

Promoting Aging-place Interaction; Case Study: Iranian Elderlies Living in Toronto*

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ABSTRACT

The current residential environments have not been designed for the activities and needs of elderlies, so addressing the quality of interaction between older adults and the surrounding physical environment is necessary. On the other hand, the ratio of the elderly population percent to the total population is increasing in the upcoming decades, and the world in general, and Iran, in particular experience aging. Therefore, this study was conducted to find how aging interaction is shaped in the place to achieve a theoretical and practical perception of aging interaction in the place. To do this, a qualitative research strategy was selected and the interview protocol was pursued based on the five topics. Older adults from the Iranian community living in Canada were selected as studied samples, and assigned to two groups, including 43 interviewees in urban place situations and 50 interviewees living in suburbs. After the in-depth interviews were done, the responses were saturated, and sufficient statistical society was obtained. The data obtained from open interviews share some subjects about older adults' feelings about the place and the reflection process for making decisions about aging in the place or relocation. Five thematic coding categories were pursued through qualitative data: the importance of the house, house comfort, properties of the neighborhood and community, difficulty in home affairs handling, and safety and security concerns. The study results indicate that elderlies pay more attention to the functional aspect of the house and immediately point to those environmental properties with unsupportive natures. Ultimately, the research findings indicate that the concept of a house supporting aging interaction in place has been defined based on the residence place of older adults through six components: designing several realms for the house, creating permeable borders and transparent margins, environment safety, improving kitchen access, restrooms, and bathrooms supporting aging in place, and access to nature.

Keywords: Aging Interaction in Place, Elder-Friendly Housing, Iranian Elderlies Living in Canada, Environmental Properties of Aging.

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1. INTRODUCTION

As reported by United Nations in 2019, the life expectancy index in the world has exceeded 72 (WHO 2019). According to the anticipations of the population sector of the UN, the elderly population in the world will reach from around 10.5% in 2007 to 21.8% in 2050 (WHO 2007). According to the population census of 2016 in Iran, population accumulation has occurred in the age range of 25-35 among men and women; this accumulation will reach the age range of 45-65 by the next 20 years indicating that the mass population of Iran will be in the age range of 65-75 that is the age of disability by 2056. The importance of this study originates from the principle that older adults that are in special classes of society are different from other age ranges due to their underlying role in environmental or ecological design. Firstly, urban environments have not been designed for the activities and needs of elderlies; secondly, the ratio of elderlies' population to the total population is increasing in the upcoming decades. Various theories have been presented to find out how aging occurs. The mentioned theories have mainly described and explained aging based on a biological approach. In addition to such theories, however, other scholars have addressed the influence of environmental and social elements and quality of life during different periods of life on aging. Using a transformational approach, some theorists have tried to introduce aging based on multiple interactions (between social, environmental, biological, and psychological aspects). Therefore, it is essential to consider theoretical foundations in improving elderlies' interaction with a place to make them ready when dealing with it. Hence, this study aims to reach a theoretical and practical perception of aging in the place to find how aging is shaped in the place and what the motivations causing relocation and environmental factors-based relocation behaviors. Regarding the diversity of housing options for elderlies in Canada and supportive plans of this considered for aging in place and a sufficient population of Iranians living in Toronto, this study selected elderlies of Iranian society with an age range greater than 70 as a statistical society then assigned them to two groups of central neighborhoods of Toronto and those who live in suburbs. This study tends to answer the following questions: how do elderlies change the place to cope with changes caused by aging in their homes when they decide on aging in the place? Which components improve aging in the place? What is the nexus between these components? Finally, this study tries to recommend some instructions for housing design that is proper for aging.

1.1. Review of the Research Background of Aging in Place

With the increasing number of studies and antecedents, the WHO suggested improving the interaction of

