

Assessing the Therapeutic Environment of Residential Aged Care Facilities for People with Dementia in Taiwan

Ping-Wen Lee* and Chih-Hong Haung

Abstract—To assess therapeutic environments in residential aged care facilities (RACFs) by applying validated Environmental Audit Tool (EAT) to 19 facilities in Taiwan where some (N=6) were purpose-built for people with dementia while others (N=13) were non-purpose-built and by comparing the mean and standard deviation (SD) of EAT scores across a variety (N=56) of RACFs in Australia with 24 purpose-built facilities and 32 non-purpose-built ones. The EAT assesses environmental quality for dementia in facilities by 72 questions in 10 subscales (safety, size, visual access, unwanted stimuli, helpful stimuli, planned wandering, familiarity, privacy, community links, and domestic activities). The results show the descriptive data of EAT scores listed mean percentage scores for each subscale and for the overall score, with higher scores indicating better quality, across all facilities both in Taiwan and in Australia. This evidence-based assessment tool contributes substantially to evidence-based solutions to improving the quality of dementia in residential aged care facilities in different countries with different cultures using different languages.

Index Terms—Dementia, therapeutic environment, evaluation, residential aged care facility.

I. INTRODUCTION

There are 3,421,600 (14.56%) aged adults above 65 years and approximately 270,000 people living with dementia in Taiwan with 8.9 million households residing a population of 23.5 million individuals. It is estimated that the number of people living with dementia in Taiwan will exceed 460,000 by the end of 2031. There are 1,098 residential aged care facilities providing 62,724 beds (about 84% occupancy rate) in which 471 beds are purpose-built for the needs of people living with dementia in Taiwan.

With an increasing number of people living with dementia, it is critically important for health care professionals to understand the therapeutic environments in residential aged care facilities (RACFs). The quality of dementia-friendly in a therapeutic environment would have diversified influences upon quality of life (QoL) in people with dementia. A well-designed environment could improve wayfinding, daily activities, eating behaviors, mobility, vitality, pleasure and social interactions while a poor-built one would increase agitation, anxiety, conflict, confusion, depression, emotional disturbance, restlessness and cause distress.

Designing dementia-friendly environments is currently the mainstream of care for seniors with dementia [1]-[9]. A good dementia-friendly environment can improve the quality of

life for seniors with dementia [10]-[12]. Exploring therapeutic environments and their influence factors has become major topics in research on dementia. The abnormal dementia behaviors (e.g., hallucinations, delusions, aggression, hostility and uncooperativeness) can be improved via rearranging their living space to avoid excessive visual and auditory stimuli causing their aggressive and destructive behavior.

A validated tool is required to assess RACFs' therapeutic environments required quality care for people with dementia. The Therapeutic Environment Screening Survey for Nursing Homes (TESS-NH) has been widely used by professional researchers and been considering as a gold standard tool for assessing RACFs' therapeutic environments by a validation compared with the Professional Environmental Assessment Protocol. Australian Environmental Audit Tool (EAT) is a more robust alternative for regular use to assess the quality of RACFs' therapeutic environments for people with dementia. The EAT, showing 86.8% average absolute agreement on individual items and 0.97 inter-rater reliability when validated in comparison with TESS-NH, can be used by anyone because of its simple nature [13]-[17]. However, the EAT has been used only for RACFs in Australia [18].

This study used the Environmental Audit Tool (EAT) to assess the therapeutic environment of 19 residential aged care facilities (RACFs). The aim of this study is to describe data on scores from 19 facilities including 6 purpose-built environments and 13 non-purpose-built ones in Taiwan and to compare the mean and standard deviation scores of 24 purpose-built facilities and 32 non-purpose-built ones in Australia based upon ten EAT design principals (safety, size, visual access, unwanted stimuli, helpful stimuli, planned wandering, familiarity, privacy and community, community links, and domestic activities). The results show that purpose-built facilities in Australia got higher scores in subscales 'safety', 'helpful stimuli', 'planned wandering', 'familiarity' and 'community links' while those ones in Taiwan had higher scores in subscales 'size' and 'unwanted stimuli'. The non-purpose-built facilities in Australia received better scores in subscales 'size' and 'planned wandering' while those ones in Taiwan got higher scores in subscales 'safety', 'visual access', 'unwanted stimuli' and 'planned wandering'.

II. METHODS

The Environmental Audit Tool (EAT) is easier to use and has better robust performance in interrater reliability and internal consistency in subscales than the TESS-NH when quantifying the quality of the physical environment used for the care of people with dementia. The EAT consists of 72

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questions grouped into 10 subscales in terms of design principles described in Table I. The 72 questions are mostly answered with either ‘Yes’ or ‘No’, with points gained from ‘Yes’ answers. Some questions have a ‘Not Applicable’ option or an option to gain an extra point for features which are unobtrusive to residents. The score for each subscale is turned into a percentage by dividing the points scored by the maximum possible points, giving equal weight to each subscale. The EAT total score is the mean of the 10 subscale percentage scores.

