not guarantee that power and resources will be shifted to them because research partnerships cannot be entirely horizontal’ but reflecting on and discussing how power dynamics vary at all stages of the research process can help to facilitate meaningful participation [373]. There also needs to be an intent to shift power beyond that of individual researchers; that is emanating from research institutions. As Fox

concludes, 'voice needs teeth to have bite – but teeth may not bite without voice' [371]. Allowing the voice of those at the bottom of the “energy ladder” to be heard is a necessary step towards positive social change and improved health for marginalised people. However, providing them with “teeth that bite” can only be achieved if the hidden and invisible power of research institutions and other powerful actors is challenged and shifted.





## Chapter 8 – Conclusions and implications

### 8.1 Overview

**Overall aim: To explore the societal factors that influence adoption of a cookstove intervention in the context of a research trial in rural Malawi, and the implications for future implementation of clean cooking technology and research**

In the preceding three results chapters I presented my findings under chapter headings which corresponded in a large part to my three objectives. In this chapter I synthesise these findings in line with the above overall objective and related to the literature presented in Chapter 2 and theoretical foundations in Chapter 3. The chapter concludes with a discussion of the implications of these results including a description of the original contribution to knowledge of this thesis for future implementation of and research into, clean cooking technology.

### 8.2 Research Question 1

**Question 1: How and why do families in CAPS villages use the intervention stove and how is this shaped by gendered insecure livelihoods and being part of a ‘research community’?**

Through exploring this question and the widening the context of cooking beyond an emphasis on the primary cook, this study demonstrated that a detailed view of ‘foodwork’ [146] (from Meah, see 5.24) is key to clean cooking interventions. The “foodwork” system in CAPS households was shown to encompass men and children within the household and to extend beyond it, to include the means by which food was obtained through unreliable income generating activities. The idea of research as a job, as part of the piecemeal activities that CAPS participants juggle in order to feed their families, links MLW as a research institution with household livelihoods in Chikwawa and therefore with this “foodwork”.

The detailed exploration of cooking practices in Chapter 5 showed how the socio-cultural context of Chikwawa is relevant to cookstove use but in a less direct way than observed in other scenarios where the preparation and taste of certain dishes are seen as key factors in cookstove use. The emphasis on access to maize and of equitable sharing of food was evident and concern about this fed into a specifically local “food imperative”, situated in cyclical cropping and food scarcity seasons. In

retrospect, it seems surprising that such links between food shortage and cookstove use are not prominent in the literature discussed in Chapter 2. In the existing literature, the link is made between poverty and use, for example the idea of moving up the energy ladder and of poverty as a barrier to cookstove adoption. However, the suggestion that people will necessarily consider what they will eat before they consider how they will cook it, is not evident. This can be linked with the dominance of technocratic development discourses (as discussed in in Chapter 3) and the suggestion that poverty may be viewed as a technical problem which demands a technical solution, such as a cookstove.

In general, there appears to be an over-emphasis in the literature on whether cookstoves are culturally acceptable in that they can be used to produce “traditional” dishes. There is less emphasis on how the impact of ongoing uncertainty about obtaining nutritious food, acts against long term decision making. In Chapter 6, study participants and CoLT members described a healthy life as one in which people have enough food to enable them to work to provide for their families; “clean air” or “no disease” did not readily come to mind even within the context of a cookstove study looking specifically at lung health. In addition, the health benefit they did identify, that is, not having to breathe out to use the cookstove is intrinsically linked with saving strength to enable survival in the context of insecure livelihoods.

Implicit in this first research question and a source of rich data, were conversations about “who” used the intervention cookstove and why they did so. The acquisition of cooking skills is seen by CAPS participants as a key part of the socialisation of children and there is an expectation that girls need to learn to cook in preparation for their future role in the household and community. There are differences between men and women regarding the age that this “training” should begin and different opinions generally about whether children can be “trusted” to use cookstoves.

There is some indication that men use or would like to use the cookstoves although this conflicts with their ascribed primary role as the “breadwinner” and the emphasis on women’s responsibility for cooking. The idea that children may be close to their mothers and therefore at risk from air pollution and burns is well-recognised in the cookstoves literature (see 2.2.2) and links are also made between school attendance and time-consuming cooking practices (see 2.2.4). However, this study suggests that paying closer attention to all potential cooks in intervention

households and not just the primary cook is a necessary consideration in cookstove interventions and research.

Linked with this, the data also suggests that (concurrent with exploration of the literature in Chapter 2) that gender and cookstoves as an area of study, covers a more expansive and complex scope than is generally recognised in cookstove interventions. These pre-dominant ideas could be summarised as: firstly, the idea that women cook, and men decide about cookstove purchase, and secondly that cookstoves have an empowering impact on women. Household decision making is difficult to explore, and a detailed examination was not possible in the scope of this study (as detailed in 5.3) but it is very clear that gendered relations within and without the household cannot be so easily summarised. Although gendered roles were generally clearly defined, there was also some scope for contestation and change.

As discussed in Chapter 5, the evidence of the “empowerment potential” of cookstove interventions through freeing up time for economic activity is insubstantial. This data reinforces that view and suggests that freeing up time from cooking does not automatically or necessarily result in more employment outside the home and economic emancipation of women. There are other factors that would need to underpin such “empowerment” including the availability of work, improved childcare and not least the support of other family and community members for this shift in gendered norms.

That is not to say that freed up time was not seen as a benefit; the ability to get more rest, chat to family members, and complete household responsibilities were viewed positively and as enhancing well-being and contributing to family harmony. The latter was also seen as important to health. Likewise, an unexpected finding was how being able to cook quickly improved lives through helping people be on time and provide food quickly for tired and hungry family members. Families used and appreciated cookstoves in the context of their insecure livelihoods and of the CAPS study. Underpinning this context are the social relationships within and without households that reflect power dynamics, related to both gender and the power inequity between research participants and researchers. This will be discussed further in the sections that follow.

### 8.3 Research Question 2

**Question 2: How do CAPS participants experience the trial and how is this linked with understandings of health, technology and the research process?**

Syncretic health and occult narratives were used to explore how understandings of health and cookstoves were developed through CAPS, based on previous experience and beliefs related both to health and the research process. The data showed that the disconnect between the locally situated social model of health and the research-focused biomedical model contributed to the development of these syncretic understandings. In addition, power inequity and issues of trust were highlighted and linked with the longer-term relationship between participants and MLW as a research institution, and with the role of SLBs in the trial and the wider research process.

The divide between social and biomedical understandings of health was demonstrated in the results presented in Chapter 6, in various ways. Firstly, through the finding that respondents emphasised wellbeing when discussing health which includes having “no worries”, as opposed to expressing concern about pneumonia and other biomedical issues that are linked with cookstove interventions. Wellbeing in this context was closely linked to insecure livelihoods (as discussed above), the ability to provide for families and the maintenance of household harmony.

Secondly, the idea that pneumonia had “gone” because of the cookstoves which is in direct conflict with the result of the clinical trial, which did not show a significant reduction. The data showed that new information about pneumonia merged syncretically with what was already known leading to an understanding that could potentially have a negative impact on treatment seeking for childhood pneumonia. This is a clear example of an unintended consequence that Ferguson and Englund (see 3.3.1) identified as a feature of development initiatives.

