

Self Help Plus: Study protocol for a cluster randomised controlled trial of guided self-help with South Sudanese refugee women in Uganda

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1 **Self Help Plus: Study protocol for a cluster randomised controlled trial of guided self-**
2 **help with South Sudanese refugee women in Uganda**

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1 **Abstract**

2 **Background:** Exposure to armed conflict and forced displacement constitute significant risks
3 for mental health. Existing evidence-based psychological interventions have limitations for
4 scaling-up in low-resource humanitarian settings. WHO has developed a guided self-help
5 intervention, Self Help Plus (SH+), which is brief, implemented by non-specialists, and
6 designed to be delivered to people with and without specific mental disorders. This paper
7 outlines the study protocol for an evaluation of the SH+ intervention in northern Uganda,
8 with South Sudanese refugee women.

9 **Methods:** A two arm single-blind cluster randomised controlled trial will be conducted in
10 14 villages in Rhino Camp refugee settlement, with at least 588 women experiencing
11 psychological distress. Villages will be randomly assigned to receive either SH+ with
12 enhanced usual care, or enhanced usual care alone. SH+ is a 5-session guided self-help
13 intervention delivered in workshops with audio-recorded materials and accompanying
14 pictorial guide. The primary outcome is reduction in overall psychological distress over
15 time, with 3-months post-treatment as the primary end-point. Secondary outcomes are
16 self-defined psychosocial concerns, depression and post-traumatic stress disorder
17 symptoms, hazardous alcohol use, feelings of anger, interethnic relations, psychological
18 flexibility, functional impairment, and subjective wellbeing. Psychological flexibility is a
19 hypothesised mediator, and past trauma history and intervention attendance will be
20 explored as potential moderators.

21 **Discussion:** This trial will provide important information on the effectiveness of a scalable,
22 guided self-help intervention for improving psychological health and wellbeing among
23 people affected by adversity.

24

25 **Trial Registration:** ISRCTN50148022; registered 13/03/2017

1 access to mental health services in low and middle income countries (LMICs) and most
2 people in low-resource settings with mental health problems, including refugees, currently
3 do not receive evidence-based care (Saxena et al., 2007, Kane et al., 2014). In addition,
4 most armed-conflicts occur in LMICs (Kim and Conceição, 2010), and these countries
5 also host around 90% of the world's refugees (OECD, 2017). Thus, the damaging effects
6 of armed conflict and displacement frequently lead to increased risk factors and greater
7 mental health needs in the very contexts where health and support systems are greatly
8 challenged to cope with this burden.

9 For psychological interventions to have promising potential for large-scale
10 implementation in low-resource settings, they must be brief, inexpensive, and relatively easy
11 to deliver. Given the dearth of mental health specialists in most regions, particularly in
12 humanitarian crises, scalability can be improved by: (i) further innovating on task-shifting /
13 task sharing approaches whereby non-specialists are trained and supervised to deliver
14 programmes (Blanchet et al., 2013); (ii) enhancing reach *via* approaches targeting a broader
15 array of mental health difficulties simultaneously (Betancourt et al., 2014, Murray, 2014,
16 White and Ebert, 2014); and (iii) designing interventions to be more easily adaptable to
17 culture and context (Castro et al., 2004, Castro et al., 2010, Bernal and Sáez-Santiago, 2006).

18 To meet these demands, the WHO has published guidelines and evidence-based
19 interventions for use in non-specialised health settings (World Health Organisation, 2015b,
20 World Health Organisation, 2016).

21 **SH+**

22 In line with recommendations for stress management interventions (Tol et al., 2013)
23 and the need for innovative approaches to address the issues of access and scale, WHO
24 developed the Self Help Plus (SH+) intervention (Epping-Jordan et al., 2016). The
25 programme was developed with experts in psychological intervention and global mental

1 health, with peer-review from 43 external experts. SH+ is brief (5-sessions) and does not
2 require diagnostic assessment since it aims to target a broad range of psychological
3 difficulties (e.g. depressive and/ or anxious mood, stress reactions, and client-defined
4 psychosocial problems) that cause distress but do not necessarily meet the diagnostic criteria
5 for a mental disorder. Innovative features include a guided self-help format, comprising an
6 illustrated book and audio materials (which provide the core course content) delivered in a
7 larger group course format, with a guide to assist briefly trained lay facilitators to conduct the
8 course. These materials aim to ensure that key intervention exercises are delivered with
9 fidelity, without the financial and human resource burden of extensive training and
10 supervision. Thus, SH+ may be easier to disseminate and more readily scalable in areas
11 where there is limited access to mental health services.

12 SH+ is based in Acceptance and Commitment Therapy (ACT), a third-wave
13 cognitive-behavioural approach that incorporates acceptance and mindfulness and encourages
14 meaningful living despite adversity. Specifically, ACT aims to promote psychological
15 flexibility, which is associated with (i) a reduction in attempts to alter or control unwanted
16 internal experiences such as thoughts and emotions (based on the notion that suppressing
17 unwanted thoughts and emotions paradoxically increases them) and (ii) an increased ability
18 to respond adaptively to situations for the purpose of valued living (Hayes et al., 2006).
19 Arguments for using ACT in efforts to increase access to mental health support in culturally
20 varied low-resource settings have been highlighted recently (White et al., 2017). Several
21 meta-analyses suggest that ACT-based interventions may be effective in various formats, and
22 for numerous psychosocial problems (Hayes et al., 2006, A-Tjak et al., 2015), including in
23 low-resource and culturally varied settings (Lundgren et al., 2006, Stewart et al., 2016).

