Perceived neighborhood environments and self-rated health of older adults in Hong Kong

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Citation

Abstract

Background: Where an individual resides is believed to associate with the individual's health. The health of older adults is significantly affected by their neighborhood environments since they are less mobile and more attached to their living environments. In Hong Kong, little is known about the health and neighborhood environments relationship of the elderly. This absence of information limits the knowledge and understanding of the needs of older adults in respect to urban planning and environmental designs.

Objectives: This study aimed to explore the older adults' perceptions of neighborhood environments and their relationships to self-rated health.

Methods: The current study employed a structured questionnaire to obtain information on seniors' perceptions of the physical, service and social environments and their self-rated health (SRH). A convenience sample of 523 older adults aged ≥65 completed the questionnaires in summer 2008. Ordinal regression was used to assess the relationships between perceptions of neighborhood environments and SRH.

Results: Respondents were generally satisfied with the physical and service environments; and they had good social ties with neighbors. Those older adults, who had good social ties (OR=0.95; 95% CI=0.92-0.97) and greater financial sufficiency (OR=0.73; 95% CI=0.59-0.89,) tended to report better SRH while those with higher education (OR=1.39; 95% CI=1.13-1.72) and more perceived service problems (OR=1.19; 95% CI=1.04-1.36) were more likely to report poor SRH. Physical environment was found not having an effect on SRH of the elders.

Conclusion: This is a pilot study to explore the older adults' perceptions of neighborhood environments and their associations with SRH. Results show that subjective perceptions of neighborhood environments can be predictors of elderly's heath.

INTRODUCTION

It is noted that where an individual resides is related to the individual's health. As population in the developed countries is aging, there has been increased interest in studying the association between health of the elderly and their living environments [1,2,3]. Older adults are believed to be less mobile and more attached to their neighborhoods than the young [4]. Their health is also more sensitive to their living environments since they have a wide range of physical and health-related changes with increasing age [3,5]. The availability and proximity of services, neighborhood safety and cleanliness [6,7] and urban designs, such as pavement surface material, seat availability, lighting, street layout and traffic signals [8,9] are factors affecting the functionality of the elderly. In addition, the mental health of the elderly is found to be related to community quality and satisfaction

[10,11,12,13]. Thus, it is evident that the physical, service and social environments of the neighborhood greatly affect the elderly's health and well-being.

The majority of the neighborhood-health studies focus on the effects of objective neighborhood assessments on health outcomes; and little research examine the health effects of subjectively perceived neighborhood environments. Although there is recently a growing amount of research documents the association of an individual's perception of neighborhood environments and various health outcomes (e.g. [14,15,16,17,18,19]), few studies investigate the association of the health of the elderly and their perception of the residential environments. To fill this gap, it is essential to examine the effects of perceived neighborhood contexts on the health of the aged.

Self-rated health (SRH) is the most widely used measure of perceived general health status and has been increasingly used in health and social science research [20]. It is a good predictor of morbidity and mortality [21,22] and is noted having robust validity and reliability [23]. For the aged population, SRH is discovered to be a predictor of mortality and functional disability [24]. In addition, SRH of the elderly is discovered to be associated with the satisfaction of neighborhood environments [25,26,27].

In Hong Kong, the proportion of the elderly population (those aged ³65) will rise from 13% in 2009 to 28 % in 2039 [28]. Studies indicated that depressive symptoms and self-rated health of the aged were related to social support or financial strain [29,30,31]. It is also discovered that self-rated economic condition was a significant predictor of the number of somatic complaints and physical illnesses of the aged living in public housing in the Southern District [32]. Cheng and Chan examined the connection of self-rated health of the older adults and social support and concluded that the determinants of self-rated health between western and Chinese elderly were similar, and the effect of social support was gender free [33]. In addition, a curvilinear relationship between time-comparative SRH and physical health problems was detected [34]. However, the effects and/or the perception of the neighborhood environments on the health of the elderly have not received much attention.

The present study attempts to explore the perception of neighborhood environments and its association with SRH of the older adults in Hong Kong. Findings of the study can provide insights into the association of living environments and the health of the elderly; and contribute understanding of the needs of older adults in the aspects of urban planning and environmental designs.