A more positive unintended consequence identified in the data and a third example of a local and social understanding of health, was demonstrated by cookstove users’ appreciation of the cookstoves, as it is not necessary to expend breath to use them. This benefit does not appear in biomedical descriptions of the positive impact that cookstoves may have on health. Instead this beneficial aspect of the intervention is situated in practice and linked with preserving strength and local ideas of blood and the body. The local and practical basis of this benefit makes it difficult to assess

whether this “advantage” would translate to similar circumstances in other social or geographic contexts but emphasises the importance of taking the priorities of research participants into account in all contexts.

The link between power and trust in the context of CAPS was also explored in Chapter 6. This relates to the discussion above and the idea that pneumonia may ‘have gone’ because MLW and therefore CAPS could be trusted to bring beneficial studies to the Chikwawa community. As has been found in other similar contexts, (see discussion in 7.2.2), trust and distrust, in MLW and researchers, is developed through a complex and precarious process. Doubts about research participation are expressed through rumours of satanic intent including blood-taking which can be viewed as a form of resistance to the more powerful within the research context. However, these results also show that participants weighed up the pros and cons of participation, taking a transactional approach and looking beyond a trial-by trial view of participation.

This data suggests that taking the view that rumours and satanic beliefs can be “managed” as part of the trial process, for example, by emphasising that blood will not be taken, may have a limited impact. Such an approach may fit with development discourses that define some communities as “traditional” and in need of modernisation but downplays the sophisticated and in-depth understanding that research participants have of the power imbalance inherent in the research process.

SLB theory was introduced in Chapter 3 (3.4.1) as a way of exploring these issues of trust in power in the research context and more specifically SLB’s use of discretion, the enactment of policy in practice and the way in which this practice is in response to the overarching research environment. In Chapter 6, I demonstrated that these workers played a key role in the comprehension and interpretation of health messages within CAPS that led to syncretic understandings of health. SLB’s were also shown to be at the “front-line” and needed to negotiate resistance expressed through rumours and trial “non-compliance”. The link between ignorance and illiteracy made by Englund was found in SLB narratives and, as he suggests, appears to both provide a way of SLB’s maintaining their (relatively) powerful status and emphasise the ubiquity of development narratives of advancement in the research process.

## 8.4 Research Question 3

**Question 3: What are the challenges and opportunities from an ethical perspective of using the participatory methodology Photovoice in the context of a large-scale clinical trial of a cookstove intervention in a low-resource setting'?**

As described in the previous section relating to questions one and two, I have suggested that a consideration of the power dynamics within the CAPS research environment is key to achieving the overall aim of this study. In addition, in Chapter 4 I explained how my axiological stance is to promote the knowledge and expertise of those at the “bottom of the energy ladder”. This links with the critique of dominant discourses of development described in Chapter 3 which position such groups of people as resistant to modernity.

As a participatory methodology, the ethical use of Photovoice entails aiming for “optimum empowerment” during the research process. From the outset, as explored in sections 4.3 and 4.4 Photovoice researchers have found that achieving and measuring the power shifting potential of the methodology is challenging. These issues as related to this study were explored in Chapter 7. Firstly, through the narratives of SLBs and CAPS participants and secondly, via an examination of how study participants were represented and advocated for, through Photovoice exhibitions.

This data showed that the power shifting and therefore ethical potential of Photovoice was limited by lack of time and resources and my own positionality as a short-term visiting researcher. However, the use of the situated visual ethics and attempts over time to move along the participatory continuum provided a way to try to maximise opportunities for positive social change. At the core of the ethical use of Photovoice methodology is the assumption that the needs and perceptions of the less powerful are important and that their conscientisation is possible and desirable. My approach in this study has been to take a reflexive approach but, on the understanding that the complex power relationships in this research context remain both difficult to explore and change. Nevertheless, the use of Photovoice methodology encouraged a deeper exploration of issues of power and trust in this study which I consider to be key to the ethical conduct of research in the context of a clinical trial in a low resource setting. This research has been guided by the suggestion that participatory methodologies can facilitate ‘knowing better together’

and a deeper understanding of how power and knowledge are ‘inextricably entwined’ [191].

## 8.5 Synthesis of cross-cutting themes

Power is a key overarching theme in this thesis but is underpinned by other key cross-cutting sub-themes related to concepts introduced in Chapters 2 and 3.

First is the pervading idea of “modernisation” as a desirable and “natural” activity that leads to improved health and wealth. This is key to the concept of the “energy ladder” and the designation of open-fire cooking as traditional, and other more “advanced” cooking methods as modern. In Chapter 3, I showed how this concept is linked with development discourses that position certain groups of people as in need of external technical expertise and knowledge and suggest that there is a linear and predictable path to desirable modernity. Englund’s suggestion that in Malawi, this “ignorance” has become synonymous with illiteracy was clearly demonstrated through SLB data related to understandings of health, occult narratives and compliance with the trial. In addition, SLBs and trial participants were shown to position themselves as more “modern” in order to reinforce or enhance their own status. This study has therefore made a direct connection between these development discourses related to modernity and the concepts that underpin cookstove implementation. I would suggest that a more critical view of the latter that builds on these connections, could improve both efficacy and equity of cookstove interventions.

Modernity is also closely linked with occult narratives and the suggestion that such ideas result from lack of knowledge and “under-development”. My examination of relevant literature suggested that unequal power dynamics were implicated in the pervasiveness of such ideas. The data in this study is concurrent with this view in that rumours of “blood-taking” through cookstoves were shown to be directly linked with trust in MLW as an institution, mediated through researchers and SLBs. This has brought analysis specifically related to cookstoves into the field of occult narratives that has relevance to cookstove implementations and to other technological interventions in low-resource settings.

Ideas of modernity are also a key part of the diverse and complex discourses of “cookstoves and gender”. As discussed in Chapter 2, there is a common narrative that suggests cookstoves can result in the economic “empowerment” of women and facilitate a more “modern” allocation of household roles. However, Crewe suggests that the prevalence of androcentrism in cookstove development may mean that a

move to more “modern” cooking practices results in the downplaying of the knowledge and expertise of female cooks. It was clear from my analysis of data in this study that ideas of gender equality were in some ways seen as coming in from outside. A detailed examination of gendered household roles and livelihoods also indicated that limited opportunities for women outside the home and the complexities and resilience of gendered power dynamics within households, meant that more “modern” cooking practices alone, are unlikely to empower women in this context and may even result in disempowerment. This divergence challenges the common narrative described above, adding to the cookstove literature and the building body of evidence which indicates equating cookstoves with female empowerment is reductive.

The sub-theme of “modernity” described above is closely linked with the second cross-cutting theme in this study which is has been how syncretic ideas have been developed through the CAPS trial. As described in Chapter 2 syncretism originated in religious studies and was then used by researchers to explore how understandings of health are developed through the merging of old and new knowledge. In Chapter 6, I used the concept of syncretism to explore how understandings of pneumonia and health resulted from a merging of what was already known and new information with unintended consequences. In this way the idea that the perceptions and knowledge of trial participants are inconsequential and the dominance of a bio-medical “hierarchy of knowledge”, was problematised. However, syncretic understandings are also indicated in occult narratives related to “blood-taking”, particularly in the idea that researchers were using cookstoves and air monitoring equipment to take blood and strength from trial participants. This is an expansion of the syncretic model beyond health that adds new depth to the current literature relating to understandings of health in clinical trials and cookstove interventions.

