



Neighborhood environment walkability and health-related quality of life among older adults in Hong Kong[☆]



Yanan Zhao^{a,*}, Pak-Kwong Chung^b

^a Department of Physical Education, Nanjing Normal University, China

^b Department of Physical Education, Hong Kong Baptist University, China

ARTICLE INFO

Keywords:

Quality of life
Built environment
Walkability
Older adult
Hong Kong

ABSTRACT

This study examined the associations between walkability related environmental attributes (WREA) and health-related quality of life (HRQoL) among older adults in Hong Kong. A cross-sectional study was conducted among 340 participants (women = 233; mean age = 74.4 years) living in urban communities. Independent variables included residential density, land use mix-diversity, land use mix-access, street connectivity, infrastructure for walking, aesthetics, traffic hazards, crime, access to parking, lack of cul-de-sacs, hilliness, and physical barriers. Physical and mental dimensions of HRQoL were the dependent variables. Results revealed significant associations between WREA and HRQoL and demonstrated that aesthetics and physical barriers were significant determinants of physical health after adjusting age and sex, and crime and physical barriers were significant determinants of mental health after adjusting sex. This study provided empirical evidence that environmental walkability was associated with HRQoL among older adults in Hong Kong.

1. Introduction

With the advancements of technology as well as health and medical sciences, the world's older population grows dramatically over the last several decades (He, Goodkind, & Kowal, 2016). At the same time, world's population increasingly urban with 54% of the world's population lives in cities (UN, 2015). Moreover, this number will be increased to 66% in 2050 and one in four urban residents will be classified as older adults. This indicates that urban ageing is an urgent concern; in developing countries, this situation is particularly serious.

Hong Kong, located to the southeast of the mainland of China, is an outstanding modern international metropolis in Asia. For decades, Hong Kong has been well known for high density living. As of 2015, there are 7,346,700 people for its 1105 square kilometres of land (Census and Statistics Department, 2015), and less than 25% of this land is for built-up area (Yeh, 2011). Today, 16.0% of its population are older adults (65 and over; Census and Statistics Department, 2016), making Hong Kong facing the challenges from a fast ageing society. Of various challenges, maintaining health related quality of life (HRQoL) in the later years and reducing health related medical cost would be of great importance for both older individuals and the society.

Of various influential factors to health, neighbourhood environment has been well evidenced to influence health of older adults (Rogowski,

Freedman, & Schoeni, 2006). Older adults who reported problematic neighbourhood environments (e.g., noise, crime, trash and litter) would be at higher risk of loss of physical function (Balfour & Kaplan, 2002). Significant effects of the neighbourhood environment are also found on various aspects of daily livings, such as transportation behaviours, mental health status, physical activity level, and obesity (Booth, Pinkston, & Poston, 2005; Ding & Gebel, 2012; Evans, 2003). With the enlarging population of older adults and the generalization of the concept of "Ageing in Place" (van Dijk, 2015), influences from neighbourhood environment would be reinforced to older adults' daily livings and to the later years of quality of life (Wiles, Leibing, Guberman, Reeve, & Allen, 2011). Parra and colleagues conducted one of the few studies exploring the influential environment attributes to the HRQoL of older adults (Parra et al., 2010). Results revealed that safety from traffic and parks, as well as street noise, were significantly correlated with HRQoL among older adults in Colombia. However, the researchers examined only three environmental attributes, further study is needed in order to have a comprehensive and systematic evaluation and understanding of the residential environmental attributes to the HRQoL of older adults.

In the last decade, many studies were conducted to investigate the relationships between built environment and walking (Cerin, Macfarlane, Ko, & Chan, 2007), and found that a more "walkable"

[☆] This work was supported by a faculty research grant from Hong Kong Baptist University [grant number FRG2/13-14/035].

* Corresponding author.

E-mail address: ynzhao@njnu.edu.cn (Y. Zhao).

environment is positively associated with higher physical activity, lower overweight and depression (Reis, Hino, Rech, Kerr, & Hallal, 2013; Renalds, Smith & Hale, 2010). Purpose of this study was thus to 1) investigate the associations between walkability related environment attributes (WREA) and HRQoL, and 2) explore the determinant WREA to physical and mental dimensions of HRQoL among older adults in Hong Kong. Results from this study can provide insights for designing and planning residential environments to facilitate the HRQoL and promote healthy and active ageing. Moreover, the present results have value as a reference for the mega cities of mainland China, which are in the process of rapid urbanisation.

2. Method

2.1. Study design

This cross-sectional study involved 360 older adults registered in local community senior centres in Hong Kong. Invitation letters with project procedures and confidential agreement forms on data usage were emailed to senior centres. Older adults who signed the consent form were introduced with the two questionnaires for quality of life and environment walkability assessments, respectively. Following this, they were guided to fill in the questionnaires through face-to-face interviews. To ensure scientific and consistent test procedure, interviewers had formally received 4 h training courses on how to conduct questionnaire introduction and administer the interview. Data collection for each participant ranged from 20 to 30 min, and the whole data-collection stage was started in 2014 and lasted for 6 months. This research was approved by the Committee on the Use of Human and Animal Subjects in Teaching and Research of the university.