24 Current progress in psychological research and practice has targeted increased access
25 through innovative delivery models such as psychoeducational courses (Cuijpers et al.,

1 2009), e-mental health (Andrews et al., 2010) and bibliotherapy (Cuijpers et al., 2010).
2 Recent meta analyses suggest that i) guided self-help formats may be just as effective as face-
3 to-face interventions for depression (World Health Organisation, 2015a); and ii) self-help
4 mindfulness-based interventions are potentially efficacious in reducing depression and
5 anxiety (Cavanagh et al., 2014). Several ACT interventions have been tested in self-help
6 format (Jeffcoat and Hayes, 2012, Trompeter et al., 2015, Fledderus et al., 2012).

7 **Setting**

8 This study is part of a larger programme of research being conducted in Rhino Camp
9 refugee settlement, located in northern Uganda. Despite its name, Rhino Camp is not a camp
10 but a set of villages where South Sudanese refugees are able to self-settle on appointed plots
11 of land and utilise existing government health and education services. Most recent figures
12 indicate that approximately 116,250 South Sudanese refugees reside in Rhino Camp (V.Kahi,
13 Health Information System Officer, Public Health Section, UNHCR, Geneva).

14 High rates of mental health problems have been documented in displaced South
15 Sudanese populations, with co-occurring PTSD, depression, and anxiety symptoms the most
16 commonly reported (Harsha and Kulkarni, 2014). Local idioms of distress amongst South
17 Sudanese have also been documented (Ventevogel et al., 2013). A recent desk review and
18 needs assessment conducted in Rhino Camp during early phases of this study found high
19 levels of psychological distress amongst displaced South Sudanese populations. Experiences
20 of gender-based violence, including sexual violence, and early marriage were common.
21 Limited mental health and psychosocial support services were identified. Prominent
22 psychosocial issues identified included psychological distress in the form of “overthinking”
23 and ethnic tensions (Adaku et al., 2016).

24 The study will be conducted with the implementing partner, Peter C. Alderman
25 Foundation (PCAF). PCAF is a non-governmental organization that has collaborated with the

1 Ministry of Health in Uganda to provide mental health support to conflict-affected
2 populations since 2006 (Nakimuli-Mpungu et al., 2013). PCAF has a static clinic at the Arua
3 Regional Referral Hospital, a multi-disciplinary team that visits health centers in Rhino Camp
4 on a weekly basis (psychiatric clinical officer, nurse, counselor, social worker), and a social
5 worker based in the settlement. At the time of this study, all mental health services in the
6 settlement are provided by PCAF and supervised by a psychiatrist (AA) based in Arua.

7 **Current Study**

8 Our research strategy is informed by the UK Medical Research Council Framework
9 for the Development of Complex Interventions (Craig et al., 2008), which recommends an
10 iterative process of: a) intervention development; b) feasibility testing and piloting; c)
11 evaluation; and d) implementation. This framework for development of interventions
12 emphasises the importance of exploratory and randomised pilot studies prior to large-scale
13 trials, to address uncertainties such as problems of acceptability, compliance, feasibility,
14 delivery of the intervention, recruitment and retention.

15 In line with this framework, we conducted two preliminary studies: (1) an
16 uncontrolled pilot with one SH+ group of men and one with women (Tol et al., under review-
17 a); and (2) a feasibility cluster randomised controlled trial (cRCT) with two groups of women
18 in both intervention and control conditions (Tol et al., under review-b). Given concerns of
19 contamination in small communities and with the provision of an illustrated book, a cluster
20 design was chosen. The initial uncontrolled pilot found good adherence among women,
21 promising changes on outcome measures, and encouraging statements of improvement in
22 qualitative interviews. However, adherence among men was suboptimal and a few sessions
23 were disrupted due to some participants attending while intoxicated. We therefore decided
24 that further adaptation was required for use of SH+ with men, and to continue our evaluation

1 of SH+ with women only. Additional details on the translation, adaptation and initial
2 uncontrolled piloting can be found in this volume (Tol et al., under review-a).

3 **Methods**

4 **Design**

5 This study is a two-arm, single-blind, superiority cRCT, to evaluate the
6 effectiveness of the locally adapted SH+ alongside enhanced usual care (SH+), compared
7 to enhanced usual care alone (EUC). It is conducted in a community-based setting with
8 South Sudanese refugee women living in northern Uganda.. All villages in zones of Rhino
9 Camp where preliminary studies of SH+ have not been implemented ($n= 14$) will be
10 included and randomisation will occur at the village level such that half of the villages
11 will be allocated to receive SH+ and EUC and half will receive EUC alone. Outcomes on
12 a range of mental health indicators will be assessed at the individual level at baseline
13 (T1), post-intervention (T2; 6 weeks), and 3-month follow-up (T3; 19 weeks). The
14 Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT) is outlined
15 in figure 1, and the checklist is attached as a supplementary file.

16 **Aims and Hypotheses**

17 The primary aim of this cRCT is to assess the effectiveness of SH+ on symptoms
18 of psychosocial distress at 3 months. The secondary aim is to assess SH+ effectiveness
19 using other measures of mental health and wellbeing from pre- to post- intervention, and
20 at a 3 month follow-up. Additional aims are to assess: (1) whether psychological
21 flexibility acts as a mediator of changes on other outcomes; (2) whether treatment effects
22 are moderated by past experience of sexual and other forms of gender-based violence
23 (GBV), the number of different types of potentially traumatic events experienced, and
24 attendance at sessions. Health service use will be measured as an index of costs to enable
25 preliminary cost-effectiveness analysis. We will assess fidelity to the intervention manual

1 and contamination of the control group by exposure to SH+ materials or content.

2 We expect that women in the SH+ arm will show significantly greater
3 improvements on all outcome measures both at immediate follow-up and 3-month follow-
4 up compared to the EUC arm. In addition, we hypothesise that psychological flexibility
5 will act as a mediator such that the intervention will lead to improvements in
6 psychological flexibility, which in turn are associated with improvements on outcome
7 measures.