The development of syncretic ideas is also indicated in discussions of gender by trial participants and SLBs and the idea that gender equality is an outsider concept that merges with local understandings to become something new. At the centre of any consideration of the development of syncretic knowledge and understandings is the key point that people are not a “blank slate” on which knowledge can be “written”. This links back with the first sub-theme of modernisation as described above and the idea that certain populations can benefit from “modern” knowledge and “development”. In this study, the “voice” of participants has been used to show that the Chikwawa community is not homogenous and that understandings of health and



technology are developed syncretically, with unintended consequences resulting from apparently straightforward “messaging”. This sub-theme of syncretism has been used in new ways that reflect and elucidate the complexity of interventions like CAPS and why unintended consequences may occur.

In the next section, these cross-cutting themes will also form part of an analysis of the implications of this study that relate specifically to the CAPS trial.

## 8.6 Implications of exploring the CAPS trial process

The development of new knowledge in relation to the CAPS trial will be described with reference to the suggestion made by O’Cathcain et al., that qualitative research can add value to clinical trials through **interpretation** of the results and through shaping further **implementation** initiatives (see also table 4.1) [206].

The results of this qualitative study help interpret the main trial results in the following ways. A local social concept of health as being able to provide for families and encompassing more general well-being, contrasted strongly with the biomedical message of the trial. This further develops the work of Hausmann Muela et al. and Ewing et al. (described in 3.4.2.2) who used a medical syncretic framework to explore how biomedical concepts are merged with existing knowledge to become something new. The impetus to use the cookstoves was also multi-factorial and more complex than imagined, which undoubtedly led to “stacking” of different types of cooking methods. This complexity contrasts with the continued emphasis on uncomplicated progress to clean cooking found in references to the “energy ladder” as introduced in Chapter 2 and in the discourses of development explored in Chapter 3.

Enrolment and continued “compliance” with the trial, essentially cookstove use, depended on trust in MLW as a research institution and a willingness to dismiss worrying satanic rumours. These findings are concurrent with those of Fairhead et al. relating to concerns about blood taking in clinical trials (see 3.4.3.3). However, the direct link made between cookstoves and the taking of blood has not previously been identified in cookstove interventions as far as I am aware. The persistence of rumours of satanic intent within CAPS clearly impacted on recruitment and retention of trial participants.

The emphasis on the primary cook within CAPS as recipients of the cookstoves and training overlooked the role of children (and to a lesser extent men) in cooking activity. Of note is the discovery that many children were not allowed to use the intervention cookstoves. This could potentially have impacted on the main trial

findings that in the intervention group, incidence of childhood pneumonia was not reduced and fewer severe burns of children were reported.

These findings related to interpretation of the main CAPS result also have an impact on future implementation of clean cooking interventions although the null result meant that replicability was not a priority. In response to the question of how future clean cooking implementation should proceed, these results suggest that complex trials that impact on everyday life and social relationships within and without the household, may have **unintended consequences**. These may be negative, such as the perception that “pneumonia has gone” but can also be positive, for example, appreciation of “not having to blow” on cookstoves.

The unanticipated nature of these consequences is closely linked with the **differing priorities of trial participants and researchers**. This is most clearly indicated in this study with the finding that obtaining equitable access to food within the household, took priority over how that food was cooked. In addition, the suggestion that cookstoves can be economically empowering for women was shown to be not applicable in this context. Instead, time saving through cookstoves was valued through freeing up time for rest and generally making busy lives a little bit easier. In addition, the unanticipated and novel benefit of saved strength through “not blowing” was identified as situated in the everyday practice of open fire cooking. While authors of systematic reviews of cookstove adoption (see 2.3.3) have previously categorised various determining factors, defining the relative importance of these has proved to be difficult. In this case an important context specific benefit was found through using qualitative and participatory research methods that facilitated a deep exploration of everyday cooking practice. In particular, the innovative use of Photovoice methodology in this study provided a new way of exploring the socio-cultural context of cookstove use and of the underpinning power dynamics within and without the household.

## 8.7 Limitations

This study was a small-scale qualitative study limited by time, resources and the “outsider” status of the researcher. The use of the participatory methodology Photovoice was limited as no action stage was included, as discussed in Chapter 7. As explained in section 4.2, the study was based at only one of the CAPS sites; including the second site would have provided the opportunity to explore a different context and the inclusion of more diverse experiences.

My own very limited knowledge of Chichewa was an important limitation of this study although through intensive examination of transcripts and liaison with the skilled translators at MLW my knowledge of local idioms and potential problem areas improved over time. It was very useful to have a study team member to provide simultaneous translation during interviews and on reflection this would also have been useful during village focus groups to enable me to follow activities more closely and probe when necessary.

As also discussed in Chapter 7, my involvement in the selection of Photovoice images and the production of captions was not possible. In general, as explored in 4.2.4, the quality of Photovoice research is generally enhanced by the building of closer relationships between researchers and participants over regular sessions. The limited number and intermittent nature of Photovoice activities is therefore a limiting factor. There are also limitations related to the use of other research methods and my own positionality as discussed in detail in Chapter 4. I was a white “outsider” making short visits and representing a powerful research organisation. While I acknowledged and reflected critically on the unequal power dynamics in this situation, this social distance remains a limiting factor.

A limitation of the use of Photovoice methodology was clear from the absence of any discussion of satanic rumours in Photovoice FGDs, reflecting the problems that other researchers have experienced when using the methodology to explore complex and sensitive issues (see discussion in 6.4.2). To move away from the dichotomy of barriers and enablers of cookstove use that many other cookstove intervention researchers have employed, the guidance for Photovoice image collection was very general (see Appendix 4). While this is concurrent with Photovoice methodology, in hindsight, more focused instructions, for example about any difficulties with trial participation, may have been beneficial.

There are also three other areas where more exploration may have resulted in richer data. First, the communication of information through sensitisation activities was not examined in any detail. This is in part due to my lack of knowledge about the allocation of responsibilities at MLW at the start of the study, that is, that science communication activities were not managed by the CAPS team, although team members were often involved. It would have been useful to build a closer relationship with the Science Communication Team at the outset and to include members in the sample set. Second, I underestimated the involvement of children and young people in cooking activities. Their inclusion in Photovoice or other study

activities would have required a substantial amendment to the protocol and was not possible due to constraints of time and funding. The addition of the perspectives of children and young people on cookstove use would have been valuable, particularly in relation to the exploration of the complex area of gender and cookstoves. Finally, and as described in section 5.3.5, data related to household decision making came from fieldworker FGDs and interviews; the perspectives of CAPS participants and CoLT members were not explicitly sought.

