Brief Report

Neighborhood Support and Aging-in-Place Preference Among Low-Income Elderly Chinese City-Dwellers

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Abstract

Objectives. Preferences for aging-in-place are unclear among low-income elderly Chinese city-dwellers, who are more likely to be geographically bound, to have little care support, but possess strong filial values and family cohesiveness. This study investigated the preferences for aging-in-place and its contributing neighborhood factors among low-income Chinese elderly in a metropolitan city.

Method. We conducted interviews with 400 older people residing in public housing estates in Hong Kong.

Results. The majority of low-income elderly persons (80.4%) prefer to age in place even if their health and functioning has deteriorated beyond independent living. Logistic regression showed that (a) having very low income (<HK$2,000/month) and not receiving means-tested welfare predicted lower preference for this option [odd ratios (OR) = 0.27]; and (b) having medical facilities within reach (OR =9.02); and (c) an elderly center in the area (OR =2.98) were associated with a preference for aging in place, after controlling for demographic, and functioning characteristics.

Discussion. Low-income elderly Chinese city-dwellers prefer to age in place, given appropriate neighborhood support. These findings can be interpreted in light of Lawton’s ecological theory of aging and suggest a service model similar to the Naturally Occurring Retirement Community with Supportive Service Programs.

Key Words: Aging in place—Community support—Low-income Elders—Neighborhood—Social support.

Aging-in-place (AIP) refers to “the ability to live in one’s own home and community safely, independently, and comfortably, regardless of age, income, or ability level” (Centers for Disease Control and Prevention, 2014). Promoting AIP is a policy objective for both developed and developing countries (World Health Organization, 2007). It contributes to the wellbeing of older adults by providing a sense of attachment, connectedness, security and familiarity, identity, independence, and autonomy (Wiles, Leibing, Guberman, Reeve, & Allen, 2012).

Preference is central to the concept of AIP in distinguishing a choice to stay versus being “stuck in place” (Torres-Gil & Hofland, 2012). Although it is recognized that older adults generally prefer to stay in their home and local community for as long as possible (Keenan, 2010; Löfqvist et al., 2013), the situation is more complicated for elders with low income, who lack financial resources and care support for their preferred mode of living when faced with physical decline (Mullan et al., 2009). Socioeconomic status is related to health (Mackenbach et al., 2008) and...
functional disabilities (Syddall, Evandrou, Cooper, & Sayer, 2009), which are major endogenous factors that affect relocation. Importantly, because of transportation costs, low-income elders are more likely to be confined by their immediate environment (Newman, 2003); if support is not readily available in their neighborhood, they may encounter difficulties in commuting for services (Park et al., 2010), and have to give up community living in order to be in closer proximity to the necessary care (Gaugler, Duval, Anderson, & Kane, 2007). Older people of lower socioeconomic status are thus theoretically more prone to involuntary relocation or involuntary stay (Wiseman, 1980). In a recent U.S. study comparing elders with low versus higher income ($n = 1,376$), the former were more likely to expect AIP; however, it is unknown whether this reflects a desire to stay or the fact that they have nowhere else to go (Lehning, Smith, & Dunkle, 2013). AIP preference in the low-income elderly population remains unclear.

Lawton and Nahemow (1973) suggested in their ecological theory of aging that a decision to relocate can be determined by the balance between environmental demand and individual competencies (Lawton, 1999; Lawton & Simon, 1968). Theoretically, therefore, AIP preference can be modified with increased neighborhood support. Although previous research emphasized individual competencies, recent studies have directed more attention to ecological frameworks and the role of neighborhood support in AIP (Greenfield, 2012). These studies focused on actual relocation or expectation to relocate. For example, community support networks were found to be an important social environmental element for AIP (Gardner, 2011); perceived availability of community services is related to anticipation of AIP or relocation (Tang & Pickard, 2008); community ties (e.g., knowing many neighbors by name) and personal ties (e.g., children and relatives living nearby) are shown to be predictors for relocation (Longino, Bradley, Stoller, & Haas, 2008). Evidence for the impact of neighborhood support on AIP preference, however, is lacking.