8 Although the study is not powered to conclusively determine moderation effects,
9 we will conduct exploratory analyses of potential moderators. We expect smaller but still
10 significant treatment effects for women exposed to GBV and higher levels of exposure to
11 other potentially traumatic events. We also expect that treatment effects will be
12 moderated by attendance such that greater attendance is related to larger effects.

13 **Sample Size**

14 Recent meta-analyses of self-help acceptance and mindfulness-based therapies
15 (Cavanagh et al., 2014) and psychoeducational depression courses (Cuijpers et al., 2009)
16 have found small to medium effect sizes for depression symptoms. Although our primary
17 outcome measure is psychological distress, this literature was used as the best estimate of
18 expected effect size. Utilizing the PowerUp! Tool (Dong and Maynard, 2013), a
19 minimum detectable effect size was calculated using an average cluster size of 42
20 individuals; 14 clusters; intracluster correlation of 0.012; 20% attrition; 80% power; an
21 alpha level of 0.05 and a two-tailed test. With these specifications the minimum
22 detectable effect size is 0.219 with a total N of 588 (294 per condition). In the completed
23 small feasibility cluster RCT in this population less than 20% attrition was observed (Tol
24 et al., under review-a).

25

1 *** INSERT FIGURE 1 *****

2 **Participants, Screening and Randomisation**

3 Participants will include any female adult refugee (aged over 18 years) from South
4 Sudan living within study villages in Rhino Camp who: (1) is experiencing psychological
5 distress based on attaining a score of 5 or more on the Kessler 6 (K6; Kessler et al., 2010); (2)
6 can understand spoken Juba Arabic (according to self-report). Exclusion criteria will be
7 determined through a structured screening questionnaire administered by trained research
8 assistants, and will include: (1) imminent risk of suicide or other life threatening risk; (2)
9 observable signs of a severe mental disorder (e.g. psychosis); (3) inability to understand the
10 basic intervention materials (with items 2 and 3 assessed using an observation checklist).
11 Within each village, households will be randomly selected by spinning a bottle to decide
12 which direction to start in, approaching the first household in that direction, and then
13 approaching every fifth house after that. Within households, we will inquire whether there are
14 Juba Arabic speaking adult women. If more than one woman meets these requirements we
15 will randomly select one by drawing numbered slips of paper, and screen the woman who
16 drew the slip numbered as one. Potential participants will be screened for eligibility, and
17 recruitment and screening will continue until two SH+ groups (20-25 people per group, or
18 around 40-50 participants in total) have been identified. Assuming that 60% of participants
19 screened will be eligible and willing to participate in the study (conservatively estimated on
20 eligibility rates of 76% in the uncontrolled pilot; (Tol et al., under review-a)), we estimate
21 needing to screen approximately 1,050 individuals. However screening will be continued
22 until the target sample is achieved. Based on population statistics (V.Kahi, Health
23 Information System Officer, Public Health Section, UNHCR, Geneva) and experiences in
24 preliminary studies (Tol et al., under review-a, Tol et al., under review-b), we estimate that
25 recruiting sufficient participants from each of 14 clusters will be feasible. To ensure

1 participant retention in the study we aim to keep detailed address information, and discuss
2 current location with family members if participants have moved.

3 After baseline, simple randomization of villages will be conducted via software by
4 staff at Johns Hopkins University not involved in the study, and they will reveal allocations
5 to the local implementation team who will inform refugee leaders and individual participants
6 which condition their village has been allocated to, in preparation for intervention
7 commencement. Allocation of villages will not be revealed to the independent assessment
8 team until the end of the trial.

9 **Outcome Measures**

10 The primary outcome is psychological distress across time (T1, T2, T3). Secondary
11 outcomes are: self-defined psychosocial concerns, symptoms of depression and PTSD,
12 hazardous alcohol use, feelings of anger, interethnic group relations, psychological
13 flexibility, functional impairment, and subjective wellbeing. The primary end-point is the 3
14 month follow-up (T3). However, we will also examine effects of the intervention between
15 baseline (T1) and post-treatment (T2). All measures have been systematically translated from
16 English to Juba Arabic according to standard systematic procedures (van Ommeren et al.,
17 1999) and piloted. Psychometric properties were found to be suitable in the preliminary
18 studies, and internal consistencies (using Cronbachs alphas) are reported below in
19 parentheses. Socio-demographic data will be collected through questions A1-A5 of the
20 WHO Disability Assessment Schedule 2.0 (WHODAS; World Health Organisation, 2010).
21 Outcomes will be assessed through one-to-one interviews in participant homes. These will be
22 conducted by an assessment team, comprised of trained research assistants with strong Juba
23 Arabic and English language skills, and an independent assessment team leader. To
24 accommodate low literacy, pictorial flashcards will be used to depict answering options for
25 the outcome measures. These have been used in preliminary studies and are well understood.

1 **Primary outcome: Psychological distress.** We will measure psychological distress
2 using the K6 (Kessler et al., 2010); ($\alpha = 0.64$). This is a brief 6-item scale of non-specific
3 psychological distress, screening for the presence of serious mental illness. It has been used
4 in the WHO World Mental Health Surveys and validated in many different countries. Scores
5 range from 0-24, and in most applications, a score of 13 or above has been interpreted as
6 indicating a probable serious mental illness (Kessler et al., 2003), whereas a score of 5 or
7 more is indicative of moderate or severe psychological distress (Prochaska et al., 2012). We
8 will use the K6 as both a screener and an outcome measure.

9 **Secondary outcomes.** We will assess self-defined psychosocial goals using the
10 Psychological Outcome Profiles instrument (PSYCHLOPS; Robinson et al., 2004) ($\alpha = 0.82$).
11 This consists of four questions, and three domains: problems (2 questions), function (1
12 question) and wellbeing (1 question). Participants are asked to give free text responses to the
13 problem and function domains. Responses are scored on a six-point scale producing a
14 maximum score of 18. The pre- and post-therapy versions of PSYCHLOPS consist of the
15 same four questions but the post-therapy version adds an overall evaluation question
16 (determining self-rated outcome ranging from “much better” to “much worse”).
17 PSYCHLOPS has been validated in primary care populations across several countries
18 (Czachowski et al., 2011, Héðinsson et al., 2012).