## 8.8 Overall implications

The results of this study have implications for further research into clean cooking and for research more generally at a local, national and global level:

- The identification of the differing priorities of researchers and cookstove users within CAPS has implications for any future cookstove implementations at a local or national level in that specific local benefits of cookstoves have been identified such as facilitating timeliness and saving strength through not blowing. This information can be used in ongoing Malawian government cookstove initiatives and the work of Practical Action, Universal Concern and other NGOs who have cookstove projects in Malawi.
- Globally, these results imply that researchers and implementors of clean cooking interventions need to be cognisant of the locally situated needs and priorities of cooks and other household members and carefully consider whether other “larger” benefits such as women’s economic empowerment, are priorities and practical possibilities within the context and timeframe. This implies that the success of such initiatives would be improved by firstly identifying the cooking requirements of the targeted group and gaining in-depth knowledge of their cooking related and wider priorities. If empowerment of women is the main or an ancillary aim, then the strategic interests of women themselves should also be considered along with other potential barriers to such empowerment.
- At all levels, locally, nationally and globally, these results suggest that considerations of gender within clean cooking should move beyond the rubric that “women cook, and men decide” and consider household roles and responsibilities, and the power dynamics of these more widely. The role and socialisation of children in the household related to cooking also appears to be largely overlooked. The implications of this are that future implementors of clean cooking interventions should involve all household cooks (and potential) cooks in their study designs. This is not as simple as targeting men

or children as this could potentially shift power away from women. Further qualitative research is needed to gain a more complete understanding of gendered household dynamics in low resource settings to inform clean cooking initiatives.

- The example in this study of syncretic understandings of health also has wide implications across all levels and types of research, particularly in highly researched communities where similar issues of power and trust are relevant. For example, at a local level the design and dissemination of MLW science communication initiatives could be enhanced through a deeper appreciation of how scientific information is merged with what is already known and shaped by power inequity between researchers and research participants. More widely, the syncretic model could add value to health-based studies in 'research communities' similar to Chikwawa.
- Similarly, the prioritisation of food before cooking in the context of scarcity has wider implications beyond clean cooking research and Malawi and is relevant to global research generally. The concept of the "food imperative" and the idea that people prioritise obtaining food was first developed in relation to agroforestry and has been linked in this study with cookstove adoption. My research supports the supposition that the short term need to sustain families will take precedence over potential longer-term health issues in similar low-income settings. Researchers and practitioners seeking to change behaviour through adoption of new technology or practice would therefore benefit from taking the "food imperative" into account when designing and implementing interventions.
- At the local setting, these results have implications for the ethical conduct of research at MLW and add to the important body of evidence that MLW researchers are building on the role of SLBs and in the development of more effective science communication and public engagement strategies. This study showed that CoLT members ability to represent the interests of their community was often subsumed by their instrumental role in trial processes. Both CoLT members and fieldworkers encountered ethical dilemmas during trial implementation. Further support of SLBs at MLW appears to be warranted.
- At all settings within research, these results suggest that challenging existing "hierarchies of knowledge" (see 3.1) could potentially contribute to more impactful and ethical research. The implication is that the use of participatory

methodologies including Photovoice may facilitate exploration of the knowledge and expertise of people whose circumstances limit their opportunities, and to advocate for positive change. However, as detailed in Chapter 7, the use of such methodologies is not a “quick fix”; moving along the “participatory continuum” requires long term engagement and support at a programme level.

## 8.9 Overall conclusion

In summary, this study made an original contribution to knowledge in the academic field of clean cooking in two ways; firstly, through the development of new knowledge and secondly through the innovative use of Photovoice methodology. Key areas of new knowledge include the problematisation of the common narrative that equates cookstoves and the “empowerment” of women; through the use of a syncretic model the study deepened understanding of how multiple, intersecting power inequities in the research environment impacts on perceptions of health and gender, as well as opportunities for and constraints to positive impact in these areas. By identifying and exploring the occurrence of occult narratives in the context of a cookstove intervention and applying the concept of ‘street level bureaucrats’ to field workers and community liaison members, the study analysed the power relations of trial processes in a new way and identified their unintended consequences.

This resulted in a novel “view from the foot of the energy ladder”. As one of the originators of photovoice suggests, expanding the ‘forms of representation and diversity of voices who help define, and improve, our social, political, and health realities’ is beneficial [286]. This study explored the nature of these benefits, not only for researchers, cookstove intervention implementors and research institutions but also for the “targets” or “recipients” of the activities of these individuals and institutions. It has shown that the design of ethical research into energy use requires the meaningful inclusion of “cooks”, the development of deep understanding of their needs and perceptions, and an appreciation of the complex links between cookstoves and health.



## Appendix 1: Images selected by participants for exhibition

Village 1				
				
People depend on eggs mostly because they are cheap and locally available	Families practice household hygiene after cooking	When families have enough cash, they sometimes buy meat which is more expensive than vegetables	Families come together during lunch and dinner, in some cases different families	Families depend on open fire as compared to improved cook stoves since its cheap and able to accommodate large pots
				
Different families gather together during community festivals e.g. celebrations conducted at the end of school term/ semester	Families depend on mice as they are locally available and cheap	Families depend on eggs in rural areas since they are cheap and locally available	Fresh maize may be boiled and used as food for the whole family as well as for business purpose in local markets	Families mostly depend on nsima and only vegetables as it is locally available and cheap

Village 2



Families also depend on fresh milk straight from the farm in villages; this brings excitement to children



Rural household cooking using cookstove as compared to open fire. It also shows how children fall in love with the cook stoves



Nsima is a staple food which is mostly available in rural communities



Donuts are prepared as part of small-scale business in rural communities/ source of household finances



Children gathered to celebrate during Independence Day of Malawi 6th July



Children are directly or indirectly involved in cooking activities together with their parents and are exposed to smoke from open fire cooking



Families depend on vegetables because they are affordable and locally available



Rural children are exposed to fire and dust mostly when parents are not around



Rural gardening is a source of family income and women are also involved



Food being prepared using smokeless cook stove and the joy it brings to the community as compared to the use of open fire



Village 3



Families depend on charcoal and old stoves for cooking and this exposes them to dust



Communities observe good hygiene before eating once food is prepared



Families spend their time eating together mostly mothers and children



Clearly shows how families mostly children are involved in cleaning dishes particularly after eating



Meat being prepared for storage



Rural families gather together (mostly women and children) during lunch to have food



Children are exposed to fire and smoke by staying close to their parents in the kitchen



Extended families in rural communities have an impact on community development and health



An improved cook stove compared to old stoves/ open fire



Families are connected to God in prayers before taking food

Village 4



A local football team of children before a football match, football represents part of the entertainment in communities



Families depend on forest fruits as compared to home grown fruits



Different foods are prepared in rural settings by both males and females; before cooking meat is mostly cut into pieces by men



Food being prepared using smokeless stoves and how food is handled in rural areas



Fruits are preserved in rural communities for future use and there are risks involved mostly for children



Meat being prepared in rural areas of Malawi



Families depend on small business to support their families i.e. selling of tomatoes and potatoes



How families pound maize or other cereals as compared to the use of machines



Full dependence on home gardening as a source of food and income



Child exposure to fire and how children in rural areas are involved in cooking activities



Village 5



Children are involved in cooking activities and this is dangerous with regards to being exposed to fire



Families also use fresh maize as a source of food mostly after being boiled



A household gathered together to have food close to cooking places with dust and smoke and but all they care about is getting food



Cleanliness in the area/household and how rural community practice hygiene



Food may be insufficient in the rural areas and how children may fight for food being a balanced diet or not



A community gathering at school premises during end of term/ semester; the child in the picture was privileged to be among students who scored good grades



A household having food at the same place, in most cases women eat with their children



Plantations of rice as a way of life and how families depend on rice when maize fails. The plantations are also where people get their source of employment



Foods being prepared using smokeless stoves/ improved stoves as compared to open fires



Maize being dried ready for storage and to be packed in bags

## Appendix 2: Photovoice exhibition board used in UK

Jane Ardrey



*Family Preparing a Meal on an Open Fire*

PHOTOGRAPHER: Margret Falakeza

Although women and older girls are the main cooks in villages households, open fire cooking, as shown in the background here, is part of everyday life and impacts on everyone. Infants are particularly vulnerable to toxic air pollution and this has also been linked with low birthweight.



