



Towards Elderly-Friendly Home Environments in Egypt: Exploring Elderly Challenges, Needs, and Adaptive Strategies to promote Aging in place

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Abstract

The aging population is rising globally, affecting the built environment, social welfare, and community services. Egypt is expected to witness significant demographic changes, leading to a rise in the elderly population. This increase drives designers, stakeholders, and policymakers to know elderly needs and interpret them into designs for environments, services, facilities, and products. This paper focuses on the home environments as the elderly tend to stay in their homes under the concept of "Aging in Place". Egyptian home environments are mostly built according to cost, laws, spaces, standards, and contractors' desires, without taking into consideration changing needs across the life span of people. Therefore, the main objective of this paper is to identify the essential needs of the elderly within their home environments. The human-centered design approach was adopted to explore the life experiences of a group of Elderly; by holding deep interviews to investigate their insights about aging in their homes, analyze the challenges they faced, and how can they adapt to these challenges within their home environments. The interviews were analyzed using a "thematic analysis" approach. The results revealed the main factors that present participants' insights about aging in place. Results also demonstrated the elderly's needs in their home environments and categorized them into three essential needs: safety, support, and well-being. Understanding the elderly needs can aid architects, designers, and stakeholders to create elderly-friendly home environments; that enable the Elderly to continue living in their current homes safely and independently and maintain or improve their quality of life.

1- Introduction

The "second demographic transition," which began in the 1960s, has resulted from developments in society. One of the most significant implications of this unusual shift is an aging population

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(Lesthaeghe, 2015). The term "aging population" refers to a growth in the percentage of people aged over 60 years in the population, because of longer life expectancy and lower fertility rates (WHO., 2007; UN., 2013).

According to UN statistics on the world's population aging, older adults are expected to become almost double or more by 2050, and triple by 2100 (UN., 2017). The number will rise from 962 million in 2017 (13 percent of the global population) to 2.1 billion in 2050 (22 percent of the global population), with an ever-increasing proportion living in cities (UN., 2019). Developing countries host about two-thirds of the world's older adult population; their number is getting higher than the elderly in developed countries. By 2050, it is expected that 80% of the world's older adult population will be living in developing countries (UN., 2017). Accordingly, adaptation to the aging population has to take place in developing countries; even though national income in these countries is lower compared to developed countries.

Egypt is considered one of these developing countries with the largest population in the Middle East (approximately 104 million); the second-largest population in Africa (after Nigeria) (CAPMAS. 2021). Although Egypt is considered a young country, it is expected to witness fast and dramatic demographic changes. Recent decades have witnessed remarkable changes in both fertility and surviving rates. In Egypt, the Fertility rate decreased from 6.14 to 3.24 children per woman from the year 1971 to 2020 respectively; also, life expectancy levels improved for males and females (WDA. 2021). These changes in life expectancy and fertility led to a change in the population's age composition by increasing the number of older adults.

The population of the elderly in Egypt is growing rapidly. Classification of old age starts at the age of retirement (age 60). Nowadays, the Egyptian government proposed to change the retirement age from 60 to 65 years by 2027; this probably may change the definition of old age in the future (Ahmed et al., 2014; Mostafa, 2013). Statistics by the Central Agency for Public Mobilization and Statistics (CAPMAS) revealed that the percentage of older adults (60 or more) was 4.4% in 1976, 5.75% in 1996, and increased to 6.27% in 2006 (CAPMAS. 2014). The national census increased by 2.56% from 2006 to 2017; and it is expected, by the year 2031, that the elderly population will have doubled, with an expected increase of 11.5% (Odejimi et al., 2020). By 2050, the largest portion of the older adults in the region is expected to be living in Egypt (about 23.7 million) (Sweed, 2016).