METHODS

This study was an exploratory cross-sectional survey using a structured questionnaire. The target subjects were persons aged ≥65 residing in Wong Tai Sin. The district of Wong Tai Sin has a population of 420,183, about 5.9% of the total population of over 7 million in Hong Kong. Wong Tai Sin is characterized by extensive public housing. About 82% of the population in the district lives in public and subsidized housing developments while the remaining live in private housing. Wong Tai Sin was selected because it has the highest proportion of older persons, 17.6%, in Hong Kong [35].

Subjects

Survey responses were collected through a convenience sample of 1000 non-disabled elderly persons aged ≥65 in urban open spaces including parks and shopping locations in Wong Tai Sin. In the process of conducting the survey, three trained interviewers approached the target respondents and determined their eligibility by asking if they resided in Wong Tai Sin and were aged ≥65. After eligibility was ascertained, the respondents were informed about the survey's objective, methods and confidentiality. A total of 523 older adults (52.3%) agreed to participate in the study and completed the questionnaires via face-to-face interviews in Cantonese in summer 2008.

Survey instrument

The survey instrument was an anonymous questionnaire that consisted of three main domains. The first and second parts sought information on the perception of the neighborhood environments and SRH of the participants respectively, and third section focused on the respondents' demographic characteristics, including gender, age, education, living arrangement and financial sufficiency. All questions were close-ended. The exact amount of income was not asked in the present study because it is a sensitive question. Due to the lack of retirement protection, many of the aged rely on their own savings, support from their children or the Comprehensive Social Security Assistance (CSSA). In addition, question on financial sufficiency can reflect the subjective notion of financial satisfaction of the elderly [36]. The respondents were requested to rate their financial situation from more than enough (5) to very insufficient (1).

Perception of neighborhood environment

To evaluate respondents' perceived neighborhood environments, questions on physical, service and social environments that were based on those developed by Ellaway et al. [37] and Pampalon el at. [38] were adopted. Respondents were asked to express their perceptions on problems in their neighborhood since problem perceptions referred to the extent individual liked or disliked the local area. Further, it is agreed that neighborhood perceptions are relevant to individual well-being [39,40].

Respondents were asked 12 problems of the physical environment that were related to the quality and safety of the neighborhood, namely provision of open spaces, noise, crowdedness, air quality, litter, up-keeping of sidewalks, traffic, vandalism, burglaries/thefts, assaults, drug use and disturbance by gangs of youngsters. Six items on service

environment focused on respondents' perception on provision of facilities and services, which included provisions of recreational, medical and cultural facilities, policing, lighting and shopping. A three-point scale (1=not a problem, 2=a minor problem, 3=a serious problem) was adopted for both perceived physical and service environments. Responses to each individual item were summed to produce a score indicating the overall assessment of the perceived physical and service environments. Higher score represented more perceived problems in the neighborhood.

Social environment referred to the perceived nature and quality of social interaction in the neighborhood. In the present study, interviewees had to respond to 6 items on neighboring using a five-point Likert scale that ranged from "strongly disagree" (1) to "strongly agree" (5). These items were statements of "my neighbors are friendly and helpful", "I believe neighbors would help in emergency", "I visit my neighbors in their homes", "I regularly stop and talk with people in the neighborhood", "I know a lot of people in the neighborhood" and "I trust a lot of people in the neighborhood". Responses to each statement were summed to produce a score showing the overall measurement of the social environment. The higher the score, the better perceived social ties in the neighborhood.

Self-rated health (SRH)

SRH was assessed by the question "How would you rate your overall health at the present time?" Respondents were asked to rate their overall health on a five-point Likert scale, on which 1 indicated "excellent" and 5 indicated "very poor".

Data analysis

Descriptive statistics were employed to describe the demographic characteristics, perception on the neighborhood environments and SRH of the respondents. To determine whether there were differences in the perception on neighborhood environments among the respondents, ANOVA was used. Pearson's Chi Square ($c2$) tests were utilized to detect the differences among the demographic variables and SRH. Where the expected cell frequencies were fewer than required assumptions to satisfy criteria for the use of Pearson's $c2$, fisher exact test was employed. To evaluate the association of perception of neighborhood environments and SRH, ordinal regression was used. All relationships were determined to be statistically significant

at 95% confidence levels.