*Mice for Lunch*

PHOTOGRAPHER: Enelesi Paulo



*Maize is Life*

PHOTOGRAPHER: Aines Banda

## PHOTOVOICE

### Exploring the Multi-Sectoral Links Between Cooking and Health in Rural Malawi Using Photovoice

Rural Malawians are part of a 3 billion worldwide population exposed to toxic pollution and ill-health through cooking on open fires or inefficient cookstoves using biomass fuels. This burden is a significant challenge to health systems in low income countries. The Cooking and Pneumonia Study (CAPS) was a village-level randomised controlled trial of an advanced cookstove intervention recently completed in Malawi.


CAPS provided a unique opportunity to gain understanding about the social and cultural factors that may hinder or encourage use of advanced cookstoves and to explore gendered household dynamics and decision making in this context.

A total of 50 participants from 5 representative CAPS villages participated in a Photovoice study in 2016. Images about cooking were collected over 5 days and discussed in village-level focus groups and in interviews.

This methodology facilitated an in-depth exploration of every-day priorities and decision making. The complexity of gendered household and community roles was illustrated through image collection and discussion and led to the development of a 'picture' of the socio-cultural context of adoption of the cookstove intervention. The expertise and autonomy of the photographers was also promoted.



## Appendix 3: Photovoice pilot work publication


 PLOS ONE


RESEARCH ARTICLE

### The Cooking and Pneumonia Study (CAPS) in Malawi: A Nested Pilot of Photovoice Participatory Research Methodology

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**Data Availability Statement:** The film produced is available via an open access web platform (<https://vimeo.com/153926407>) and example images are attached in supporting material. Transcript data is also available as supporting material.

**Funding:** This pilot study was funded by the Wellcome Trust, through an Engaging Science Grant, 'The Cooking and Pneumonia Study: a focus on food' (reference, 106977/Z15Z). Additional support was provided through the CAPS Joint Global Health Trials grant funded by the Wellcome Trust, Medical Research Council UK, Department of International Development UK (reference, MR/K06533/1) and the

**Abstract**

The Cooking and Pneumonia Study (CAPS) is a village-level randomised controlled trial of an advanced cookstove intervention to prevent pneumonia in children under the age of 5 in rural Malawi ([www.capstudy.org](http://www.capstudy.org)). The trial offers a unique opportunity to gain understanding about the social and cultural factors that may facilitate sustained use of improved cookstoves. In January 2015, the use of Photovoice as a participatory research methodology was piloted at the CAPS Chikhwawa site. Photovoice is a photographic technique that allows communities (including women and marginalised groups) to share knowledge about their perspectives and priorities. Four households were given digital cameras and asked to collect images over 24–48 hours and were then interviewed on film about their selection. This resulted in over 400 images and a one hour long film that revealed community concerns and could be thematically analysed. The collection of interview data through film was useful for capturing discussion and was acceptable to participants. Photovoice is a feasible participatory research methodology that can play a valuable role in qualitative studies of improved cookstove adoption in challenging resource poor settings.

**Introduction**

Household air pollution (HAP) from cooking using solid fuels in open fires or basic cookstoves causes 4.3 million premature deaths a year [1],[2]. Pneumonia in children, and chronic obstructive pulmonary disease and cardiovascular disease in adults are the main causes of these deaths [2],[3]. Women are particularly vulnerable to adverse health effects due to their prolonged exposure [4]. HAP is intrinsically linked with poverty and the collection and/or purchase of fuel is an additional burden to poor households. The use of solid fuels for cooking depletes forests and the particulates and other partial products of combustion generated (particularly black carbon and carbon dioxide) contribute to climate change.

The use of cleaner burning cookstoves in place of open fires has been proposed as a solution to HAP. Whereas early models were designed simply to use less wood, advanced cookstoves

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The full publication has not been included here as the file is very large due to the inclusion of images. It can be accessed via the link below:

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0156500>

## Appendix 4: Topic guides

### Final Photovoice Topic Guide

#### Stage 1 – Camera distribution and training

##### Introduction

- Introductions to research team
- Explain aims and objectives of CAPS Qualitative Study
- Outline confidentiality and anonymity of participation
- Carry out consent process, explaining that participants can withdraw at any time.
- Explain additional requirement for consent to be given for use of images and video
- Explain about recording of following focus group session and possible interviews
- Explain what will happen with data and the study outcomes

##### Camera training and distribution

- To include emphasis on personal safety
- Issues that may arise when taking pictures in public to be covered
- Each participant to be loaned 1 of the study digital cameras, with case and spare batteries

##### Image collection

- Participants will have 5 days to collect 50 images showing:
  - what they ate
  - how this food was cooked
  - who cooked the food
  - who they cooked and ate with
- The aim is not simply to record these activities but to collect images that illustrate the context in which these activities occur
- Participants will be asked to explain what these images show, that is, the story behind the image at a later group discussion
- Each participant can take an additional 20 images of other scenes, for example their family and friends for personal use

#### Stage 2 – Focus Groups

##### Introduction

- Introductions to moderator and observer
- Go over the aims and objectives of CAPS Qualitative Study
- Outline confidentiality and anonymity of participation

- Explain the meaning of the consent already given to use voice recordings, images (and video if appropriate)
- Lay out ground rules for the session, treating others with respect, speaking one at a time etc.
- Explain role of the moderator and observer
- Arrangements for length of session, any planned breaks etc. to be outlined

*Main discussion*

Each participant will be given a printed set of the 70 images they have collected. They will first be asked to take out their 20 personal images.

For the remaining 50 images they will work with the other focus group members to categorise and sort them, for example, images of: fuel collection; raw food items; finished dishes. The previous focus group work with CAPS Field Workers and the Participant Observation will be used to identify suitable categories as a useful starting point, but participants in this process will not be limited to using these.

Each group of images will be discussed by the group using a modified version of the SHOWeD model. The table below shows the original use of the acronym (in italics) followed by the modified version that will be used to draw out the specific areas of enquiry.

<b>S</b>	<i>What do you See here?</i>
	Explain what the eye sees; describe the images.
<b>H</b>	<i>What's really Happening here?</i>
	Talk about the unseen story of the images, think about how you would explain this to someone from outside your community. If there are people in the images, what is their role in the cooking process?
<b>O</b>	<i>How does this relate to Our lives?</i>
	Explain what these images say about life in your household, in your village, in the wider community. Why did you take this particular image? Explain what you want others to understand when viewing the image.