The demographic change, that increased the elderly population, has significant considerations towards the built environment, social welfare, and community services (Chau & Jamei, 2021). The World Health Organization (WHO) reported that an aging population in line with urbanization is the major challenge for the 21st century (WHO., 2007; 2015a). Well-being and healthy life in urban environments became a priority issue for both developed and developing countries (WHO., 2007; 2015a). Because of the world's population's rapid aging, the concept of age-friendly communities has gained advocacy; communities to live in from cradle to grave. The WHO's age-friendly city model reflects efforts to create supportive urban communities for older citizens, considering their needs and preferences. These communities are encouraging "active aging" by optimizing opportunities for health, participation, and security to improve quality of life as people age" (WHO., 2007). Eight themes address a wide range of topics in the WHO guiding framework for an age-friendly city which is divided into three categories: (1) the built environment, which includes housing, outdoor spaces, public buildings, and transportation; (2) social aspects, which includes

respect and social inclusion, employment, social and civic participation; and (3) service provisions, which includes community support and health services, as well as communication and information. The built environment affects the well-being and quality of life of the elderly, The built environment is the man-made physical surroundings and the settings for human activity where people can live, work, learn, entertain, and recreate daily (Kaklauskas & Gudauskas, 2016). The focus of this research is on the home environment. The significance and motivations for choosing a home environment are described as follows:

- People spend most of their lives at home. By assuming a life expectancy of 78.7 years, 70 of those years are spent in buildings, with 50 of those years spent in residential buildings (Al-Tarazi, 2021).
- In comparison to other age groups, the elderly spends significantly more time at home (Oswald et al., 2005). Studies of the daily life of older adults show that they spend most of their day (almost 80% of the day) in their homes doing various activities (reading, watching TV, making phone calls, personal care, eating, etc.) (Horgas et al. 1998).
- Homes offer the elderly a familiar physical environment as well as emotional connections to personal memories and experiences (Stones & Gullifer, 2016). Even though aging affects mobility, vision, and hearing, as well as cognition and mental competence, it is still preferable for older adults to continue living in their own homes as long as possible; under a concept called "Aging in Place" (Chau & Jamei, 2021). "Aging in place" is a common concept in current aging policy advocated by the World Health Organization (WHO) that address the challenges of the aging population (WHO., 2007)
- During the coronavirus lockdown, the elderly has spent more time at home than ever before. As a result of the COVID-19 pandemic, numerous nations throughout the world have advised seniors to stay at home and restrict their exposure to other people who may be infected. The limits and suggestions were a sort of structural isolation which means they limited face-to-face social interactions. Social isolation and loneliness are severe yet underappreciated public health concerns that impact a large section of the elderly population (National Academies of Sciences, 2020)

The points showed the importance of home environments for the elderly through their daily activities if they age, also studies revealed that health, well-being, and quality of life are related to the surrounding environments for older adults (Oswald & Wahl, 2004). However, there is a lack or even scarcity of architectural studies discussing the home environment for the elderly in Egypt. Buildings' regulations, costs, minimum spaces standards, and contractors' desires, are common determinants of building home environments in Egypt; without taking into consideration changing needs across the life course. Homes in Egypt are mostly built according to quantity, not quality, and to meet the needs and requirements of only healthy adult people and neglecting their changing needs, especially in later life as they age.

Consequently, this paper aims to identify the essential needs of the elderly within their home environments; by taking into consideration changes related to aging that give them the ability to age in their beloved homes and environments which promotes the concept of "Aging in place". This can be applied by adopting the approach of "human-centered design" to explore life experiences for a group of older adults; by holding deep interviews with them to investigate and analyze their insights and perspectives about aging in their homes and the challenges they faced. This paper is trying to

deduce the main needs of the elderly in Egypt to be taken into consideration to create elderly-friendly homes.

2- Literature Review

2-1 Aging in Place

Since 1960, Environmental gerontology contributed about 60 years of theoretical and empirical developments to better understand the relationship between people and their environments in later life (Wahl & Oswald 2016; Chaudhury & Oswald 2019). In line with the expansion of this field, the aging population has increased in several countries throughout the world. "Aging in place" has emerged as a cost-saving strategy for healthcare policymakers, as well as a symbol of independence and autonomy for older persons (Scharlach & Diaz Moore 2016; Lewis & Buffel 2020).

"Aging in Place" is a popular phrase in today's aging policy. It means "staying alive at your own home and your community, with a degree of independence, not in Nursing homes" (Wiles et al., 2012). The World Health Organization (WHO) describes it as a widespread phrase suggesting that older people choose to age in their homes, in surroundings that reflect their life, and ideally near to family and friends (WHO., 2015b).