19 We will administer the abbreviated 6-item version of the PTSD Checklist- Civilian
20 (PCL-C; Lang and Stein, 2005) ($\alpha = 0.64$) to assess posttraumatic stress disorder symptoms.
21 The PCL-C scale uses a 5-point response scale, to give a total score ranging between 6 and
22 30 with higher scores indicating higher levels of PTSD symptoms. It has been well validated
23 across cultures.

24 To assess depression symptoms, we will use the Primary Health Questionnaire 9-item
25 version (PHQ-9; Kroenke et al., 2001) ($\sigma = 0.85$). The PHQ-9 scale uses a 4-point response

1 scale, giving a total score between 0 to 27, with higher scores indicating more depression
2 symptoms. The PHQ has been previously used with South Sudanese internally displaced
3 people (Kim et al., 2007).

4 We will assess hazardous alcohol use through two survey questions designed for the
5 purpose of this study, asking how many days in the last week the participant drank alcohol
6 and how many days they became intoxicated. We will use the addition of the number of days
7 for both questions as a continuous variable.

8 To assess anger, we will use a shortened version of the explosive anger index, which
9 was developed by Silove and colleagues for use in post-conflict Timor-Leste (Silove et al.,
10 2017) and with perinatal women (Silove et al., 2015). Our shortened version asks two
11 questions to identify whether participants have experienced attacks of explosive anger
12 (presence score). Participants who endorse these items, will be asked further questions about
13 frequency, what triggers attacks, and whether attacks are associated with verbal or physical
14 violence (severity score).

15 To assess ethnic relations, we developed three questions ($\alpha = 0.87$) that ask about
16 frequency of interacting with people from other ethnicities, in terms of greeting and having
17 conversations in public places, and meeting in one's home. Questions have a 4-point response
18 format ranging from 0 (Never) to 3 (Very often). We will sum answers to form a continuous
19 variable ranging between 0 and 9.

20 We will assess functional impairment using the WHODAS 2.0, 12 item interview-
21 administered version (World Health Organisation, 2010) ($\alpha = 0.82$). This instrument assesses
22 health and disability across all health conditions, is applicable across cultures, can be used in
23 all adult populations, and has been used in Uganda (Nyirenda et al., 2013). WHODAS 2.0
24 covers six domains (cognition, mobility, self-care, getting along, life activities, participation).
25 It assesses difficulties people have across these domains during the last 30 days.

1 To assess subjective wellbeing, we will administer the WHO-5 Wellbeing Index, a 5-
2 item questionnaire measuring current psychological wellbeing and quality of life (Bech et al.,
3 2003) ($\alpha = 0.80$). Scores range from 0-25. The scale has demonstrated sensitivity to change in
4 wellbeing and is available in numerous languages (Bech et al., 2003).

5 To assess psychological flexibility, we will deliver the Acceptance and Action
6 Questionnaire (AAQ-II; Bond et al., 2011) ($\alpha = 0.82$), a 7-item scale, using a 7-point
7 response scale. Scores range from 0-49, with higher scores indicating higher psychological
8 flexibility. It has been used in post-conflict settings (Kashdan et al., 2009). Psychological
9 flexibility will be included both as a secondary outcome and as a mediator of the primary and
10 other secondary outcomes.

11 **Moderators.** To assess level of exposure to different potentially traumatic events, we
12 will administer an adapted 23-item version of the Harvard Trauma Questionnaire Part A
13 (HTQ; Mollica et al., 1992) ($\alpha = 0.71$). Respondents are asked whether they have experienced
14 each of the events. For this study, several items were removed and others added based on
15 contextual relevance in consultation with the local research and clinical team, and one item
16 on torture was adapted from the original version of the HTQ. Two items on the HTQ Part A
17 assessing domestic violence, and sexual assault were replaced by 3 adapted items from the
18 WHO Violence Against Women measure (World Health Organisation, 2005) that were
19 perceived to enhance the ability of the scale to capture these experiences.

20 At T3, a single question will be asked about any potentially stressful or upsetting
21 events participants have experienced during the trial period. Responses will be coded with
22 general categories (e.g. violence, riots, hunger, destruction of home or property). PCAF
23 reports will be used to identify additional community-level events that may affect particular
24 villages.

1 A measure of attendance at sessions will be collected via session attendance sheets kept
2 by intervention facilitators.

3 **Use of Services.** To assess the use of EUC services by participants in both trial arms, an
4 identifier will be added to the PCAF routine assessment to indicate whether the participant is
5 in the SH+ trial. At the conclusion of the trial period, data will be gathered on access to any
6 PCAF service (i.e. assessments, group support psychotherapy, medication, social work home-
7 visits, counseling, or group health talks).

8 To assess other health service usage, participants will be asked to list any health
9 service they used for any health problem in the past month, including traditional healers.
10 They will then be asked to identify expenditures in the past month on healthcare, through a
11 series of nine questions.

12 **Enhanced Usual Care**

13 EUC will be provided to participants in both SH+ villages as well as participants in
14 control villages. We used enhanced usual care as the comparator to avoid possible nocebo
15 effects associated a waitlist condition (Furukawa et al., 2014), whilst providing more
16 substantial support than usual care. It will consist of an individual visit from a Community
17 Psychosocial Assistant (CPA; a trained Village Health Team member who is a South
18 Sudanese refugee), employed on a small facilitation fee, The CPA will be aware of the
19 allocation of the village and will provide information to all participants over one session of
20 approximately 10-15 minutes held in the participant's home and covering: the effects of
21 psychological distress; simple strategies to manage 'overthinking' (such as physical exercise,
22 regular sleep, and keeping a regular routine); services available via PCAF and how to access
23 them. The CPAs will be of mixed sex. Other services will not be restricted in any way to
24 participants in either condition, but will be monitored.