<b>W</b>	<i>Why does this problem, concern, or strength exist?</i>
	Talk about why things happen in this way. Has this always happened or have changes occurred over time. Does the image show usual or unusual behaviour? Explain more about the role of people in the images; who is doing what and why is that particular person involved in the activity?
<b>e</b>	
<b>D</b>	<i>What can we Do about it?</i>
	If these images can be used to illustrate something positive about cooking, explain how. If the images show something that could be improved, then suggest how this could be done. Explore who has the power to facilitate any change in cooking practices.

#### Concluding discussion

The moderator will verbally review the outcomes of the discussion and make sure that all agree that good understanding of these has been captured. Participants will be given the opportunity to make any final comments.

#### Conclusion

Thank participants for their time and contribution.

Explain that we may contact members of the group to explore specific issues in more detail and the appropriate timeframe.



## Final CAPS Fieldworker Focus Group Topic Guide

### Introduction

- Explain roles of the moderator and observer
- Explain aims and objectives of CAPS Qualitative Study
- Outline confidentiality and anonymity of participation
- Carry out consent process, explaining that participants can withdraw at any time.  
Explain about recording of focus group session
- Explain what will happen with data and the study outcomes
- Emphasise that this process is not about the performance of individuals or the team
- For female group, explain why separate process

### Main discussion

The aim is to explore the perceived and experienced benefits of using improved cookstoves and to identify the barriers to exclusive use of improved cookstoves from the perspective of fieldworkers. This will be done through the following questions/methods:

- Does CAPS differ from other research that you have been involved in, e.g. vaccine trial?
  - What differences, if any, are there?
  - What specific challenges, if any, does this study present?
  - PROMPTS  
What are the implications of a study that demands participants use the intervention several times every day?  
Did participants 'resist' the intervention?  
What strategies did you use to overcome challenges?  
How did you find the interaction went with the participants?
- What are the challenges of introducing new technology in this relatively low-technology environment?
  - Is the 'strangeness/newness' of the stove a barrier to use?
  - Are participants able to use the stove in the correct way, if not why not?
  - Are the cookstoves a desirable acquisition and if so, does this hinder or facilitate use?
- Has CAPS been beneficial for the participants? How/why not? Have there been any problems or disadvantages for them?

## CAPS Photovoice and Observation Participant IDI Topic Guide

### Location

Interview can take place in the interviewees home, outside their home or in a communal place (same as used for focus groups), as they choose. It is important that the location allows the interviewee to speak openly without being overheard.

### Introduction

- Explain roles of the interviewer and observer
- Explain aims and objectives of CAPS Qualitative Study
- Outline confidentiality and anonymity of participation
- Carry out consent process, explaining that participant can withdraw at any time.  
Explain about recording of session
- Explain what will happen with data and the study outcomes
- Emphasise that this process is not about the performance of individuals or the team

### Main discussion

1. Tell me about the meals and snacks you ate yesterday and how they were cooked.

Use the chart to go through the day with the participant probing for full details of all of the people involved in the following activities:

- Providing food through purchase or growing
  - Preparation of food – what was done and who did it?
  - Cooking method used – probe for stacking
  - Who cooked – may be more than one person?
  - Who ate the food and when, e.g. ate together, shared with others?
  - Where did the fuel come from?
  - Who obtained and prepared the fuel?
2. For Photovoice participants and with reference to selected images, about Food, Family and Fuel encourage the participant to talk about why they took a particular image and the story behind it.

**For the 3 observation participants example images will be used from the fieldwork photos if possible or from non-identifiable Photovoice participant images**

3. For Photovoice participants, offer the opportunity to look at other images taken by the participant and discuss, could be one particular image or sets of images. The interviewee should be encouraged to take the lead.

#### Follow-up questions

**1. If health and safety has not come up in main discussion.**

Do you think using the intervention cookstove has had an impact on health and safety?

If so:

- How?
- Why?
- 2. What have others said to you about participating in CAPS?  
e.g. neighbours, chiefs, family members
- 3. How would you advise other invited to take part in a similar trial?
- 4. If time-saving/timeliness did not come up in main discussion**

Do you think that using the cookstove resulted in time-saving?

If so, explain how and why?

What was this saved time used for?

**5. Extra question for CHAPS group**

Tell me about any benefits or disadvantages of taking part in CHAPS

Reserve closed question, i.e. only use if question above not useful.

*Did taking part in CHAPS affect your use of the stove:*

- *While you were participating in CHAPS activities?*
- *After you participated in CHAPS activities?*

#### Closing questions

If you had enough money, would you consider buying an improved cookstove (like the Philips or ACE stove)?

- If not, why not?

Probes:

How do you manage making bigger purchases, e.g. school fees, tin roof?

If you had money saved and had the option of buying a stove or a mobile phone, which would you prioritise?

#### Conclusion

If you would like to make any further comments then feel free to do so.

Thank participants for their time and contribution.

## CAPS Fieldworker IDI Group Topic Guide

### Location

Interview to take place in a location that allows the interviewee to speak openly without being overheard.

### Introduction

- Explain roles of the interviewer and observer
- Explain aims and objectives of CAPS Qualitative Study
- Outline confidentiality and anonymity of participation
- Carry out consent process, explaining that participant can withdraw at any time.  
Explain about recording of session
- Explain what will happen with data and the study outcomes
- Emphasise that this process is not about the performance of individuals or the team

### Opening questions

Tell me about what brought you to the Chikhwawa field site?

Prompts:

- Are you from this area?
- Have you had other research jobs?
- What was your role on the CAPS team?
- How long have you been at the Chikhwawa field site?

### Main discussion

1. If there was an opportunity to buy one of the intervention cookstoves, would you have taken up this option?
2. For people living in Chikhwawa now, how beneficial, in practise do you think participation in CAPS has been?

Prompts:

What problems have they had using them?

Someone said 'It would be better for a Chikhwawa villager to buy a bag of maize than a cookstove'. What do you think?

3. If improved cookstoves were available in Chikhwawa, would people buy them?

Prompts:

What about if there was a choice between buying a mobile phone or an improved stove?

How is this type of decision made?

4. Photovoice participants used phrases such as 'that is gender' and 'doing gender' in their focus groups. Tell me what you think the participants mean when using such expressions.
5. A recurring theme in the fieldworker focus groups was that CAPS participants were not able to benefit from the intervention due to their illiteracy. Can you expand on this statement?

Prompts:

Do you agree with this view?

If so how do you think illiteracy links with cookstove use?

6. What do you think the CAPS participants understand by the term 'pneumonia'?

Prompt:

Is the meaning always the same, i.e. at different times and for different people?

7. Religious beliefs are important in Malawi; a common question is to ask 'What church do you go to?'

a) Do you think these types of beliefs are linked with health?

b) If so, how are these linked to cookstove use?

Prompts:

Tell me about some of the influences on people in Chikhwawa? Religious leaders? Other influential people? Government?

What about gossip and rumours?

#### Concluding discussion

Shortly we will finish the interview but I thought it might be good to finish with a different type of question. Tell me about a recent meal that you enjoyed – who did you share it with, who cooked it, what did you eat?

#### Conclusion

If you would like to make any further comments then feel free to do so.

Thank participants for their time and contribution.

Go over confidentiality.

## CAPS COLT member IDI Topic Guide

### Location

Interview can take place in the interviewees home, outside their home or in a communal place (same as used for focus groups), as they choose. It is important that the location allows the interviewee to speak openly without being overheard.