Evidence indicates that most of the elderly prefer to live in their own homes rather than in institutions (Chan, 2014; Hansen & Gottschalk, 2006). For example, according to a 2021 study conducted by the American Association of Retired Persons (AARP), 75 % of the study participants (age 50 and above) greatly like to live in their own homes as much as possible (Binette, 2021). Several previous studies have revealed the favor of aging-in-place (Bayer & Harper, 2000; Judd et al., 2010; Lewis & Buffel 2020) and home-based care in comparison with institutional care (Chappell et al., 2004; Grabowski, 2006). This is because: (a) it brings pleasure to the older people; (b) it is more economical than other options like nursing homes and care centers, and (c) it offers health outcomes for the older adults (in addition to that it may expand life expectancy).

The concept of "aging in place" has been more popular in the environmental Gerontology literature, to the point of "verging on an obsession," (Rowles & Bernard, 2013). The World Health Organization's (WHO) programs of age-friendly cities and communities, as well as its current work on healthy and active aging, have all focused-on socio-physical environmental contexts and "places" of aging (WHO., 2007; 2015a).

The term "Aging in Place" has become a cornerstone of studies on later-age residential dynamics, support, and well-being during the last three decades due to its widespread use (Vasunilashorn et al., 2012). However, there is no specific definition that sets up boundaries of "Aging in Place", nor a theoretical frame that formalizes its use. Definitions found in the literature are frequently oversimplified and slightly capture the diverse facets of older adults' experiences if they age in place (Bigonnesse, 2017; Bigonnesse & Chaudhury, 2020). Part of this conceptual ambiguity stems from the multidimensional character of the "Aging in Place" process and the resulting in fragmentation of the relevant corpus of research (Wiles et al., 2012).

2-2 Changes and Challenges of the Aging Process

Many physical, social, and psychological changes related to aging require special needs (Woodrow, 2002). Considering the elderly needs in designing homes promotes long-term positive results with

high value and low cost; with emphasis on their aims, opportunities, healthy life, activities, and functional abilities (Lak et al., 2020). Regarding physical changes, aging may cause a shortage in vision /hearing, changes in the sense of smell /taste, and sensitivity to touch (Thorson, 2000). Also, Aging may cause changes in the nervous system and brain, weakness of muscles and power, reduction in bone strength, shortage in balance ability, and many other challenges related to their function abilities (Madigan, 2006). The elderly face challenges of adapting their changing functional abilities with their home environments to meet their needs. One of the crucial challenges is fall accidents, a percentage of 35 to 50% of the elderly are exposed to falls (Parijat & Lockhart, 2012). Additionally, a significant percentage of fall accidents lead to major injuries among older adults (Pavol & Pai, 2007).

On the other hand, many social and psychological changes affect the elderly in different ways and many challenges may appear in social connections and psychological health (Franklin & Tate, 2009). Accordingly, the elderly may have a variety of social and psychological needs such as the feeling of, belonging, socialization, independence, autonomy, and good relations to their surroundings. In general, physical, social, and psychological aging are related to each other in multiple ways. For example, declines in psychological health may affect social connections; also, physical health can be deteriorated if there are psychological and social stresses, and so on (Charles & Carstensen, 2010). Optimal psychological, social, and physical health can be obtained within appropriate environmental conditions and according to the person (Oswald et al., 2007). Therefore, the main issue of “Aging in Place” is how older adults deal with themselves and their surrounding environments through psychological, social, and physical perspectives, also how they balance between their functional abilities and their environments which is known as the “*person-environment*” relationship in Lawton & Nahemow theory (Lawton & Nahemow, 1973). So, understanding older adults’ needs can help explain how they deal with and navigate their environments (Oswald et al., 2007). Figure (1) illustrates how aging changes lead to challenges and consequently, these challenges turn into needs related to persons and environments.



Fig. (1): What happens in the elderly lives

Several studies have been conducted in the field of "Aging in Place" in terms of the physical, psychological aspects, and functional abilities of older people and linking them to independence and quality of life for the elderly in their homes (Golant, 2011; Moore & Ekerdt, 2011; Farage et al., 2012). However, these studies have the same main aim, identifying needs for the elderly, they deal with needs in different ways. Firstly, before we mention needs, we have to know the functional abilities of older adults; in which they react to their environments and other people. Considering function abilities is the main step to designing for the elderly; a suitable home for older people is suitable for everyone. According to the International Classification of Function (ICF), the

functional abilities of people are classified into mobility, sensory, and cognitive functions (WHO., 2001); as described in below categories Figure (2).