Preferences for AIP in rapidly aging Chinese societies are particularly intriguing given the unique cultural and societal background. Traditional values of filial piety and multigenerational family cohesiveness (the ideal of “four generations under one roof”) suggest strong preference for AIP. However, in modern Chinese cities such as Hong Kong, such values have been largely watered down (Chow, 2009; Chow & Lum, 2008). The emphasis on the cohesiveness of the extended family is declining: the average size of domestic households in Hong Kong has dropped, from 3.9 in 1981 to 2.9 individuals in 2011 (Census and Statistics Department, 2013b). About half of elderly people are living with their adult children, although this figure decreased from 56.8% in 2001 to 51.1% in 2011, and elders living alone or with their spouse only increased from 29.7% to 36.3% in this period (Census and Statistics Department, 2013a). Despite its strong familial and Confucian values, ironically, Hong Kong also has one of the highest nursing home placement rates in the world, at 6.8% (OECD, 2014), with a long waiting list for subsidized residential care places for the elderly (28,794 applicants, average waiting time 25 months) (Social Welfare Department, 2013). We do not know whether the heavy demand for residential care services reflects the true preference of elders, or a need associated with declining family function in supporting AIP.

We carried out an empirical study on AIP preference and neighborhood support in low-income older adults in Hong Kong, one of the most developed cities in China. Hong Kong is a fast-aging society: in 2013, 14% of the population was aged 65 or above; by 2041, it will be one in three (Census and Statistics Department, 2012b). The city does not have a publicly funded social security system, and most elders are either living on their own savings or dependent on their adult children for financial support. As a result, more than 30% of all elders are living in poverty (Hong Kong Council of Social Service, 2013) and 38.6% live in subsidized public rental housing (Census and Statistics Department, 2012a), mostly old apartments that are not elderly-friendly.

Like other developed countries, Hong Kong has a comprehensive long-term care (LTC) system that provides community support services (e.g., meals on wheels, chore services, and adult day care centers) and residential care services to frail elders. These services are mostly funded by the government and are non-means tested. However, to be eligible, elders need to pass a health and functioning screening conducted by the government. The LTC system itself is heavily biased toward residential care (Chui et al., 2009): for each Hong Kong dollar the government spends on community support services, 6.8 dollars are spent on residential care services. Community support services are the only alternative to nursing home care as Hong Kong does not have any assisted living facility for low-income elders and has only two small assisted living facilities for upper-income elders. These facilities are 100% occupied and maintain a very long waiting list. Therefore, low-income frail elders’ options are either staying in their own home and community with community support services (AIP) or moving to a nursing home. In Hong Kong, there are about 300,000 foreign domestic helpers and 30% of the households with a foreign domestic helper contain one or more elders aged 60 years or above (Census and Statistics Department, 2001). The role of foreign domestic helpers in providing community support, however, is less relevant to low-income elders as they do not have the means to hire foreign domestic helpers, provide them room and board, and cover their employment insurance. Among institutionalized elders, the majority (about 82%) are supported by the government in the form of payments and subsidized nursing home placements (Census and Statistics
Depend among low-income elders in Hong Kong, it is therefore essential to understand the factors associated with their AIP preference.

Our key research questions are (a) whether low-income older Chinese people in Hong Kong would prefer to age in place should their functioning and health levels deteriorate to a point they need care; (b) whether family support remains important in affecting AIP preference; and (c) what are the other neighborhood support that may increase AIP preference in this group of elders, after controlling for individual characteristics.

**Design and Methods**

**Participants**

In 2012, we conducted face-to-face interviews with 400 older people aged 60 years or above residing in four low-income public rental housing estates \((n = 100 \text{ per estate})\) in Hong Kong. The four estates have shared and unshared features that allow us to examine the effects of neighborhood environment on AIP preference. The estates have similar proportions of older residents, with about one-third \((31\%–37\%)\) of the tenants aged 60 years or above. All estates are relatively old high-rise buildings in urban areas built in the 1960s and 1970s; however, two had completed major redevelopment programs, including improved lighting and accessibility to public areas and demolishing and rebuilding a few of the oldest buildings in the estate, making the environment more elderly-friendly. All four estates have similar community LTC services funded by the government and provided by non-governmental organizations through regional elderly centers, such as meals-on-wheels and chore services for frail elders, but only two have a regional elderly center physically located within them. These district elderly centers are staffed by professional social workers and other support staff such as program workers and personal care workers. They provide a variety of community support services such as case management, meal and laundry services, caregiver support services, health education, volunteer development, referral services, and recreational activities. They serve all elders living in the district regardless of their health and economic conditions.

Participants were recruited through a free community health screening. To ensure enough variation in frailty levels, participants were screened for their activities of daily living (ADL) and instrumental activities of daily living (IADL) by trained occupational therapists, and were stratified into healthy (no ADL/IADL limitation), moderately frail (some ADL/IADL limitations but not requiring community-based LTC services), and high frailty (ADL/IADL difficulties using community-based LTC services) groups with equal representation in our sample. Those who were cognitively incapable of participating in the interview were excluded.