elderlies with the place by presenting the concept of "active aging" and trying to build "elderly-friendly neighborhoods" (WHO 2002; 2007). The term "aging in place" means the residence of elderlies in the place, and their social groups with different levels of individual autonomy (Davey, Nana, de Joux & Arcus, 2004, Wiles et al., 2011). Many hypotheses posit that humans and especially elderlies prefer to get older in their place, and be allowed to remain independent and have their social relationships in familiar conditions (Burkhauser et al. 1995; Marr and Millerd 2004; Wiles et al. 2011); however, the idea of aging in place means staying at the current residential unit of elderlies and current social group. Although the concept of the elderly stuck in the place means aging in place, its meaning implies no right to choose. In other words, elderlies stuck in the neighborhood or improper houses caused by socioeconomic barriers have no right to change their place (Golant 2008; Klinenberg 2015). One of the topics available in the literature on aging in place includes different ratios of quality of social, therapeutic, and healthcare services, access to facilities, and diversity in public transportation that are effective in the tendency to stay in the environment (Erickson et al. 2012; Stinner and Van Loon 1992; Vogt, Allen, and Cordes 2003). Hence, many studies have addressed the satisfaction with the residential environment concerning aging in place (Lawton, Altman, and Wohlwill 1984; Bonaiuto et al. 1999). The term satisfaction with residential environment implies the individual developments concerning the conditions of the residential environment of a person, which are divided into two dimensions of housing and neighborhood and include individual needs, willingness, and successes (Perez et al. 2001). Attachment to the environment and social communications both influence the aging in place and neighborhood may mean a sense of belonging to a group, which is considered as a deep emotional relationship between person and neighborhood (Wiles et al. 2011). In practice, elderlies' belonging to the neighborhood results in individuals belonging to housing.

Some previous studies have tested the nexuses between socioeconomic properties and biological-motion factors, as well as the willingness to stay in that place or relocate; among these factors, ownership of a residential unit is the most determinant one (Burkhauser et al. 1995; Ferraro 1981; Golant 2008; Lehning, Smith, and Dunkle 2015; Stoeckel and Porell 2010; Venti and Wise 1998). Moreover, many statistical pieces of evidence are available about the influence of ownership of the residential unit and willingness to age in place (Ferraro 1981; Lehning et al. 2015; Stoeckel and Porell 2010; Strohschein 2012). Similarly, being married or single and having a child that lives nearby have positive impacts on the expectations of aging in the place (Erickson et al. 2012; Ferraro 1981; Stoeckel and Porell 2010),

while education level and economic problems have negative effects on the decision on aging in place (Erickson et al. 2012; Ferraro 1981; Lehning et al. 2015; Stoeckel and Porell 2010; Strohschein 2012). Despite the functional and somatic-motor problems, most elderly people prefer to get older in their houses to have maximum personal autonomy (Bayer and Harper 2000; Rantz et al. 2011). Moreover, studies indicate the elderly spend 90% of their time at home (Baker et al. 2007). Elderlies spend a long time in the house and surrounding environment while the environment's properties mainly limit the interaction between elderlies and the environment (Oswald et al. 2003; Wahl et al. 2009). Although few empirical studies have been conducted on this topic, various narrative evidence indicates that the physical environment is correlated with health implications, well-being perception, and functional autonomy among older adults.

1.2. Theoretical Framework of Aging in Place

Person-environment theories have been developed in an intellectual tradition in which, humans are considered as adaptive organisms that respond to drivers predictably. According to "interaction or exchange" models are determined based on the changes that occur in both person and environment over time under the circumstances in which, the physical situation of the person is the only constant value. A remarkable study that contributed to the formation of this intellectual tradition is adopted from the field theory of Lewin (1951). Lewin argued that behavior can be generally seen as a function of the interaction between a person and the environment. According to this research, he extracted a formula

that explained this interaction as $B = f(P, E, \text{ and } P \times E)$ where, behavior (B) is a function (f) of the person (P) and environment (E) and interaction between them (Px E) (Lewin, 1951). The work of Lewin and most other interactive person-environment modes are based on Murray's need-pressure theory (1983), which claims a person needs to keep a balance with his/her environment. Among the introduced models, the ecological model of aging presented by Lawton and Nahemow (1977) has had the highest influence on studies and policies. The ecological model of aging by Lawton and Nahemow (1977), which is also known as the competence model explains the relationships between tensions created by the environment (known as the press) and the ability of the elderly to cope with these needs (known as competence). Environmental "Press" refers to environmental conditions (physical, social, psychological) that can be defined as supportive or oppositive. When tension (press) is imposed then the person should have a response to reach a balance between these two factors. In this model, "competence" refers to individual capabilities (such as sensory ability, mobility or motor skills, cognitive ability, etc.), which are measured from low to high. The combination of these two cases is then used to find whether the person is in the "right zone." (Fig. 1). According to the model of Lawton, when a person faces increasing levels of "press," has two options: change his/her competence or change the physical or social environment to compensate for his/her low competence. The aging process mainly leads to lower levels of competence; therefore, correction of the physical or social environment can be taken as a more effective strategy.