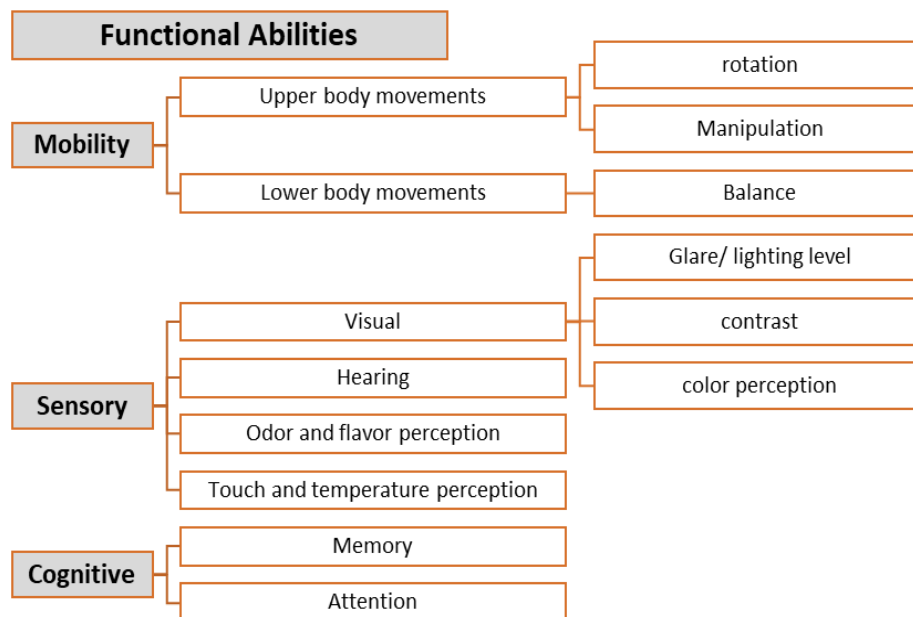


Fig. (2): Categories of functional abilities (Adapted from WHO., 2001)

2-3 Human Needs and Human-Centered Design.

Needs and priorities vary according to different people. Accordingly, architects and designers should seek comprehensive approaches when creating spaces (Andy, 2014). Discovering needs requires systematic research efforts by designers. Three main steps are important to recognize needs. The first step includes planning, defining goals, determining the needed group, identifying questions, and knowing the topic background. The second step is recognizing problems by asking, watching, and recording. The third step is analyzing, interpreting, and classifying (Patnaik and Becker, 2010).

Engel et al. (1993) demonstrated a model of consumer behavior and explained that acceptance of any product is confirmed through seven steps; the first step of this model is “needs recognition.” According to Patnaik and Becker, (2010); designers should seek for users’ needs because; “Needs last longer than any specific solution, Needs are opportunities waiting to be exploited, not guesses at the future, Needs provide a roadmap for development, needs spur action, and Needs are obvious after the fact, not before”. The UN Sustainable Development (UN-SDG) and World Health Organization (WHO) aim to improve spaces and built environments where people spend most of their time regarding different ages and specially to assess the aging world (WHO., 2001). Human-centered design approaches must be adopted by architects and designers nowadays; these approaches are highly considered people's needs and capabilities through designing a new product (Patnaik and Becker, 2010).