**Measures**

**Dependent variable**

The dependent variable is AIP preference. Participants were asked whether they wished to (a) stay in the community; or (b) move to a nursing home, should their health and functioning deteriorate to the point where they need support from other people to continue living in their home.

**Independent variables**

The independent variables are physical and social environmental characteristics, namely (a) accessible care and daily living facilities; (b) instrumental social support provided by family, friends, and organizations; and (c) physical attributes and amenities in the community.

(1) Neighborhood facility accessibility

Perceived walkability to provider sites of care and daily living services was measured using a scale modified from the Leyden Walkability Instrument \((\text{Leyden, 2003})\). Based on the Hong Kong context, inapplicable items were removed and destinations frequented by elders were added. The scale contains five categories: “Recreational” (park and other recreational facilities); “Medical” (clinics, pharmacies, and hospitals); “Necessities” (grocery stores, wet markets, and supermarkets); “Dining” (restaurants, canteens); “Others” (banks, hair salons, housing estate offices). The accessibility of these facilities was rated as “High” (can walk with ease), “Low” (cannot walk with ease), or “Not Applicable” (no such facility or participant is bed-bound).

(2) Instrumental social support providers

Instrumental social support was measured using a name generation method following the exchange approach. Participants were asked to name the persons upon whom they had to rely for help in the following categories: buying food, buying daily necessities, and escorting to medical appointments \((\text{McCallister & Fischer, 1978})\). There was no limit to how many people they could name. For each person named, the interviewer then asked about his/her relationship with the participant, which was classified into “Family Living Together” (immediate family members living together), “Family & Relatives” (family and other relatives not living together), “Friends” (neighbors, friends), and “Organizations” (formal support from an organization). We used binary coding to represent whether or not the participant had received instrumental social support from any of these providers. Whether or not the participant had a domestic helper was also recorded.

(3) Physical attributes and amenities

These are categorized as “Estate Redeveloped” or “Estate Not Redeveloped” (whether the estate has undergone major redevelopment work) and “Elderly Center Present” or “No Elderly Center” (whether there is an elderly center within the estate).
Control variables
Control variables are individual characteristics, namely age, gender, income, education, ADL, and self-rated health. To understand the effect of means-tested welfare benefits on AIP preference, we categorized low-income elders into six mutually exclusive groups: the ultra-low-income elders are those who had an income of less than HK$2,000 (US$256.4) per month and were not receiving means-tested welfare benefits; the low-income elders are those who had an income between HK$2,000 and HK$3,999 (US$256.4–US$512.7) per month and were not receiving welfare benefits; and the welfare recipients are low-income elders who were receiving means-tested welfare benefits. The standard welfare payment for a single elder is HK$3,055 (US$391.7) per month in 2014. In Hong Kong, in order for older people to receive means-tested welfare benefits, all their children, including those who are not living with the elder, are required to sign a government form to declare that they do not have the means to support their elderly parents. Many older people prefer to live in poverty instead of applying for welfare benefits in order to save their children from making such a declaration. We also grouped the remaining elders into three income groups: between HK$4,000 and HK$5,999 (US$512.8–US$769.1), between HK$6,000 and HK$7,999 (US$769.2–US$1,025.5), and HK$8,000 (US$1,025.6) or above. Level of education was classified into three categories, namely uneducated/kindergarten, primary, and secondary and above. ADL was measured using the Barthel Index (Mahoney & Barthel, 1965). Self-rated health was measured by asking the participants to rate their present physical health on a five-point Likert scale (1 = very poor; 5 = excellent). Due to a high degree of correlation between living arrangements and relying for help from family members living together (phi correlation = 0.61), living arrangement was excluded from the regression analysis.

Statistical Analysis
Descriptive statistics were calculated for the prevalence of AIP preference and other sample characteristics. Logistic regression was conducted with AIP preference as the dependent variable. Stata 13.1 (StataCorp, 2013) was used to conduct data analysis. To test the effect of neighborhood environment on AIP preference, we computed the odds ratios (OR) with 95% confidence interval for the predictors: (a) neighborhood facility accessibility in the five categories of recreational, medical, necessities, dining, and other services; (b) instrumental social support provided by family living together, family and relatives, friends and neighbors, and organizations; and (c) estate redeveloped and elderly center present, with individual characteristics as control variables in the regression model. Considering the possibility of multicollinearity, variance inflation factors (VIFs) were calculated for each independent variable (not reported here). A mean VIF of 2.46 showed no evidence of multicollinearity. The missing values were handled by listwise deletion, which resulted in a final sample size of 361. The number of missing participants in each estate ranged from 7 to 15. Chi-square test suggested no significant relationship between estate and missing pattern.