1 The standard PCAF services include assessments, and then based on need and
2 preferences: psycho-education, group and individual psychological interventions, social work
3 home visits, counseling, medication, and group health talks. For SH+ participants the CPA
4 will also provide details of the SH+ programme, and schedule of sessions.

5 **SH+ Implementation**

6 The intervention will involve participants attending five weekly workshop sessions
7 (20-25 people) lasting approximately two hours each, during which pre-recorded audio
8 materials adapted for the local context are presented, with participants engaging in several
9 experiential exercises and small group discussions. Participants are also provided with a
10 locally-adapted illustrated self-help book to be used outside of the sessions. Two facilitators
11 conduct the workshop, but their involvement is minimal. Primarily, their role is to coordinate
12 the group process, for example, stopping and starting the audio, reading discussion exercises
13 and answering basic questions from participants. The content of the intervention is delivered
14 via the pre-recorded materials, with facilitators trained not to provide detailed explanations,
15 in order to ensure fidelity and keep the need for their training and supervision minimal. A
16 written facilitator guide helps facilitators to conduct the course.

17 SH+ involves teaching participants skills of: present moment awareness and
18 grounding, defusion from and acceptance of difficult thoughts and feelings, identifying
19 valued life directions and taking action in line with those, and compassion for self and others.
20 A brief outline of the five sessions of SH+ is provided in Figure 2. Skills learned in any
21 session are reinforced in subsequent weeks.

22 In Rhino Camp, the audio material will be presented in Juba Arabic- the most
23 common language spoken amongst South Sudanese. The SH+ book is largely pictorial
24 because of high rates of illiteracy among South Sudanese refugees, but still contains some
25 text. Pilot testing revealed that literate family members may read the book to illiterate course

1 participants between sessions (Tol et al., under review-a). The book will be offered to
2 participants in either English (a language increasingly understood by young people) or Juba
3 Arabic. Incentives will not be provided for participants to attend SH+ sessions, however a
4 soda or water, and a biscuit, will be provided to each participant during each SH+ session due
5 to the length of the sessions. Sessions will be held in tent structures erected specifically for
6 this programme, and mobilisation activities will occur prior to each session.

7

8 *** insert Figure 2 here ****

9 **Facilitator Selection, Training, and Supervision**

10 SH + facilitators have a minimum of completed secondary education, prior experience
11 with psychosocial activities or community mobilization, and reasonable proficiency in both
12 Juba Arabic (spoken) and English language (written and spoken). Four female facilitators
13 from Arua (Uganda) were employed for the duration of the initial uncontrolled pilot study,
14 and prior feasibility cRCT. Training for these facilitators comprised a five-day training prior
15 to the uncontrolled pilot study and a further four days of training prior to the feasibility cRCT
16 because of substantial changes to the SH+ package based on results of the pilot. This training
17 was conducted by a WHO master trainer (KC). The training provided information on
18 psychological distress, taught skills in identifying and managing participant distress and
19 managing group processes, explained the aims and background to the SH+ intervention, and
20 allowed facilitators to experience taking part in the course themselves. PCAF clinical team
21 members also attended this training, to prepare them to supervise the overall conduct of the
22 intervention and contribute to general capacity building. PCAF clinical team members do not
23 use SH+ techniques, audio-recordings, or books in routine services, and the general concepts
24 of ACT and SH+ were not covered sufficiently in training to enable them to be used without
25 materials, therefore contamination of EUC was not considered an issue.

1

2 Competency checks were completed during the training and prior to the feasibility
3 cRCT. These comprised of facilitators completing two role-plays each (one of running a SH+
4 group session and the other supporting a distressed participant), chosen by the WHO master
5 trainer.

6 After the feasibility cRCT but prior to the current cRCT, a further four female
7 facilitators from the same area will be employed. The training for these facilitators will be
8 provided in two stages of four days each. The first stage will be conducted by the previously
9 trained team who gained experience with SH+ during preliminary studies. This stage will
10 mainly involve listening through the audio course and reading the accompanying book, along
11 with initial practice in running groups. The second stage of the training will be provided by
12 the facilitator team leader in conjunction with the WHO master trainer and focus on the skills
13 covered in the pilot training described above. This will be followed by the same competency
14 assessment. This two-stage approach will also build training capacity in the local facilitator
15 team.

16 A social worker from PCAF will supervise the conduct of SH+ during the cRCT. The
17 clinical supervisor and the facilitator team leader will receive remote support and supervision
18 on an as needed basis (but no more than one hour per week) from the WHO master trainer.

19 Protocol adherence will be ensured through group peer-review sessions after each
20 SH+ session. Peer reviews will cover potential difficulties encountered in delivering SH+,
21 feedback on participant or facilitator concerns, and any adverse events (AEs; e.g. injuries on
22 the way to treatment, increase in distress) and serious adverse events (SAEs; e.g. suicide
23 attempts; serious violence). The facilitator team leader will receive supervision from the
24 clinical supervisor weekly or less frequently, with the supervisor also attending some peer-

1 review sessions to provide support. The structure of the SH+ intervention delivery,
2 supervision, and training team, is illustrated in Figure 3.

3

4 *** insert Figure 3 here ****

5

6 **SH+ Fidelity**

7 Fidelity will be assessed using adherence monitoring checklists to note any deviations
8 from protocol (i.e. a checklist of all activities to be completed in each workshop according to
9 the intervention manual) by both facilitators present at each workshop. Any deviations will
10 be reported to the WHO master trainer after supervision. The clinical supervisor will directly
11 observe a sample of at least 10% of all SH+ workshops, and will complete the same fidelity
12 checklist.