Human-center design (HCD) is being used worldwide in all design fields as the main driver of any design process to understand users’ needs and apply it to the design of products, environments, or services. According to Maslows’ pyramid of human needs, needs are classified into physiological, safety, social, esteem, and self-actualization needs (Maslow, 1943; Maslow and Lowery, 1998). The basic questions (who, what, when, how, and why) are categorized based on the pyramid of human-

centered design needs by Maslow. The base of the hierarchy pyramid is the human factors (physical, sensorial, cognitive, and perceptual characteristics) followed by more complex considerations (activities, tasks, social interaction, and communication), to reach in its apex the metaphysical interaction between designs and users. Answering these incremental questions regarding any product or service can help structure the complexity of users' needs. Designs that answer these questions are supposed to offer a wide range of facilities and satisfy users' needs (Giacomin, 2014). As shown in Figure (3)



Fig. (3): The Human-centered design pyramid (Giacomin, 2014)

2-3-1 Human-centered design for "Aging in Place"

Human-centered design (HCD) may be applied in a variety of fields, including sociology and technology. It has been praised for its capacity to produce solutions that consider human dignity, access, and ability levels (Buchanan, 2001). As a result, rather than focusing primarily on product and technology-based fields, human-centered design may more thoroughly include culturally sound, human-informed, and suitable solutions to challenges across a range of fields. As human-centered design is concerned with human experiences, applying this approach will help in a deep understanding of person-environment relation and creates elderly-friendly homes, which treat issues of inclusion and social justice and promotes the concept of aging in place (Jones, 2016).

According to the literature, the building industry lacks the applying of Human Factors and Human-Centered Design foundations (Dovjak, et al. 2018; Agee, et al. 2020). Thus, building an elderly-friendly home environment requires an added value by involving stakeholders in the design process, which is one of the advantages of using human-centered design. There is now only a small body of research available on human-centered design applied to the built environment; much of the theory is applied to Healing Environments (Kylén et al., 2019) or house adaptations for rehabilitation (ISO., 2019). In this regard and by reviewing the literature related to the application of human-centered design approach in the built environment (for the elderly), it was concluded that to create a suitable home environment for aging in place, it is necessary to focus on collecting and analyzing data for

four basic elements; 1) Human, 2) Home environment, 3) Activities of Daily Living (ADL's), and 4) Surrounding community that he interacts with. Figure (4) illustrates a model of human-centered design for aging in place.

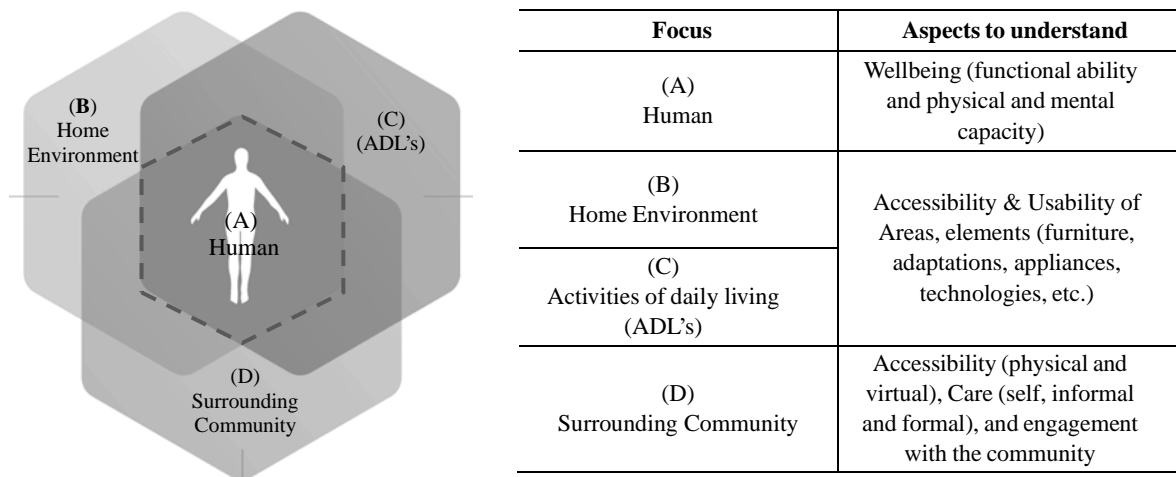


Fig. (4): HCD model to design homes for aging in place

3- Design and Methods

A qualitative study approach is used to explore the life experiences for a group of older adults; by holding deep interviews with them to investigate and analyze their insights and perspectives about aging in their homes and the challenges they faced. Interview with senior participants is selected to be conducted in this research as a kind of qualitative study. “*Discovering underlying meanings*” is the main driver of the qualitative approach and this can be done by listening, observing, and interpreting (Babbie, 2007). Participants are motivated to share their stories through open-ended questions, and researchers listen carefully to unfold their insights about aging in place. The qualitative approach allows researchers to gain insights about participant life with no constraints and with many sources of data such as speeches, movements, level of sounds, etc. (Creswell, 2007).