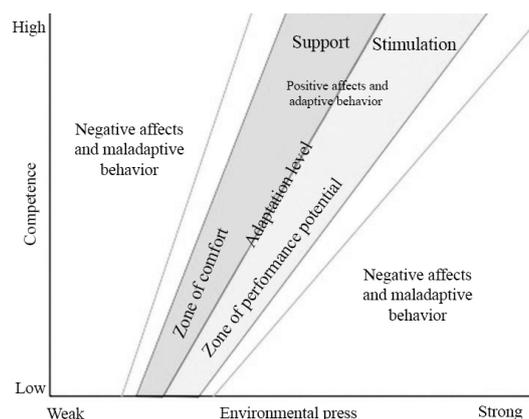


Fig. 1. Ecology Theory of Aging (ETA) of Lawton and Nahemow
(Lawton and Nahemow 1977)

In general, individuals with high levels of competence can withstand higher levels of the press or respond to them, while individuals with lower levels of competence are vulnerable to demands from the environment. Procedural theories especially the

theory of continuity (Atchley R. C. 1989), which has been designed based on the elderly' observation in sociology, and is inconsistent with theories of adulthood growth that are designed by developing child growth to adulthood theories. A kind of

intellectual and pragmatic pattern in older adults so that these patterns have been developed gradually and are continuously used to be adapted to varying needs and conditions. Precious studies indicate that an environment without control or choice that encourages passive and dependent behavior would lead to a higher perception of learned helplessness (Peterson et al. 1993). Learned helplessness is correlated with higher levels of depression, physical disease, and mortality (Peterson et al. 1993; Rodin and Langer 1977). Personal involvement and engagement of the

person with the house present another explanation for feeling comfortable in the house. In terms of the meaning of house, when a person is highly interested in a place (i.e., they have participated in its design, have arranged its furniture, and have tried to maintain it) then they feel more comfortable in that place considering it their territory. According to these points and the ecological model of Lawton and Nahemow, the ecological model of aging was designed by the authors of this paper as shown in Figure 2.

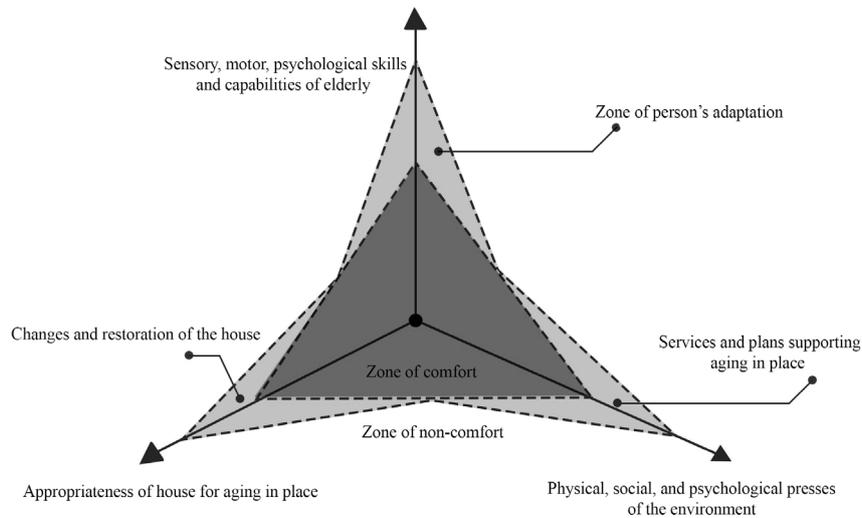


Fig. 2. Ecology Model of Aging

2. METHOD

The research strategy is qualitative. A systematic process is a substantial factor used to achieve a successful qualitative study. According to Miles and Huberman (1994), this process includes “an interactive relation between data collection, data reduction, data display, and conclusion drawing/verification” (Groat and Wang 2013). The most critical problem in the analysis of qualitative data is seen in the word nature of data; these words may seem unimportant at first glance unless prefix and suffix words must be considered to determine the nexus between these data (Creswell 2009). Because

data analysis consists of dealing with words, coding is an effective method for data organizing and reduction to manageable classes of information (Groat and Wang 2013). Codes are classes derived from research questions, hypotheses, key concepts, and or important themes of data. Ultimately, the researcher enters the next phase of coding after identifying and designing different codes. This process is called "pattern coding" through which, a large volume of data is converted to more meaningful and consistent units (Newman 2003). A researcher usually uses one of three approaches introduced in Table 1 to conduct a qualitative study.