13 **Ethics and Trial Procedures**

14 Ethical approval has been obtained from the WHO Ethics Review Committee (ERC),
15 the MildMay Uganda Research Ethics Committee, and the Uganda Council for Science and
16 Technology. Permission to conduct research and mental health support activities has been
17 provided by the Office of the Prime Minister in Uganda and the United Nations High
18 Commissioner for Refugees in Uganda.

19 Potentially eligible women identified through the recruitment process described
20 above will be given oral and written information in the local language about participating
21 in the screening process by a research assistant, who will then seek informed consent for
22 screening. For eligible participants, oral and written information about the trial will be
23 provided by research assistants, and participants will be asked to complete a written
24 consent form. For participants who are illiterate, witnessed oral consent and a thumb-print

1 will be considered sufficient. Participants will be free to decline to participate or withdraw
2 without any effect on their routine care.

3 Small non-financial incentives (e.g. a package of soap) will be provided to
4 compensate participants' for their time in completing outcome assessments. In case
5 participants do not attend a scheduled assessment, three attempts will be made to contact
6 them to schedule a new appointment, via home visits or contacting other members of the
7 community.

8 All AEs and SAEs will be recorded by the research team and reported to a data safety
9 monitoring board (DSMB) consisting of an external clinical officer, an external social worker,
10 the project coordinator, and the independent assessment team leader. This will occur within
11 24 hours for SAEs, and as soon as possible for AEs. A representative from the DSMB will
12 review SAEs within 48 hours and, in addition, the DSMB will review all AEs at least twice a
13 month. If necessary, appropriate action will be taken in respect to individual participants, or
14 conduct of the trial (such as referral to specialized care, installing extra assessment points for
15 monitoring participants, or discontinuation). No interim analyses are planned. The local
16 project coordinator is responsible for ensuring timely follow-up of any SAEs, and will inform
17 the participants and DSMB if any data indicate that the disadvantages of participation may be
18 significantly greater than expected.

19

20 **Blinding and Contamination**

21 Participants and implementation staff will not be blind to village allocation. The
22 independent assessment team will remain blind to the intervention allocation of villages
23 throughout the trial, and will operate independently from the intervention team (with offices
24 in separate parts of Arua).. All staff have been trained and supervised in the importance of
25 maintaining blinding, and at no time will intentional unblinding of the independence

1 assessment team be required. Prior to conducting each post-intervention and follow-up
2 assessment, instructions will be given by assessors to all participants about the importance of
3 not revealing their village allocation.

4 Contamination assessments with 15% of participants in each cluster will be conducted
5 at the 3-month follow-up. As these assessments will reveal village allocation, they will be
6 conducted by SH+ facilitators rather than research assistants. Data Entry Assistants will enter
7 the data into computer systems, and this contamination assessment data will only be entered
8 once all outcome assessments have been completed. The uncontrolled pilot and feasibility
9 cRCT did not show any contamination between villages.

10 Should blinding be compromised for a particular participant the independent
11 assessment team leader will be alerted. If this occurs during an assessment, the assessment
12 will immediately be halted and a new research assistant will conduct the rest of the
13 assessment. Such assessments will be marked as being conducted by a different research
14 assistant for analysis purposes.

15 **Statistics**

16 All analyses will be detailed in a statistical analysis plan, which will be signed
17 before unmasking the study data set. As a first step, we will assess the comparability of
18 study conditions at baseline (demographic characteristics, scores on moderators and
19 mediators at baseline) using χ^2 with continuity correction or Fisher exact test for
20 frequencies, and independent-sample t-tests for continuous measures. In the case of any
21 imbalance, we will correct using propensity scoring. We will explore the distributional
22 properties of the outcome variables at all time points and adjust if needed (e.g., using log
23 transformation). Also as a preliminary step, we will analyse crude mean changes on the
24 outcome measures between groups, not corrected for clustering at the village level. This
25 will involve calculating change scores between (T1-T2, T2-T3, T1-T3) scores for SH+

1 and EUC groups separately on an intent-to-treat basis (last observation carried forward).
2 These crude change scores will be compared using independent-sample t-tests, and
3 considered exploratory analyses only.

4 To test our hypotheses we will use latent growth curve modeling (LGCM) in a
5 structural equation modeling framework (Duncan and Duncan, 2004). LGCM will be applied
6 to examine statistically significant differences in longitudinal trajectories on outcome
7 measures between the SH+ and EUC groups (over the three timepoints: T1, T2, and T3.
8 LGCM allows for the modeling of growth processes using participant-specific random
9 intercepts and slopes. The benefit of this approach is that it accounts for clustering as
10 recommended by the CONSORT statement for cRCTs (Campbell et al., 2004), builds on data
11 at all time-points simultaneously, and allows for sophisticated missing data handling.

12 Latent growth curve modeling will be conducted in three steps. First, we will model
13 growth curves, using all time-points (T1 (0 weeks), T2 (7 weeks) and T3 (19 weeks)), and
14 estimate the intervention effect of SH+, compared to EUC alone, on changes over time on the
15 following outcomes: psychological distress (primary outcome), functional impairment, self-
16 defined psychosocial goals, depression symptoms, PTSD symptoms, psychological
17 flexibility, and subjective wellbeing.

18 Second, we will add potential moderators and their interaction effects to explore
19 variations in intervention effects. Trajectories of outcome measures will be compared
20 between study conditions, while taking into account interaction effects with the following
21 potential moderators of treatment effectiveness: exposure to GBV, trauma exposure to a
22 large range of potentially traumatic events, and attendance at sessions. As a secondary
23 analysis we will test whether baseline levels and types of distress act as moderators. This
24 will be accomplished by creating interaction terms between study condition and
25 moderators of interest. Significant interaction effects will be further probed utilizing

1 model test statements.