Results
Descriptive Statistics
The majority of participants (80.4%) preferred AIP even if their health and functioning deteriorated to the point they could no longer live independently without assistance. Table 1 shows the characteristics of the study sample. On average, the participants had lived in the same housing estate for 33 years. Men and women were relatively equally represented, with a slight female predominance. Most were middle-old to old-old, living alone or with their spouse only, and had limited education. Functioning and self-rated health were moderate to good.

Logistic Regression Model of AIP Preference
Table 2 shows the result of the logistic regression analysis. Likelihood ratio Chi-square test is significant with

Table 1. Characteristics of the Study Sample (N = 400)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Mean (SD) or n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred AIP</td>
<td>319 (80.35%)</td>
</tr>
<tr>
<td>Years living in the estate</td>
<td>33 (0.70)</td>
</tr>
<tr>
<td>Male gender</td>
<td>174 (43.50%)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>60–69 years</td>
<td>38 (9.52%)</td>
</tr>
<tr>
<td>70–79 years</td>
<td>133 (33.33%)</td>
</tr>
<tr>
<td>80–89 years</td>
<td>194 (48.62%)</td>
</tr>
<tr>
<td>90 years or above</td>
<td>34 (8.52%)</td>
</tr>
<tr>
<td>Married</td>
<td>221 (55.25%)</td>
</tr>
<tr>
<td>ADL (range, 0–100)</td>
<td>93.10 (0.70)</td>
</tr>
<tr>
<td>Self-rated health (range, 0–5)</td>
<td>3.06 (0.05)</td>
</tr>
<tr>
<td>Living arrangement</td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>132 (33.00%)</td>
</tr>
<tr>
<td>Spouse only</td>
<td>182 (45.50%)</td>
</tr>
<tr>
<td>Other family members</td>
<td>62 (15.50%)</td>
</tr>
<tr>
<td>Domestic helper only</td>
<td>24 (6.00%)</td>
</tr>
<tr>
<td>Education attainment</td>
<td></td>
</tr>
<tr>
<td>Uneducated/kindergarten</td>
<td>128 (32.00%)</td>
</tr>
<tr>
<td>Primary</td>
<td>189 (47.25%)</td>
</tr>
<tr>
<td>Secondary or above</td>
<td>83 (20.75%)</td>
</tr>
<tr>
<td>Monthly income</td>
<td></td>
</tr>
<tr>
<td>Welfare</td>
<td>118 (31.98%)</td>
</tr>
<tr>
<td>HK$0–1,999</td>
<td>28 (7.59%)</td>
</tr>
<tr>
<td>HK$2,000–3,999</td>
<td>54 (14.63%)</td>
</tr>
<tr>
<td>HK$4,000–5,999</td>
<td>70 (18.97%)</td>
</tr>
<tr>
<td>HK$6,000–7,999</td>
<td>48 (13.01%)</td>
</tr>
<tr>
<td>HK$8,000 or above</td>
<td>51 (13.82%)</td>
</tr>
</tbody>
</table>

AIP = aging in place; ADL = activities of daily living.
The Hosmer–Lemeshow test yielded a $\chi^2$ (335) of 361.69 and was insignificant ($p > .05$), in combination of a pseudo $R^2$ of 0.16, suggesting that the model was fit to the data well. To further check the possibility of specification errors, we conducted a specification link test. The insignificant $p$-value showed that no additional independent variables are significant except by chance ($\beta_{\hat{y}} = -0.01$, $p = .913$). The estimation results show that elders living in a neighborhood with high accessibility of medical facilities are 9.02 times more likely to stay in the community (OR = 9.02, $p < .05$) than those in a neighborhood with low accessibility of medical facilities. The presence of an elderly center in the estate increased the likelihood by 2.98 times (OR = 2.98, $p < .05$), whereas redevelopment work for environmental improvements shows no significant effect (OR = 0.62, $p > .05$). Compared with those who did not receive support from family living together, those receiving such support were 1.95 times more likely to prefer AIP (OR = 1.95, $p < .1$). Income levels were related to AIP preference, a preference to move being related to monthly income of less than HK$2,000 and not receiving welfare (OR = 0.27, $p < .05$).

### Discussion

We investigated the AIP preference and its neighborhood determinants among low-income elders living in public rental housing in a metropolitan Chinese city. Our results suggest that (a) low-income elders prefer to age in place; (b) perceived proximity to medical facilities is a crucial factor; and (c) the presence of an elderly center within the community increases AIP preference in this population.