Table 1. Approaches to Qualitative Study

Grounded Theory	This theory is historically correlated to traditions of sociology and aims to achieve a theory based on the collected data.
Ethnography	This approach originates from anthropology, which aims to understand the properties of a specific condition through in-depth immersion into that phenomenon.
Interpretivism	This approach originates from phenomenology in philosophy and aims to perceive the complicated world of lived experience from the viewpoint of those who have lived these conditions.

(Groat and Wang 2013)

According to the research plan of this study, the qualitative approach of “interpretivism” has been used in this study. The possible participants of face-to-face interviews are identified from the studied population to achieve a holistic understanding. The interview was done in the house of participants by using structured items and an open answer sheet. The purpose of the interview was to collect some information about "ecological barriers" that limit the actual and subjective activities of elderlies in the house.

The number of Iranians who lived in Canada was less

than 5000 people from 1971 to 1980. The Census of Canada reported that 88225 Iranian people lived in Canada in 2001. Most Iranians who immigrated to Canada live in Toronto (41295 people) of which, 1910 people were older than 65 (Moghissi 2009). According to the criteria reported in Table 2, the eligible participants were selected from Iranian people living in Toronto. The older adults living in Canada were chosen due to the single-unit residential pattern, the long-time residence of individuals in place, sense of belonging to the place, cultural-social factors, and willingness to the aging in place.

Table 2. Criteria Used to Select Participants

Sex	Age	Marital Status	Type of House
Men and Women	70 Years Old and Older	Single, Divorced, Widow, or Married	Individuals who live in House/Apartment/Complex (Except for Individuals who live in Nursing Homes, Homes of Families, or Organizational Apartments)

The first group of samples chosen from the central neighborhood of Toronto comprised 150 prospective participants who were selected based on the examined criteria. In this main group, the researcher

interviewed 43 older adults in their homes. After the in-depth interviews, responses reached saturation and statistical society seemed sufficient.



Fig. 3. A sample Nursing Home in the First Group

The second group of samples was chosen from residents living in single-household houses in residential neighborhoods of Toronto, and a subset

included 50 people interviewed in their homes. Interviews took between 1-2 hours and 20 minutes. Table 3 reports the characteristics of this group.

Table 3. Social-demographic Aspects of the Statistical Society

Social-demographic	First Group: Sample Size of 43 Members	Second Group: Gated Neighborhood: Sample Size of 50 Members
Age Average	85 Years Old	79 Years Old
Sex	80% Women, 20% Men	60% Women, 40% Men
Education Level	Mostly Postgraduates	Mostly Graduated from High School and University
Income	Moderate to High Income (more than the Second Group)	Moderate to High-income Level

The interview protocol was designed based on the experiences, research methods, and findings of previous studies. The recorded interviews were immediately transcribed then the main sentences were extracted and considered. All codes were

analyzed concerning other words and the codes were classified based on the similarities in the next step. Sufficient accuracy was taken to keep relevant words and meanings next to each other then the topics or patterns of codes were identified. Although

the constraints content analysis, such as the limited interpretive framework of the researcher over data and the inevitable missing of some significant data, the data-collecting method and research analysis together lead to pure data. The protocol of the interview was organized based on the five general groups for thematic codes as follows:

1. Background characteristics of elderlies (e.g., living conditions, social support, health);

2. Objective and purposes of elderlies (aging in place or relocation);

3. Assessment of house and services of the neighborhood;

4. The decision-making process for residence in the place or relocation;

5. Considered or applied changes in the house for aging in place or restoration of the house to meet the current needs.



Fig. 4. A Sample Nursing Home in the Second Group

The interview protocol was revised several times to pretest its content, clarity, and sample size. Many researchers were asked to review this instrument and present their feedback. The protocol of the interview was implemented to evaluate question clarity for three different older adults then the information obtained from each question was investigated. After the interview protocol was finished, a letter was sent to prospective participants for an introduction and invitation to participate in the study. Participants were ensured that participation was optional, so they could escape any questions that did not want to answer and stop the interview. Finally, the results were shared with participants and then were tested.