The validated EAT is an observational tool requiring a rater to move through the environment and look for specific design features defined by the 72 questions. The rater was a graduate student researcher with a master's thesis on RACF's environmental assessment in the Institute of Architecture and capable of bilingual communication in both English and Chinese. Accompanied by a RACF's senior staff member to reach mutual understanding of the EAT questionnaire and supporting manuals, the rater assessed the environment to specify three possible states of each one question.

This study used the Environmental Audit Tool (EAT) to assess physical environments of 19 RACFs in Taiwan. These selected 19 RACFs were representative of aged residential care services mostly in Taiwan at certain perspectives: 1) the facilities were funded by the government; 2) the facilities met the residential care accreditation standards and building certification requirements; 3) the facilities operated privately either for profit or private not for profit; and 4) the facilities had staffing ratios of 1 care staff to 20 residents. There are 6 RACFs' assessments taken place in secured or self-contained dementia-specific units (DSU) ‘purpose-built’ for residents diagnosed mild dementia and 13 assessments in the RACFs without any special area ‘non-purpose-built’ for people with dementia. Of the 6 purpose-built facilities, there are three ‘group home’ self-contained DSU and three secured DSU within RACF. All these 6 DSU received additional funding (NT\$150,000/unit+50,000/resident+4,500/m²) for setting up additional dementia purpose-built equipment and facilities while requiring their daytime staffing ratios of 1 care staff to 6 residents and nighttime staffing ratios of 1 care staff to 10 residents.

TABLE I: DESIGN PRINCIPLES OF ENVIRONMENTAL AUDIT TOOL (EAT) FOR RESIDENTIAL AGED CARE FACILITIES (RACFs)

1. Safety	Unobtrusively reduce risks.
2. Size	Provide a human scale.
3. Visual access	Allow people to see and be seen.
4. Unwanted stimuli	Manage levels of stimulation_ reduce unhelpful stimulation.
5. Helpful stimuli	Manage levels of stimulation_ optimize helpful stimulation.
6. Planned wandering	Support movement and engagement.
7. Familiarity	Create a familiar place.
8. Privacy and community	Provide a variety of places to be alone or with others in the unit.
9. Community links	Provide a variety of places to be alone or with others in the community.
10. Domestic activities	Design in response to vision for way of life.

III. RESULTS

The results show the descriptive data of EAT scores listed mean percentage scores for each subscale and for the overall score, with higher scores indicating better quality, across all facilities both in Taiwan and in Australia. The purpose-built facilities received higher overall score and better scores in every subscale than non-purpose-built ones in Australia while not in every subscale in Taiwan. Differences in scores were found in the subscales ‘useful stimuli’ and ‘familiarity’ between facilities in these two counties. The purpose-built facilities in Australia got higher scores in subscales ‘safety’, ‘helpful stimuli’, ‘planned wandering’, ‘familiarity’ and ‘community links’ while those ones in Taiwan had higher scores in subscales ‘size’ and ‘unwanted stimuli’. The non-purpose-built facilities in Australia received better scores in subscales ‘size’ and ‘planned wandering’ while those ones in Taiwan got higher scores in subscales ‘safety’, ‘visual access’, ‘unwanted stimuli’ and ‘planned wandering’.

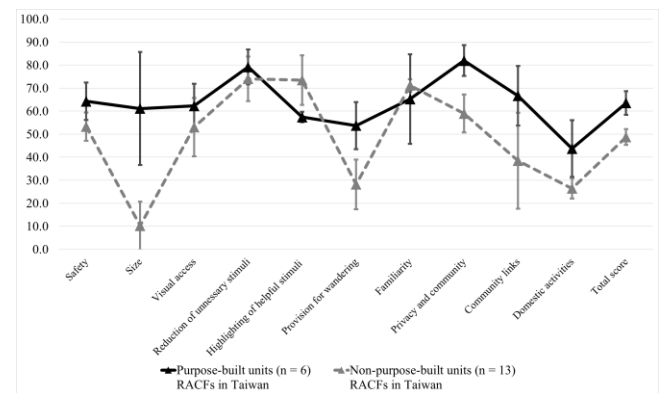


Fig. 1. The comparison of EAT score between purpose-built units and non-purpose-built residential aged care facilities in Taiwan.

Fig. 1 compares the means and standard deviations of the EAT scores in subscales as well as total EAT scores of the purpose-built units ($N=6$) and the non-purpose-built RACFs ($N=13$) in Taiwan. The results revealed that purpose-built RACFs were significantly better than non-purpose-built ones in three subscales: size, planned wandering, and privacy and community. Furthermore, the total scores of the former were significantly higher than those of the latter ($p=0.002$).