2 Third, a mediation analysis will be conducted to determine whether increases in
3 psychological flexibility with SH+, mediate improvements on: distress, functional
4 impairment, self-defined psychosocial goals, depression symptoms, PTSD symptoms, and
5 subjective wellbeing. In order to assess these mediation effects we will conduct separate
6 parallel process LGCM analyses (Cheong et al., 2003). A parallel process LGCM
7 characterizes participant-specific growth processes for a mediator and outcome variable
8 simultaneously, and relates the growth processes with each other while also enabling an
9 assessment of the influence of time-invariant and time-varying variables.

10 We will use full information maximum likelihood estimation (FIML) as implemented
11 in Mplus 8.15 (Muthén and Muthén, 1998-2017) to adjust the estimates of the parameters to
12 reflect missingness. Full information maximum likelihood is considered the appropriate
13 method for handling data missing at random (Schafer and Graham, 2002). Data will be
14 checked prior to the implementation of FIML to address the assumption of missing at
15 random. Results will be presenting using point estimates, p-values, odds ratios (when
16 relevant) and 95% confidence intervals. Difference testing will be conducted to determine if
17 the sample completing the intervention and follow up assessments is significantly different
18 from those who were lost to follow up, in basic demographics as well as baseline variables.

19 Contamination within the EUC village participants (i.e. access to SH+ materials,
20 or other content or messages) will be analysed descriptively. If substantial contamination
21 is identified, contamination adjusted analyses will be conducted.

22 In terms of cost-effectiveness, we will apply a societal perspective on costs,
23 including cost of services utilized by participants and losses in productivity. Primary
24 analysis will be on total costs in previous 3 months at T1 and T3. Bootstrap sampling
25 will be repeated 1000 times on skewed cost data. Cost-effectiveness ratios will be

1 calculated by combining total costs with the different effectiveness measures.

2 Data will be double-entered from paper copies, and data management and
3 descriptive analyses will be conducted in STATA 14.1 (StataCorp, 2015). Analyses
4 testing hypotheses will be conducted using MPlus 8.15 (Muthén and Muthén, 1998-2017)
5 and will be reported according to the CONSORT guidelines for cRCTs.

6 **Trial management**

7 The field-based research team will consist of research assistants, independent
8 assessment team leader, overall project coordinator, and an independent trial consultant.
9 The principal investigator (WT) will support the trial by communicating weekly with the
10 trial team. The independent consultant will be experienced with trial management in
11 Uganda and through two field visits, will check and document whether all aspects of the
12 project are correctly implemented (e.g. completing a checklist of whether study
13 implementation adheres to standard operating procedures, including whether all
14 assessments are completed on time, blindness is maintained and collected data are legible
15 and correctly entered and stored). Narrative reports will be provided every three months
16 and regular visits to the study site will be conducted by the project management team. We
17 will continue to coordinate activities with the Office of the Prime Minister and UNHCR
18 in Uganda.

19 **Discussion**

20 As a guided self-help programme, SH+ has been developed with the aim of reducing
21 the global treatment gap for psychological interventions, by providing a scalable solution that
22 has the potential to reach many individuals currently without access to mental health support,
23 with relatively little investment. The delivery format is innovative since fidelity to the core
24 content of the intervention is ensured via pre-recorded locally adapted audio material as well
25 as an illustrated book. Training and supervision requirements are also reduced. Preliminary

1 studies in northern Uganda indicate that SH+ can be feasibly adapted and is considered
2 appropriate and useful by participants (Tol et al., under review-a). This cRCT will assess the
3 effectiveness of SH+ delivered by non-specialist facilitators for female South Sudanese
4 refugees, living in northern Uganda. An important avenue for future research is further
5 exploration of the necessary adaptations required to increase the suitability of SH+ with male
6 participants. If sufficient evidence is established, the SH+ materials will be published by
7 WHO and will be made publicly available on its website. Future work should specifically
8 investigate the scalability of this approach and adaptations for specific populations.

9
10 **Trial status:** Trial recruitment commenced in March 2017 and T3 data collection is in
11 progress. Results of this study are expected in late 2017. Access to the full study protocol
12 and final data set will be available from corresponding author on reasonable request.

13
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20
21 **Conflict of interest:** The authors declare no conflict of interest.

22
23 **Ethical standards:** The authors assert that all procedures contributing to this work comply
24 with the ethical standards of the relevant national and institutional committees on human
25 experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

1

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For Peer Review

TIMEPOINT	STUDY PERIOD			
	Enrolment	Baseline	Post-Intervention	Follow-up
		T1	T2 (7 weeks)	T3 (19 weeks)
ENROLMENT:				
Eligibility screen	X			
Informed consent	X			
Allocation		X		
INTERVENTIONS:				
SH+ & EUC		★ ——— ★		
EUC		★ ——— ★		
ASSESSMENTS:				
Demographics		X		
Primary and Secondary Outcomes		X	X	X
Exposure to potentially traumatic events		X	X	X
Exposure to events during trial period				X
Attendance at sessions			X	
Use of EUC services				X
Use of health services		X	X	X
Contamination				X

Figure 1. Standard Protocol Items Recommendations for Interventional Trials (SPIRIT): Schedule of enrolment, interventions, and assessments for cRCT of SH+

