Chapter XX

A Comparison of Physical Environmental Design/Assessment Methods in Elderly Care Facilities between UK and China

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ABSTRACT

This study presented a comparative analysis of design/assessment methods of elderly care facility between UK and China, including eleven British instruments and three Chinese instruments, which were achieved using a systematic review. Two typical assessment methods were chosen to conduct a cross-country comparison, such as EVOLVE (UK) and CASCO (China). Compared with the British instrument, the Chinese method focused on the facility management; there was a clear lack of practical strategies for planning and assessing environmental performances. It is necessary to carry on more studies to develop reliable and valid assessment methods in Chinese elderly care facilities.

Keywords: Physical Environment, Elderly Care Facilities, Design/Assessment Methods,

Cross-country Comparison, UK and China

INTRODUCTION

The physical environment is critical to the achievement of health and wellbeing, safety, and independence among older people living in residential care facilities (RCFs) (WHO 1997). In the care home industry, it is generally required to conduct an assessment for the quality of physical environment of elderly care facilities across their planning, construction, and post-occupancy stages. From 1992 to 2020, several key assessment schemes have been produced in UK, such as Sheffield Care Environment Assessment Matrix (SCEAM) (Parker et al. 2004), Evaluation of Older People's Living Environments (EVOLVE) (Lewis et al. 2010, Orrell et al. 2013), etc. These schemes were applied to evaluate the design of institutional housing for older people, and how well a building contributes to physical support and personal well-being. In China, from 1999 to 2019, the Ministry of Civil Affairs has issued 16 building codes to guide the development of elderly care facilities (www.gov.cn/fuwu/zt/ylfw), which are mainly used for the rating of these facilities.

This paper aimed to implement a cross-country comparative analysis of assessment methods between UK and China and tried to identify their differences according to the applications in practice.

METHODS

This study was conducted using two steps. First, a systematic review was completed to identify typical elderly facility assessment methods in UK and China, through the method of Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) (Moher et al. 2009, Page et al. 2021). Second, a cross-country comparative analysis (Cacace et al. 2013) was adopted to compare two representatives.

STUDY DESIGN AND SETTINGS

This systematic review used the PICO principle (Schardt et al. 2007) to classify the search terms into four parts: 1) subjects: older people, senior population, care facility, nursing home, long-term care. 2) domain: physical environment, built environment, environment design, assessment, evaluation, survey, standard. 3) tool-related terms: scale, instrument, tool, toolkit. 4) countries: China, UK. A Boolean search strategy was applied based on a combination of these terms (Page et al. 2021). Databases applied included China National Knowledge Infrastructure (CNKI), Wanfang Data (WD), China Science and Technology Journal Database (CSTJD), PubMed, Medline, PsycINFO, web of science, and Scopus, while Google scholar was used for the supplementary search. In addition, relevant building

codes were also included in the search. To be included in the review, papers should focus on older people, care facilities, built environment, and assessment method. For articles that were concerned with children, older people stay at home, assessment for design were excluded.

After articles screening, the assessment methods of elderly care facility were selected according to the following criteria: 1) The tool must have at least one domain associated with the environment. 2) The tool must evaluate multiple aspects of the environment. However, tools that were only used for assessing single element, such as noise, light, and thermal, will not be included. 3) The tool must be applied in UK or China. 4) Tools that were not written in English or Chinese were excluded.

SEARCH OUTCOMES

Based on the systematic review, 335 articles were found. Through screening and analysis, 14 assessment methods were selected for a period of 1992 ~ 2022, including 11 from UK and three from China.

RESULT

ENVIRONMENTAL ASSESSMENT METHODS IN UK AND CHINA

The 14 assessment methods and their abbreviations were listed in Table 1. In addition, Table 2 and Table 3 showed more details of these methods in UK and China, respectively.