2.2. Participants

A group of volunteers aged between 65 and 89 years was recruited from 13 general community senior centres (Kowloon = 4, New Territories = 5, and Hong Kong Island = 4). Eligible participants were those apparently healthy without any physical disease that prohibit from physical activity. Moreover, they should live independently in local communities for more than 5 years. The Chinese version of the Mini-Mental Status Examination ([MMSE-C]) was distributed to exclude participants with mental or cognitive deficits (MMSE scores < 25; Xu et al., 2003).

2.3. Quality of life assessment

The HRQoL was assessed using the Short Form-36 (SF-36), a health survey questionnaire that is widely accepted for use in older adults (Olivares, Gusi, Prieto, & Hernandez-Mocholi, 2011). The SF-36 consists of 36 items covering two dimensions—physical health (physical functioning, role limitations due to physical problems, role limitations due to emotional problems, and social functioning) and mental health (mental health, vitality, body pain, and general health perception). The Chinese version of the SF-36, which was translated and validated by Li and colleagues, demonstrated satisfactory test–retest reliability ($r = 0.66$ – 0.94 ; Li, Wang, & Shen, 2003). In the present study, the Cronbach alpha was 0.846 for the physical dimension and 0.837 for the mental dimension of quality of life, indicating that the Chinese version of the SF-36 has high convergent validity.

2.4. Environment walkability assessment

Recently, an abbreviated version of the Neighbourhood Environment Walkability Scale (NEWS-A) was developed (Cerin, Saelens, Sallis, & Frank, 2006), and it is now widely used to assess various aspects of the neighbourhood built environment related to walking behaviours (Cerin et al., 2013). The NEWS-A has been used

widely to assess residents' perceptions of neighbourhood design features related to their physical activity (Cerin et al., 2013, 2006). The NEWS-A contains 54 items covering 12 subscales, namely residential density, land use mix-diversity, land use mix-access, street connectivity, infrastructure and safety for walking, aesthetics, traffic hazards, crime, access to parking, lack of cul-de-sacs, hilliness, and physical barriers. Scores for each subscale were calculated according to standard scoring procedures (Cerin, Conway, Saelens, Frank, & Sallis, 2009). The Chinese version of the NEWS-A exhibited high test–retest reliability ($IC-C > 0.73$) and discriminate ability.¹⁷ In this study, the Cronbach alpha ranged from 0.549 to 0.720 across the 12 subscales, indicating acceptable convergent validity of the Chinese-translated NEWS-A.

2.5. Data analysis

Baseline demographic and clinical characteristics of all participants were presented using descriptive statistics. Data outliers and missing values were reviewed to ensure data input accuracy; subsequently, data that were 5 standard deviations (SDs) away from the mean were deleted to avoid skewing the results and missing values were replaced by data resulting from multiple imputations in SPSS. Totally, there were 23 missing items from 17 participants. A sensitivity test based on available data were conducted afterward. Independent variables included 12 subscales of NEW-A (i.e., residential density, land use mix-diversity, land use mix-access, street connectivity, infrastructure for walking, aesthetics, traffic hazards, crime, access to parking, lack of cul-de-sacs, hilliness, and physical barriers). Physical and mental dimensions of HRQoL (i.e.,) were the dependent variables, respectively. The Spearman correlation coefficient (r_s) was then applied to examine the relationships between perceived environment walkability and physical and mental dimensions of quality of life. Significant correlations were then entered into a multiple linear regression using a stepwise entry method to explore the determinant attributes of walkability related environment to physical and mental dimensions of HRQoL. Age and sex were taken into account because they are potential confounders for the present analysis. Residual plots were used to check the model assumptions of linearity, normality and constant variance, as well as outliers. Statistical significance was accepted at $p < 0.050$. All data analysis was conducted using SPSS v23.0 (IBM, Chicago, IL).

3. Results

3.1. Baseline data

Of the 360 recruited participants, 20 were excluded from data analysis because they failed to report over 20% of the necessary data. There were no significant differences on age and sex between participants included and not included. The following results were obtained from the analysis of the 340 eligible participants (men = 107; mean age = 74.4 years). Overall, women comprised a larger proportion of the sample (68.5%) and most participants perceived their health status as 'good' (73.2%); approximately 40% of the participants noted that they rarely exercised in daily life. The detailed information was presented in Table 1.

3.2. Associations between environment walkability and health related quality of life

The relationships between WREA and HRQoL were investigated using the Spearman correlation coefficient (r_s), and detailed values were presented in Table 2. Five of the 12 subscales from the NEWS-A exhibited significant correlations with physical health. A positive correlation was discovered between physical health and land use mix-access ($r_s = 0.141$, $p < 0.01$) and aesthetics ($r_s = 0.113$, $p < 0.05$), indicating that improved land use mix-access and aesthetics are associated with superior physical health. Conversely, there were

Download English Version:

<https://daneshyari.com/en/article/5500869>

Download Persian Version:

<https://daneshyari.com/article/5500869>

[Daneshyari.com](https://daneshyari.com)