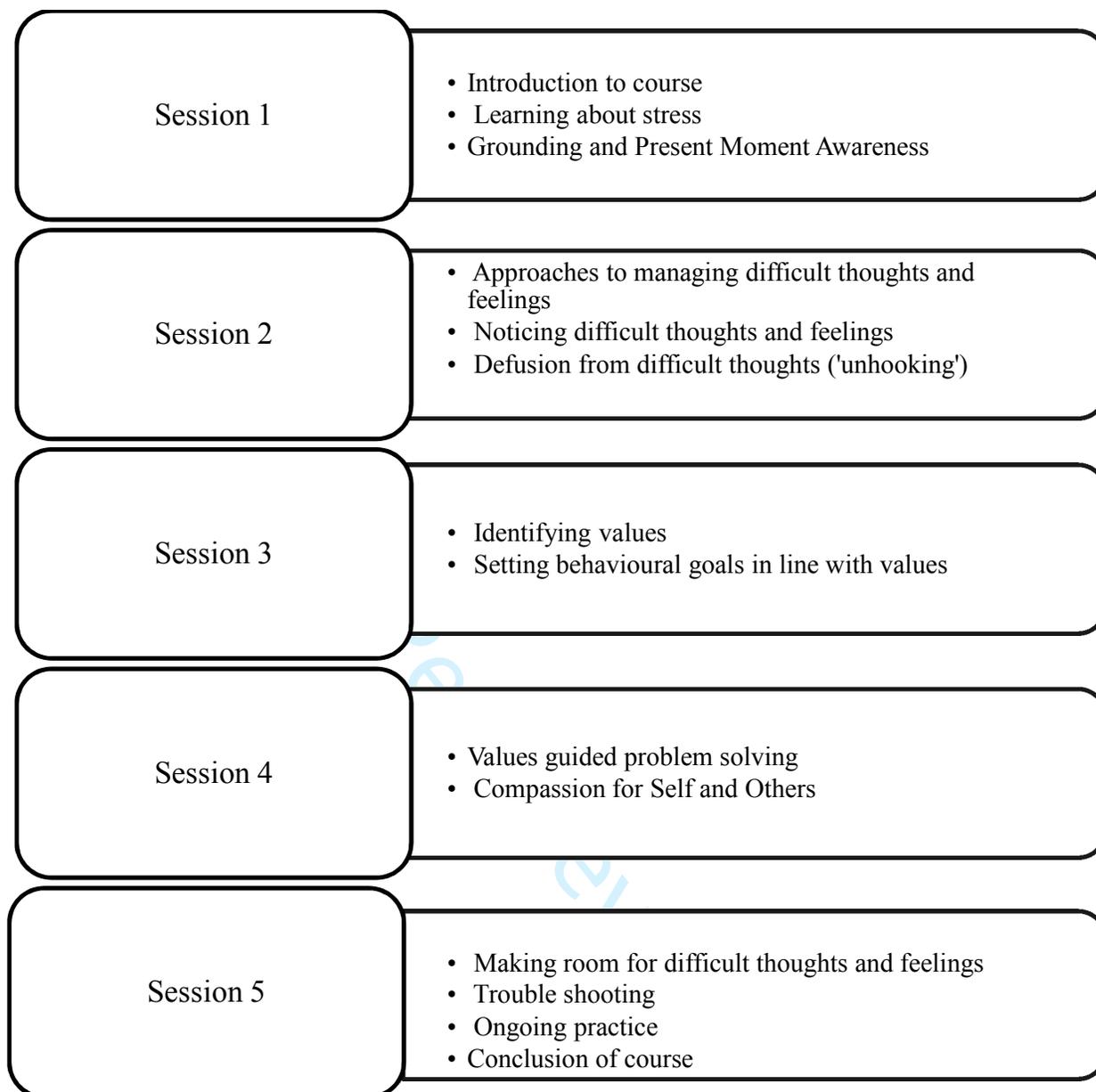


Figure 2. Outline of SH+ programme

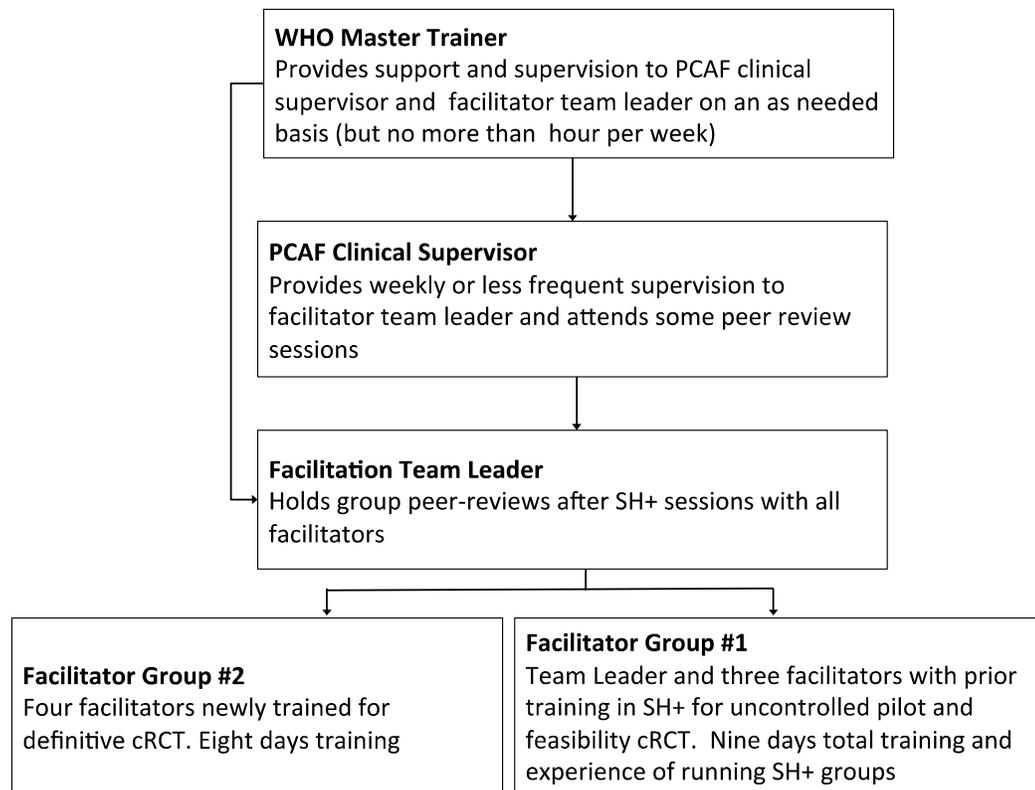


Figure 3. Structure of the SH+ intervention delivery, supervision, and training team