Table 1. Names and abbreviations of 14 assessment methods

Name of instrument	Abbreviation
Scales for the Assessment of Environments for the Confused Elderly	SAECE
Dementia Care Mapping	DCM
Sheffield Care Environment Assessment Matrix	SCEAM
Assessment of Residential Environments	CARE
Extra Care Housing Toolkit	ECHT
Design Checks for people with dementia in healthcare premises	DDC
Evaluation of Older people's Living Environments	EVOLVE
Design Audit Tool	DAT
Housing in later life: planning ahead for specialist housing for older people	Housing in later life
Enhancing the Healing Environment dementia care tool for care homes	EHE-DCT
Patient-Led Assessments of the Care	PLACE
Classification and accreditation for senior care organization	CASCO
Measurement of customer satisfaction for senior care organization	MCSSCO
Basic Specification for falls prevention of the elderly in senior care organization	BSFPESCO

For the 11 British methods (Table 2), six instruments were developed for assessing the built environment in elderly care homes, such as SCEAM (Parker et al. 2004), EVOLVE (Lewis et al. 2010, Orrell et al. 2013), and CARE (Faulkner and Davies 2006). Three instruments were specifically designed for evaluating the environment in dementia care settings, such as SAECE (Bowie et al. 1992), DCM (Brooker 2005), and EHE-DCT (Waller and Masterson 2015). One instrument PLACE was used for the buildings in the NHS healthcare system (Flanagan et al. 2013).

Table 2. 11 British instruments for elderly facility assessment

Instruments	Year	Type of building	Purpose
SAECE (Bowie et al. 1992)	1992	Institutional care facilities	Evaluate the environment quality on long-stay wards for elderly patients with dementia.
DCM (Brooker 2005)	1997	Dementia-care settings.	Improve practices in care homes for people with dementia.
SCEAM (Parker et al. 2004)	2004	Residential care facilities.	Correlate building design features against an assessment of the quality of life of people living in care homes.
CARE (Faulkner and Davies 2006)	2006	Care homes.	Celebrate what works well in a home and identify areas that need attention.
ECHT (Housing LIN 2006)	2006	Extra care housing.	Help to plan extra housing and service provision.
DDC (HFS 2007)	2007	All healthcare properties.	Ensure that the built environment does not present insurmountable barriers to its users.
EVOLVE (Lewis et al. 2010, Orrell et al. 2013)	2010	Retirement villages, sheltered housing and individual private houses.	Assess suitability as accommodation for older people.
DAT (Kelly et al. 2011)	2011	Care homes.	Examine the dementia care environments.
Housing in later life (Housing 2012)	2012	Housing built to assist older people with their accommodation and support needs in later life.	For local planners and commissioners to use when planning for specialist housing for older people.
PLACE (Flanagan et al. 2013)	2013 2019	Hospitals and hospices providing NHS-funded care in both the NHS and private/independent sectors.	How the environment or services might be enhanced.
EHE-DCT (Waller & Masterson 2015)	2014 2020	Care homes.	Creating more supportive care environments for people with cognitive problems and dementia.

Given methods in Chinese elderly care facilities (Table 3), some studies examined the environmental assessment instruments translated from English as reliable and valid, such as PCQ-P (Fang et al. 2020) and TOPAS (Li et al. 2021).

There were three codes available in China: CASCO (Classification and accreditation for senior care organization) (SAMR 2018), MCSSCO (Measurement of customer satisfaction for senior care organization) (MOCAC 2019), and BSFPESCO (Basic Specification for falls prevention of the elderly in senior care organization) (MOCAC 2022). However, no studies relating to the evaluation of these codes can be found in China.

CASCO can be used to assess the physical environment and services of elderly care facility, while MCSSCO was mainly applied for general services of elderly care facility (only 10% of items for the physical environment). BSFPESCO focused on specific risks occurring in elderly care environment.

Table 3. Three Chinese instruments for elderly facility assessment

Instruments	Year	Type of building	Purpose
CASCO (SAMR 2018)	2019	Senior care organization	A practical evaluation tool for conducting the rating process of elderly care organizations.
MCSSCO (MOCAC 2019)	2019	Senior care organization	Assessing the satisfaction of the residents living in senior care organizations and make an improvement to the quality of services and facilities in the organizations.
BSFPESCO (MOCAC 2022)	2022	Senior care organization	Provide the basic requirements for fall prevention and the fall risk assessment scale.