RESULTS

Demographic characteristics of respondents

Table 1 presents the demographic characteristic of the respondents. Of the total of 523 participants, 63.1% were male. Over half (55.2%) of the respondents were aged between 70 and 79 years. Majority was married (72.1%) and lived with children and/or with spouse or in-laws. Over 80% had no formal education and attained primary education. Less than one-fifth (16.0%) of the respondents rated their financial situation as "insufficient" or "very insufficient".

Table 1
Demographic characteristics of respondents (N=523)

	N	Percentage
Gender		
Male	330	63.1
Female	193	36.9
Age (years)		
65-69	112	21.4
70-74	157	30.0
75-79	132	25.2
80-84	84	16.1
85+	38	7.3
Marital Status		
Single	24	4.6
Married	377	72.1
Widowed/separate/divorced	99	18.9
Not specified	23	4.4
Education		
No formal education	210	40.2
Primary	222	42.4
Secondary	77	14.7
Tertiary or above	14	2.7
Living arrangement		
Alone	105	20.1
With spouse only	144	27.5
With children &/or spouse/in-laws	260	49.7
With other persons	14	2.7
Financial sufficiency		
More than enough	17	3.3
Enough	139	26.6
Just right	283	54.1
Insufficient	65	12.4
Very insufficient	19	3.6

Perception of neighborhood environment

The mean score of perception on physical environment was 13.53 with a standard deviation of 2.14. This mean score indicated that the respondents did not perceive lot of problems in the physical environment. Noise (4.4%) and crowdedness (2.9%) were considered as major problems.

Male (F=7.41; p<0.007) and respondents who had attended secondary school education (F=5.79; p<0.001) tended to perceive more physical problems.

Respondents were content with their service environment, which the mean score was of 6.80 with a standard deviation of 1.21. The most important problem was the provision of medical service (2.3%). Male (F=9.26; p<0.008) and respondents having secondary school education perceived more service problems (F=5.30; p<0.001).

Respondents were also satisfied with their social environment, that the mean score was 18.45 with a standard deviation of 6.21. About half of the respondents knew lot of people in the neighborhood (47.8%), considered neighbors were friendly and helpful (48.6%) and believed neighbors would help in emergency (50.3%). Females (F=9.54, p<0.002) and respondents having better financial sufficiency (F=5.20, p<0.001) were more satisfied with the social environment.

SRH of respondents

Over one-third (34.2%) of the respondents rated their health as "good" or "excellent", while a 39.6% rated their health as "fair" and the remaining 26.2% as "poor" or "very poor". Respondents who aged below 75 (p<0.001), were married (p<0.001), lived with family members (with spouse and/or children or in-laws) (p<0.001) and had "just enough" financial sufficiency (p<0.002) tended to have better SRH.

Relationship between perception of neighborhood environment and health conditions

Results of regression analysis were presented in Table 2. SRH was positively related to service environment and education, but negatively associated with social environment and financial sufficiency. Those elderly with higher education (OR=1.39; 95% CI=1.13-1.72) and more perceived service problems (OR=1.19; 95% CI=1.04-1.36) were more likely to report poor SRH. However, good social ties (OR=0.95; 95% CI=0.92-0.97) and greater financial sufficiency (OR=0.73; 95% CI=0.59-0.89) were associated with better SRH.

Table 2

Results of ordinal regression analysis of SRH on perceptions of neighborhood environments* and demographic characteristics

Self-rated health (SRH)	β	SE	OR (95% CI)	p
Service environment	0.204	0.077	1.19 (1.04-1.36)	0.008
Social environment	-0.056	0.014	0.95 (0.92-0.97)	0.000
Education	0.351	0.121	1.39 (1.13-1.72)	0.004
Financial sufficiency	-0.308	0.105	0.73 (0.59-0.89)	0.003

* Higher scores on service environments represented more perceived problems
Higher scores on social environment reflected positive perception

DISCUSSION

The current study is exploratory in nature. Perceptions of problems in the neighborhood, that referred to something very local and denoted the extent the individuals' satisfaction of their living environments, was employed to assess their associations with SRH of the elderly. In general, the respondents of the current study were satisfied with their neighborhood environments, as they did not perceive many neighborhood problems. However, gender difference in the perception of neighborhood contexts was detected. The findings that women were more satisfied with the social environment corresponded to some previous studies. It is suggested that women were more influenced by the sociability in the neighborhood and men were more affected by the physical environment [41,42,43,44].