3. FINDINGS AND DISCUSSION

The data obtained from the interview indicated common themes about aging in place feelings and the process of reflection on deciding on a stay or relocation. The following five themes were pursued through qualitative data: 1. the importance of the house, 2. house comfort, 3. specifications of the neighborhood and society, 4. numerous home affairs and difficult handling, and 5. safety and security concerns.

According to the qualitative viewpoints collected from elder respondents, the house is a comfortable place

for older adults and is a prerequisite for their physical and psychological well-being. Comfortability of the house is correlated with place familiarity, autonomy due to presence in a personal place, and engagement with a place that person feels belonged to it. "It is required to have a place for yourself even if you do not need it. All people need a place to take refuge in it," one of the respondents stated. This may be the reason that respondents are satisfied because they can control their environments and feel comfortable. According to the comments of older adults, they deal with many household chores and cannot do repair and maintenance affairs every day. Older adults pointed to problems and efforts of being a homeowner; however, they were not willing to relocate due to their strong attachment to the house. Older adults usually predict different scenarios of think of them. One of the common concerns among elderlies is about safety issues and fear of losing functional autonomy. These issues are multifunctional problems, which include integrated ecological, properties, personal sources, social support, health, and other cases. Respondents explained that they have created minor or major changes, which have been done to overcome environmental shortcomings in most cases.

According to the pattern shown in qualitative data, the background and conditions of the neighborhood play the role of capital for aging in place. Elderlies

explained that they need elderly-friendly public transportation. Moreover, they need the services use that employ them regularly (e.g., drugstores, shopping centers, religious centers, and medical services). This is a critical issue since elderlies are not interested to depend on the children or be a burden on them. In general, qualitative data indicate that elderlies prefer to live independently and control their life events, while they also prefer to have access to the help of others when required. According to the interesting pattern of qualitative data, elderlies are concerned about how restorative changes in the house affect the façade of their houses. Many elderlies explained that they did not want to change the whole parts of the house. Older adults especially ask for those safety characteristics that do not draw attention to their physical limitations. According to one of the elderly residents, "It does not seem pleasant if a sloped surface is added to the external façade of the house in this neighborhood." Compared to those who pointed to ecological barriers, although most elderlies prefer aging in place, other elderlies explained "This house is good and proper as it is now." Some elderlies indeed did not express important ecological barriers as the factors limiting aging in place. After they were asked "what you do not like about this house," however, those elderlies could identify the problematic cases that can be considered as ecological barriers. Deep attachment to the house may prevent an older adult from seeing his/her own realistically and identifying the ecological barriers.

4. CONCLUSION

Elderlies' perception of the residential environment varies based on different factors, including health conditions, intimacy between family members, living conditions, and attitudes of the person. Despite these differences, older adults pay more attention to the function and performance of the house pointing to those ecological properties with non-supportive natures in their interviews. In most cases, elderlies compare their current house with those who lived in them in the past. Various physical properties exist

that seem elderly-friendly from the functional view of elderlies. The dimensions mentioned in this study mainly consisted of living in a one-story house, suitable light, safety amenities, and special helping instruments. On the other hand, surface changes in multi-story houses were common concerns. Ecological barriers mentioned by elderlies include structural design and spatial properties, comfort and ergonomic sensitivities, safety issues, and maintainability. The mentioned four scopes identified by data brought a framework for understanding the ecological strategies required for aging in place.

Qualitative data indicate that elderlies downsize their current house or prefer to live in a one-story house. The concept of "reducing daily life spaces" is the thematic concept extracted from qualitative data. Elderlies prefer to be owners of houses that are maintainable and manageable for them. In the opinion of elderlies, house changes are mainly based on safety concerns. After individuals are asked about effective strategies for aging in place, the thematic concept of "compensating the unsupportive properties of the house" appeared. In this case, strategies that elderlies use for aging in place include improving accessories, renovation of illumination, creating minor or major changes in the house, adding specific safety properties, adding banners and signs, and employing auxiliary forces.

According to comments given by elderlies who were interviewed in this study, older adults downsize their living spaces for easy use in daily activities but reuse these spaces for the comfort of family and friends at their parties. The house design also can be changed in response to capabilities, preferences, and a combination of the family; the house can be manipulated, adapted, and changed over time to rebuild the "margin of comfort" for the person. Conceptually, the elderly-friendly house can be designed based on the Assumption that several realms exist in the house that can be used regarding a suitable travel distance for elderlies, which supports downsizing the daily living realm (Fig. 5).