### Introduction

- Explain roles of the interviewer and observer
- Explain aims and objectives of the CAPS Qualitative Study
- Outline confidentiality and anonymity of participation
- Carry out consent process, explaining that participant can withdraw at any time
- Explain about recording of session
- Explain what will happen with data and the study outcomes
- Emphasise that this process is not about how well COLT member or the village performed within CAPS. We want to understand more about everyday life in Chikhwawa and how this was linked with the CAPS trial and cookstove use

### Opening questions

Tell me about yourself.

Prompts:

- Are you from this area?
- How long have been a COLT member?
- Tell me about your family?
- What is your occupation?

### Main discussion

1. How have the CAPS participants viewed the trial?

Prompts:

How do you think the study went?

Did the participants encounter any problems?

Are you aware of any negative rumours about the trial?

How does this study compare with others you have been involved in (if applicable)?

2. How beneficial do you think CAPS was for the participants?

Prompts:

If you think there were benefits, tell me more about these:

- Who benefitted?
- Was this a longer or shorter term benefit?

If you think that there were negative impacts of the trial:

- Who was negatively impacted?
- Was this impact over the longer or shorter term?

3. Members of households often spend their time in different ways. Can you explain roles within Chikhwawa households?

Prompts:

Include men, women and children

How is this linked to cooking?

How do men, women and children spend their time – including leisure time?

4. Tell me about families in Chikhwawa.

Prompts:

What age do couples start living together?

Where do they usually live?

- What village? i.e. in the home village of the man or woman
- With or close to relatives?

Describe types of families, e.g. extended, polygamous, single parent

Is there a typical Chikhwawa family?

5. a) What is 'good health' for someone living in Chikhwawa?

Prompts:

What are some of the causes of ill-health?

What can people do to prevent them?

b) How can people in Chikhwawa achieve good health?

Prompts:

What stops them achieving good health?

Concluding discussion

?

Conclusion

If you would like to make any further comments then feel free to do so.

Thank participants for their time and contribution.

Go over confidentiality.