It is presumed that women tended to report poorer health than men (e.g. [45,46,47,48,49]) as women tended to consider disability associated with diseases while men inclined to cogitate fatality of diseases [46]. Nevertheless, no gender difference in reporting SRH was detected in the current study. Sun et al. noticed the same finding only in the ≥75 age group while women aged <75 year tended to report good SRH in Japan. These inconclusive results postulate further investigations [50].

Perceived physical environment was discovered not a predictor of SRH. This finding might plausibly be due to the fact that the subjects, who had been residing in Wong Tai Sin for decades, were accustomed to life in their neighborhood environments and were less likely to perceive physical problems [8].

Perceived service environment was predictive of SRH. Older adults are believed to be more affected by the availability of health services than the younger population [51] and to rely heavily on community resources [52]. It is supposed that better supports and services are provided to neighborhood with high concentration of senior population [26]. Further,

older adults living in neighborhood with a high concentration of elderly would have better knowledge of and access to various kinds of support services [53]. However, Subramanian et al. found no relationship between SRH of the elderly and neighborhood service density [26] .

Social environment was detected to be a significant predictor of SRH. An increasing body of literature indicates that the quality of social relations in the area can affect health. Social contact is crucial to older people at risk of isolation and depression. It is agreed that older adults who receive less social support are more likely to be depressed [54,55].

Perceptions of neighborhood environments are found to closely relate to health [27,38,39,40] since they influence psychosocial processes of individual that affect health. Negative perceptions of physical and service environments would affect people's health outcome and also influence their willingness to interact with others in their community. These neighborhood effects are more prominent among the elderly, who are more attached to their residential area as they have lived in the neighborhood for longer periods [40] and are sensitive to their residential environments. [56,57]. How perceptions of these neighborhood qualities function to affect health is an intricate issue that requires further exploration.

Financial sufficiency was also detected as a predictor of poor health outcomes. Prevalence of depression of the senior population in Hong Kong was found to be positively associated with financial strain [54,58]. Further, financial difficulties, that are a major source of chronic worries, also have detrimental effect on physical health, somatic complaints and SRH among older adults [32].

It is noted that elderly having higher education attainment reported poorer health in the present study. This finding is different from the previous studies that people with lower education achievement have poorer health. The plausible reason is the skewed sample towards the lower education. The education characteristic of the present sample, with 40.2% and 42.4% having no formal and primary education respectively, is comparable to that of a survey conducted by the Department of Health (in 2004) in which 42.2% and 39.2% of the senior population had no schooling or primary education respectively. In addition, the older adults tended to rate their health positively, that was concordant with the result of the Thematic Household Survey in 2002 that 31% of the elderly rated their health as "excellent" or "very good" and only 23% rated as "poor" [59].

Several shortcomings should be kept in mind when interpreting the findings of the present study. This is a cross-sectional study and causal relationship between the dependent and independent variables cannot be established. Another limitation is selection bias. Only non-disabled older adults residing in Wong Tai Sin were the target population. In addition, the use of a convenience sample, a non-probability method, that the subjects are selected on easy accessibility, would lead to both selection and responder bias. Thus samples may not be representative; and the results may not be generalized to all elderly in Hong Kong and should be interpreted with caution.

CONCLUSION

This is a pilot study that explored the older adults' perceptions of neighborhood environments and their relationships to SRH. Despite the limitations of this study, results indicate that perceptions of neighborhood environments can be predictors of SRH of the senior population. Further studies to explore the perceptions of neighborhood environments and health status of the aged in other neighborhoods are required. These area-level variations could provide insights of the needs of older adults that help effectively improve their well-being.

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