A CROSS-COUNTRY COMPARISON OF ASSESSMENT METHODS

In this study, we selected one assessment instrument as a representative from each country for a comparison. The principles for the instrument selection were as follows: 1) The instrument is still in use, 2) The instrument can be applied for various types of care facility, and 3) The instrument has public-access questionnaire. Thus, EVOLVE (UK) and CASCO (China) were finally chosen based on these criteria.

According to the Table 4, there were some differences found between EVOLVE and CASCO. 1) Types of care facilities: EVOLVE can be applied to assess environmental qualities in retirement villages, sheltered housing, and individual private houses while excluding residential care homes and nursing homes. All types of residential care facilities in China can be evaluated using CASCO, including care homes, care retirement communities, nursing homes attached to a medical institution, and apartment buildings for older people. 2) Scoring systems: a qualitative scoring method is adopted in the EVOLVE (Yes, No, Not in use and n/a), while CASCO adopts a complex quantitative system (scoring on each item; a total score will be calculated for the final assessment).

Table 4. Comparison of main characteristics between EVOVLE and CASCO

	EVOLVE	CASCO
Year of publication	2010	2019
Purpose	Evaluating the design of housing schemes or individual dwellings to assess their suitability as accommodation for older people.	A practical evaluation tool for conducting the rating process of elderly care facilities
Subjects	Retirement villages, sheltered housing and individual private houses, excluding residential care homes and nursing homes.	All types of elderly care facilities
Developer	Developed by the University of Sheffield, with PSSRU, University of Kent and supported by the Housing LIN.	Department of Social Welfare and Charity Promotion, Ministry of Civil Affairs, Social Welfare Centre, Ministry of Civil Affairs, China Institute of Public Welfare, Beijing Normal University.
Using stage	Design stage or using stage.	Using stage.
Scoring	Yes, no, not in use, n/a.	Scoring, different scores depending on what is being assessed.
Evaluation results	Scores are given numerically and shown as a histogram, with the length of the bar representing the highest possible score attainable in that domain.	Total score.
Assessors	Architects, housing providers, commissioners, individuals, and researchers.	Familiar with relevant laws and policies, familiar with the work of elderly services, and have undergone rating training and passed the assessment.
Using methods	Walk-in.	Commissioned assessment agency or self-assessment.
Domains	2 domains: Universal, Older people's requirements.	4 domains: Environment, Equipment and facilities, Operation Management, Services.
Questions	487 items for a single dwelling; about 2000 items for a housing scheme.	565 questions.

Table 5 indicated significant differences in domain between the two instruments. In terms of the 'environment', CASCO has only 17.7% items to justify the performance in care facilities, while there were 32.1% items in EVOLVE for this assessment. EVOLVE has a higher item percentage set for the 'layout, services and systems, fitting and building elements of accommodation' (49.8%), compared with the value of 19.3% for CASCO. As for the part of 'management', CASCO has 21.1% items, which is higher than the value in EVOLVE (8%). There are 42.0% items used for the 'health services' in CASCO. No items can be found for this domain in EVOLVE.

Table 5. Comparison of domain ratio between EVOVLE and CASCO

Domain	EVOVLE	CASCO
Environment.	32.1%	17.7%
Equipment and facilities (layout, services and systems, fitting and building elements of accommodation).	49.8%	19.3%
Management.	8.0%	21.1%
Health services.	0%	41.9%
Others (changing rooms, finishes).	10.1%	0%

CONCLUSIONS

Based on the comparison, it can be found: the British system focused on the environmental and architectural characteristics of care facilities, while the environmental management of care facilities was emphasized in Chinese systems. In addition, the systematic review showed that most assessment methods of Chinese care facilities used self-define tools, which were not public access and therefore not fully discussed in this article. In general, compared with the British system, the Chinese methods had a clear lack of practical guidelines to support planning and assessing the environmental factors. Thus, more research is still needed to improve the assessment method of elderly care facility in China.

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