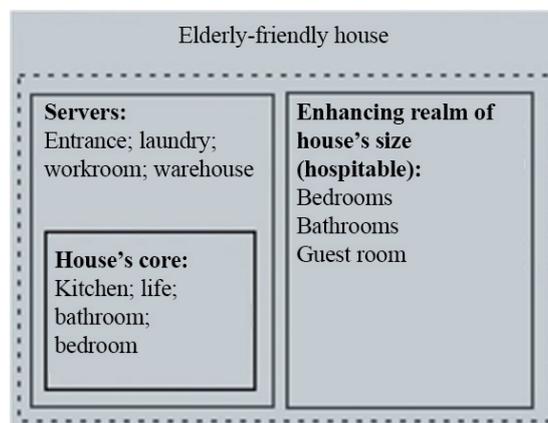


Fig. 5. Realms of Elderly-Friendly House

The desire for aging in place has dramatically increased when age gets older, and as seen in respondents' comments, the living space of elderlies becomes smaller when mobility is reduced and senses are weakened. Elderlies rarely can interpret new

environments intuitively, and familiar environments make them feel comfortable. According to research results, the concept of the house supporting aging in place through six components (Table 4) is based on the residence place of elderlies.

Table 4. Instructions Supporting Aging in Place

Design of Several Realms and Zone for Houses Based on the Elderly-Friendly Method	<ul style="list-style-type: none"> - The primary realm of the house comprises the house core and planned functions for daily life (kitchen, bathroom, and bedroom). - The second realm must be placed next to the first realm (laundry equipment, entrance, second bedroom/workroom, warehouse). - The third realm is enhancing the zone of the house that is used in certain conditions for others (bedrooms, bathrooms, guest rooms, hospitable spaces).
Creating Permeable Borders and Transparent Margins	<ul style="list-style-type: none"> - the border between realms must be integrated, so the house serves as a holistic whole (removal of ecological barriers such as surfaces difference). - Spaces must be based on the open space and the margin between spaces must be mixed and minor (such as using sliding doors to separate spaces). - Design of porch or backyard outside of the house, hall or covered entrance, design of external façade of a house in a way to see life flow in the street.
Considering Environmental Safety and Strengthening Accessibility of the Kitchen	<ul style="list-style-type: none"> - Design of open kitchen - Using fittings supporting the motor impairment in the kitchen plan
Restrooms and Bathrooms Supporting Aging in Place (in the Design Phase)	<ul style="list-style-type: none"> - The open design of the bathroom - Considering safety extensions in the bathroom in the design phase - Designing size of restrooms and bathrooms with free circular space with a minimum diameter of 1.525m for wheelchair circulation
Access to Nature	<ul style="list-style-type: none"> - Assessment of suitable surfaces and platforms for walking, avoiding changes in the platform, and providing a peaceful space and atmosphere - Design shady places that are environments in which, elderlies are encouraged to communicate with the nature - High gardens for planting flowers and vegetables regarding the motor impairment in elderlies to support active aging
Services and Plans Supporting Aging in Place	<ul style="list-style-type: none"> - Home maintenance and housekeeping services - Home and landscape maintenance, such as gardening and house repair - Consultation plans to evaluate the house and changes created in it

Limitations in the motor, strength, and endurance of elderlies and sensory impairment are inevitable incidences, so the environment must be designed to recover such capabilities. Houses must be designed with suitable-sized rooms and corridors and sufficient illumination to avoid any kind of surface difference. Many of the interviewees pointed to their interest in nature, the garden, or the courtyard of the house. Therefore, environment design must provide some opportunities for elderlies to make a relationship with nature from inside the house or through a physical

connection with nature. Suitable surfaces for walking, avoiding surface changes and providing a comfortable atmosphere and space, creating shading places are some of the ecological samples that encourage elderlies to communicate with nature. In addition, high gardens for planting flowers and vegetables provide a field for elderlies who experience physical impairment to start or continue gardening, which supports active aging and the physical-mental health of elderlies

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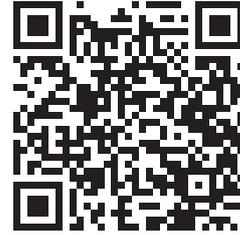
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