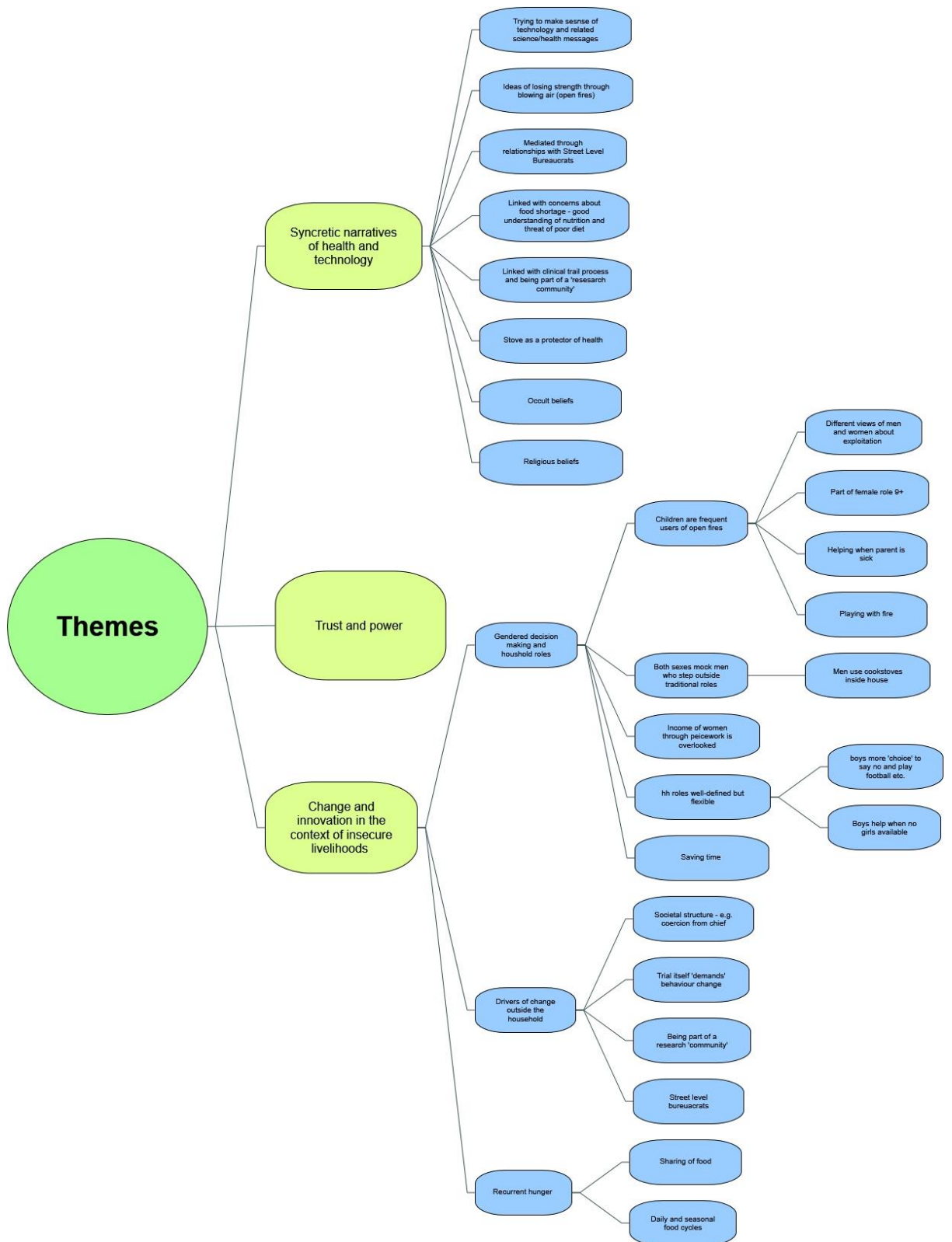


## Appendix 5: Analytical matrix example

COLT members - Framework matrix for power and trust				
	Occult beliefs	Distrust	Within trial	Innovation and change
Village				
1	<p>People linked the expense of the cookstove, solar panel etc. with satanism as in there must be a catch - why would such things be given without an ulterior motive? COLT member reported that once he explained there was no problem.</p> <p>No mention of blood-sucking</p>		<p>Due to the nature of this type of study the COLT members have much more influence over the participants. This is indicated by a description of constant monitoring (also because cooking is outdoors). In the process of doing this it is possible for messages to be altered - leads to cookstoves prevent pneumonia?</p>	
2	<p>This issue only came up in relation to ACTIA where there was blood extraction. People were 'frightened' and worried about taking the children's blood - also the idea that others were becoming rich from taking the blood - 'you are getting something' - people were being 'enticed'.</p> <p>She tried to counter these rumours by saying that people could see for themselves. At the end of the section mentions that it was the non-participants who were frightening the participants.</p>	<p>Says that study was not beneficial because the researchers did not come back to say thank you and to give the results. Comparing to past dissemination event in Mnthumba (ACTIA?).</p> <p>Also 'we don't have anything but we are just saying thank you from our mouth' - reciprocity is missing.</p> <p>She can understand that the results might be wider but agrees that study was not beneficial - presumably health wise as cookstoves were a benefit.</p> <p>'they just said that it has ended, that's all'</p> <p>'the owners are saying that, "it did not benefit us," but I can see that maybe it will be beneficial to the whole world after your additions in the future'</p> <p>Clearly dissemination of results is an important part of a study and if overlooked can cause distrust and "hurt".</p> <p>See also male fieldworker FGD.</p>		<p>Suggests that she could provide an impetus for change by explaining benefits. Also that if this was done and study came back then it would be more successful as they would 'understand it very well'</p>
3	<p>Link between sound stove fan makes and blood-sucking: 'They were saying that if those stoves are producing that sound then it is drawing your blood'.</p> <p>But this was down to envy from non-participants: 'those people who were threatening their friends they wanted just to discourage their friends but in real sense they wanted it'.</p>			<p>The cookstove is a novel item for this community: 'there wasn't such a thing in the past so it is like a new thing to them sure'.</p> <p>It can be used on the verandah when it is raining or by me who are 'shy'.</p>
4	<p>States that there was 'no problem' in this village about people participating in CAPS - if things were said 'they said it behind without my knowledge'.</p> <p>But then mentions 'blood suckers' so clear he understand what CK is alluding to.</p>			<p>There has been a change in age of marriage, now 'people wait for years... Yes they wait may be because mostly they go to school... Yes now it is changed unlike in the past'. Notably says this applies 'even' though they live in a village.</p>
5	<p>The response to the rumours question in this case results in a very standard response especially as this is the village where I first heard about these rumours directly (i.e. not via field workers).</p> <p>He 'did not come across any criticism and people 'were just happy'.</p> <p>References ACTIA but also in a positive way - 'which helped to improve children's health in this village and 'The children were receiving strong medicine when they get sick'.</p> <p>Concludes with: 'There is no problem. We are learning about good health'.</p>			<p>These groups have brought big impact, bringing things to the community that have improved their lives. For example if people have interest, those who have never seen these metal cook stoves, and now they are using these metal cook stoves. So they are interested, saying that they are ready to receive any research projects that might come.</p>



## Appendix 6: Theme development map



## Appendix 7: Information and Consent Form for CAPS qualitative research participants



**University of Malawi College of Medicine, Malawi Liverpool Wellcome Trust,  
University of Liverpool School of Tropical Medicine Information Sheet**

**Information and Consent Form for qualitative research participants: English  
version 1.0 (14/03/2016)**

**An advanced cookstove intervention to prevent pneumonia in children under  
5 years old in Malawi: a cluster randomized controlled trial – Qualitative.**

### **1. Introduction**

Burning biomass fuels (dung, crops residues, wood, and charcoal) in open fires and basic cookstoves creates smoke that can be harmful to health. We need to develop affordable and effective ways to reduce exposure to smoke. One way of doing this is to burn biomass fuels in an advanced cookstove instead of open fires or other basic cookstoves. Advanced cookstoves may have health benefits but we do not know. We are doing this trial to find out whether an advanced cookstove called the Philips fan-assisted stove has health benefits and particularly whether it reduces pneumonias in young children.

As part of this study we also want to investigate how future trials of this type can be improved. We want to know about cooking practices and decisions, to understand more how people use the CAPS cookstove and other cooking methods and why they do so. If it is shown that this type of cookstove is beneficial to health then this information will be vital to ensure that large scale distribution will be successful.

### **2. Why have you been chosen?**

You live in an area of Malawi where this trial is being conducted and your village has been selected to participate.

### **3. Do I have to take part in the study?**

We will only ask you to participate in this study if your village leaders have agreed for your village to participate. You do not have to take part even if other members of the village agree to take part. Your agreement to help with this research study is completely optional and if you would prefer not to participate, this will be without penalty or loss of benefits to which you would be otherwise entitled. You can choose to leave the study at any time, without providing a reason.

### **4. What will be involved if I agree to take part in this study?**

We want to explore your everyday experience and we are planning to use a range of different ways to do that. These include observing and joining in with cooking tasks, inviting you to participate in group discussions or through interviewing you.

We will also use a type of research called Photovoice where we will loan some people cameras and ask them to take photographs and then discuss them.

If you participate in group discussions or interviews, we will record what you say to help us remember what you have said afterwards. We may also film some sessions, if you agree.

**5. Will there be any risks involved in the study?**

You may be inconvenienced by the time commitment involved in taking part in the study.

**6. Will there be any benefits involved in being in the study?**

All households enrolled in the CAPS study will receive two advanced cookstoves either at the beginning (intervention group) or end (control group) of the study. We will ensure that supplies of antibiotics for the treatment of pneumonia are available for trial participants through the local health centres.

In addition participants in the CAPS Qualitative research will receive 2500MK in recognition of the inconvenience of time away from other tasks.

**7. Who is organizing the study?**

The research is being done by researchers at the College of Medicine, Malawi Liverpool Wellcome Trust, University of Liverpool, Liverpool School of Tropical Medicine, University of London and Imperial College London.

**8. Who will know what we find out?**

We will use digital voice recording machines to record group sessions and interviews and store this information on a computer. Any photographs and video that is part of the study will also be stored in the same way. This information will be transferred to a computer database but without using your name or address so that you could not be identified from this information. This database will be analyzed by researchers at the College of Medicine, Malawi Liverpool Wellcome Trust and Liverpool School of Tropical Medicine. We will share the results of this study with you and your community, at local charity or research meetings and will present the findings at an international conference and in journals. We will not share any information that would allow you to be identified except for photographs which you agree can be used.

**9. What happens if you change your mind?**

If you agree to join the study you can change your mind and withdraw your consent at any time.

If you have any questions about this study, please contact our Project Manager, **Chifundo Ndamala** on [+265 999 981 409].

For any questions regarding participant rights in the scope of this study, please contact the chairman of the local ethics committee (COMREC). This committee has reviewed and approved all of these studies. The contact details are: COMREC Secretariat, College of Medicine, P/bag 360, Blantyre 3. Tel no: [+265 111 989 766].

**An advanced cook stove intervention to prevent pneumonia in children under 5 years old in Malawi: a cluster randomized controlled trial – Qualitative.**

**Qualitative Participant Consent form: English version 1.0 (14/03/2016)**

Name of participant \_\_\_\_\_

Address \_\_\_\_\_

- |  |                                   |
|--|-----------------------------------|
| 1. Have you read or listened to the CAPS Qualitative participant information sheet (v.1.0)   | <input type="checkbox"/> Yes /No  |
| 2. Have you had the opportunity to ask questions?  | <input type="checkbox"/> Yes /No  |
| 3. Have your questions been answered, and do you feel that you have had enough information about this study?   | <input type="checkbox"/> Yes / No |
| 4. Do you understand that you are free to withdraw from the study at any time without giving a reason and without any penalties?   | <input type="checkbox"/> Yes /No  |
| 5. Do you understand that data collected during the study may be looked at by individuals from Liverpool School of Tropical Medicine and regulatory authorities? Information you provide which is needed for analysis outside Malawi will be anonymised. | <input type="checkbox"/> Yes / No |

If you have answered 'yes' to questions 1-5 please sign the form, or place a thumbprint below, which means that you voluntarily agree to enter the study.

I voluntarily agree to enter this study.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Witness to consent if participant unable to sign their name

(name in capitals) \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

Investigator obtaining consent (name in capitals) \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

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