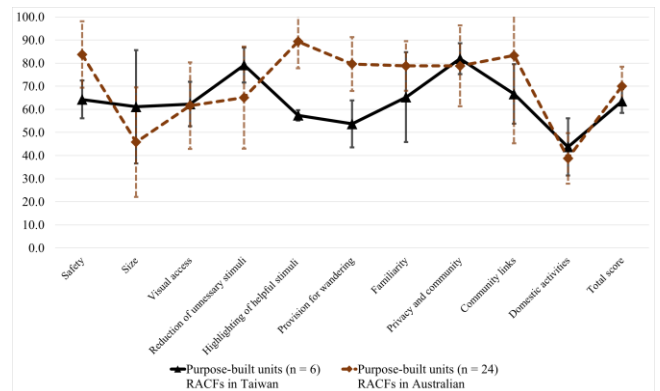


Fig. 2. The comparison of EAT score between purpose-built units of residential aged care facilities in Taiwan and in Australia.

Fig. 2 compares the means and standard deviations of the EAT scores in subscales as well as the total EAT scores of the purpose-built RACFs in Taiwan ($N=6$) and the purpose-built RACFs in Australia ($N=24$). The results revealed that

purpose-built RACFs in Taiwan were not significantly better than purpose-built RACFs in Australia in any of the EAT subscales. However, the latter performed significantly better than the former in safety, helpful stimuli, and planned wandering. The total scores of the purpose-built RACFs in Taiwan and in Australia were not significantly different.

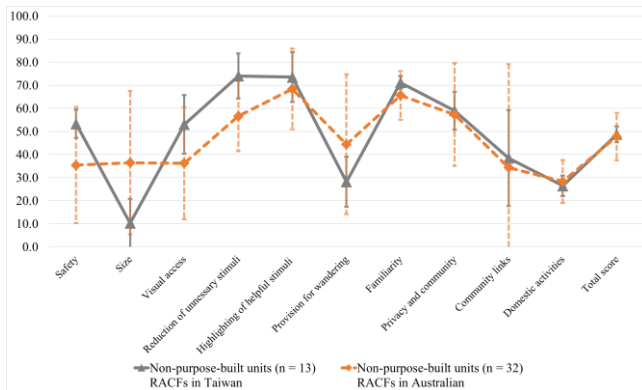


Fig. 3. The comparison of EAT score between non-purpose-built units of residential aged care facilities in Taiwan and in Australia

Fig. 3 compares the means and standard deviations of the EAT scores in subscale as well as total EAT scores of the non-purpose-built RACFs in Taiwan ($N=13$) and in Australia ($N=32$). The results show that the non-purpose-built RACFs in Taiwan had significantly better dementia-friendly designs in safety, unwanted stimuli, helpful stimuli, and familiarity than those in Australia. However, non-purpose-built RACFs in Australia performed significantly better dementia-friendly designs in size and domestic activities than those in Taiwan. The total scores of the non-purpose-built RACFs in Taiwan and in Australia were not significantly different.

IV. DISCUSSION

This study compares EAT scores of a sample ($N=19$) of RACFs in Taiwan with the mean and standard deviation (SD) of EAT scores across a variety ($N=56$) of RACFs in Australian where some ($N=24$) were purpose-built for people with dementia while others ($N=32$) were non-purpose-built. The results indicated that these RACFs in Taiwan kept smaller size; had either better or bad visual access; generally got lower scores on reducing unnecessary stimuli, highlighting useful stimuli and for wandering; performed worst scores on familiar furniture, decor, taps and doorknobs; and allowed for moderate levels of privacy and enabling residents to participate in domestic activities. In comparison with the studies in Australia, these RACFs in Taiwan had similar distribution of EAT scores only in subscales ‘safety’ and ‘total score’ while others in difference. The purpose-built facilities received higher overall score and better scores in every subscale than non-purpose-built ones in Australia while happened not in every subscale in Taiwan.

V. CONCLUSION

Designed for usability and accessibility purposefully by introducing mostly ‘yes or no’ and some countable clear-cut questions, the EAT adopts a simple procedure to differentiate therapeutic environments with special design features from

those more traditional facilities. The environments of RACFs with higher EAT scores normally have design features of 1) self-contained units set leading to increased security and safety for residents, 2) smaller size, 3) increased signage and well-placed objects such as plants provide orientation cues, 4) small-scale gardens, kitchen and communal activity areas, which most likely make it easier for staff visibility of residents is not obstructed, 5) single bedrooms allowing for increased privacy and personalization and 6) dining and lounge rooms with furniture that are familiar and age appropriate.

The EAT was created to provide appropriate assessment of a therapeutic environment that should simply help the person with dementia in day-to-day living. The subscales allow for facilities to determine specific areas where their therapeutic environments are sufficiently designed, but more importantly where deficiencies exist and improvements need to be made. Descriptive data on the EAT scores in subscales shows where deficiencies exist in each design subscale. The EAT allows units to make attainable short- and long-term goals to correct deficiencies that are found. This evidence-based assessment tool contributes substantially to evidence-based solutions to improving the quality of dementia and aged care facilities.

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