We confirmed that elders with low income prefer AIP no less than the general elderly population. In our sample,
more than 80% of elders expressed a wish to remain living in the community even when their health and functioning deteriorated to the point where they could no longer live independently. This figure is very close to the 81.4% found by the Census and Statistics Department (2009) in a citywide survey using the same question. Our results shed light on Lehning et al.’s (2013) findings that low-income elders are more likely to expect AIP, which may either be because of a preference or a lack of choice. Having stayed in an old estate for an average of 33 years, these low-income elders are neither “involuntary stayers” nor “stuck in place.”

The preference is lower, however, among the ultra-low-income group. In Hong Kong, to be eligible for means-tested welfare, the elder must provide a signed document by his/her children declaring that they lack the financial means to support their parent (commonly known as a ‘bad son statement’). Some elders would opt to live in poverty to protect their children from violating the filial norm and bringing disgrace upon the family by making such a declaration. In this group of elders, nursing home placement may be preferred when they become frail due to the associated benefits: the monthly welfare payment to a 50% disabled poor elder living in the community is HK$2,935, while the government payment for a nursing home placement can be up to HK$14,000, depending on disability level (Social Welfare Department, 2012). This difference in amount, if spent on enhancing neighborhood support services and strategies such as those identified in this study, may prove cost-effective in facilitating AIP preference among elders.

Although it is known that a range of community-based services increases AIP preference (Carpenter et al., 2007; Tang & Pickard, 2008), our results have revealed the unique role of medical facilities among community facilities (recreational, necessities, dining, and others) in a modernized Chinese city. Low-income elders are 9.02 times more likely to prefer AIP if they perceive themselves to be within easy reach of a clinic, pharmacy, or hospital. This contradicts a previous finding in the West, that access to health care (and other neighborhood facilities) does not affect AIP expectation (Lehning et al., 2013). That study, however, measured AIP expectation by asking respondents whether they would consider moving (not necessarily to care facilities), and the authors acknowledged difficulties in interpreting the results as reflecting a lack of intention or ability to relocate.

Low-income elders are more likely to be geographically bound because of transportation costs (Newman, 2003), and the proximity of facilities likely bears greater weight in their choice of AIP than for elders with means. In particular, the perceived close proximity of medical facilities appears to be a deciding factor for AIP preference as one’s health and functioning deteriorates, whereas recreational and daily living facilities such as parks and restaurants nearby do not have a similar effect. This finding suggests either that walkable access to health care services is considered a basic requirement for community living in this group of elders, whereas close proximity to personal care and recreation services may be viewed as value-added features, or that help from others may be more readily available when one becomes frail.

The presence of an elderly center increased the likelihood of AIP preference threefold. Although the public housing estates included in our study are covered by similar community support services (e.g., meals on wheel) provided by elderly centers, the physical presence of an elderly center within the estate may have other, less tangible functions, which become important when the elders are more geographically bound. Apart from formal services, an elderly center may serve as the local hub of a support network, and its presence may be a visible resource that promotes social connectedness, a sense of attachment, and familiarity, which are important elements of community living.

**Limitations and Conclusion**

This study is limited by its cross-sectional design, which does not allow one to address causal relations between neighborhood factors and AIP preference. Longitudinal follow-up study investigating changes in factors identified in this study and AIP preference, health and functioning, will provide more definite answers and information regarding the interaction between environmental and individual factors. We also caution against generalization of our results to other income groups and societal contexts, given the unique welfare and cultural factors at play in Hong Kong.

Notwithstanding these limitations, our findings provide important information for consideration in service prioritization. The fact that AIP is the preferred mode of living among low-income elders, and the essential role of formal and informal neighborhood support, are well in line with existing theories and evidence. Like many Chinese cities, Hong Kong is in search of a service model to help its elderly population age in place, a need that is especially pressing for the low-income group. Our results have demonstrated the key role of neighborhood environment, particularly the ease of access to medical facilities, the presence of elderly-specific amenities, and family support. The public health authority has recently started a health education and senior nursing program in the community. At the same time, the Hong Kong Government has just announced (in the spring of 2014) a new initiative to make elderly centers that provide community support services to frail elders more available throughout the city. With all this in place, the only missing element is care management. It would be worthwhile for Hong Kong, and other Chinese cities, to develop community partnership programs similar to the Naturally Occurring Retirement Community with Supportive Service Programs model that promotes partnership among formal and informal neighborhood stakeholders to create a coordinated package of services to support the independent living of elders.
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