3-1 Research Questions

According to the aim addressed in the introduction section, the main question of this paper is presented as: -

RQ: What are the essential needs for the elderly in their home environments to age in place?

To answer this main question, sub-questions are formulated as follows: -

RQ1: What are elderly insights about the concept of “Aging in Place” in Egypt? And what are their social and psychological needs? (Collecting data from this question depends on categories of HCD model; A, B, C, and D figure (1))

RQ2: What are the physical changes and functional abilities that challenge the elderly?

RQ3: What are the physical needs of the elderly in their home environments? And which adaptive strategies they follow?

3-2 Interview Sitings

3-2-1 Location scope:

Due to limited time and COVID-19 pandemic constraints, the study was conducted in Assiut city, Assiut, Egypt, the city of the researcher and his university. The scope of the study includes dwelling units (apartments, single-family homes, multi-family homes, etc.) in rental/ owned properties in vital areas of the city and excludes slum areas.

3-2-2 Time scope:

The interviews were held in September, October, and November 2021.

3-2-3 Participants:

choosing participants was according to the researcher's social community and connections. For the following reasons: (1) The study required participants to be willing to share his/her insights about aging in place, (2) There are no social networks for the elderly in Egypt (such as activity centers or social associations) that can help in finding elderly cases, (3) To have the ability to ask their family members about some critical issues such as their physical and mental health.

3-2-4 Eligibility for participants:

The overall sample should meet the variety of following points:

- Male/female
- Single/married/ widowed.
- Working/retired
- Living alone/with a family member
- Age: 65:74/75:84/ 85+
- Household: owned/ rented

3-2-5 Sample size:

The interview is a qualitative research approach that can be performed with a small group of people to uncover their perspectives on an idea, concept, or scenario (Boyce and Neale, 2006). Identifying sample size depends mainly on the nature of the study and the scope of the population. Many previous studies mentioned that the minimum number is 5-6 participants for the interview study (Mason, 2010; Creswell, 2007). The maximum number of participants can be identified according to data saturation. Data saturation means that there is no new information to be gained from participants. The maximum number of participants can be used for the wider scope of a study (Morse, 2000). The determination of the final number of participants can be determined after carrying out the interview and analyzing data with the initial number of participants. There is a type of sampling named *Purposive sampling*; it cannot represent all the population, but it can be used for exploratory purpose study (Babbie, 2007). For time constraints, the study will select ten participants who are eligible to the defined criteria. This number is considered a *Purposive sampling* and exceeds the minimum number of participants.

3-2-6 Limitations:

Using a purposive sample for the interview makes findings irrepresentable to all Egyptian elderly population, but it is useful to explore the concept of "Aging in place" in Egypt. The study is

conducted in Assiut, Egypt and the concept of aging in place may differ in other countries or other cultures. Also, the interview sample was a relatively highly-educated, healthy, and high-socioeconomic population. Accordingly, the results of this study cannot be generalized to other groups of the elderly such as low socioeconomic or health status.

3-2-7 Role of the Researcher:

The researcher held personal interviews to gain participant experience about aging in their homes; based on their needs. The researcher asked questions for participants and created fruitful discussions to gather their insights. When possible, the interview was held in the participant's home so that the researcher could be close to the context and environment. The researcher recorded the discussion in the participant's own words or terms and observed body language and facial expressions. After the discussion, the researcher interpreted and analyzed participants' insights about physical, social, and psychological needs (principles of aging in place).

3-2-8 Privacy and Ethical consideration:

All rights of participant privacy and confidentiality were considered (Creswell, 2007). Participants of this study were informed about the study and its purpose through the interview guide; they obtained this sheet and the researcher read it orally for each participant. The participants were informed that the interview will be audio-recorded by a mobile phone device, and the researcher will transcribe information into “participant profiles” without sharing personal information. The researcher notifies the participant that no one can listen to the record of the interview. Also, all participants have the right to refuse an interview or decide not to continue. The researcher acknowledged the contribution of the participants of this study without sharing his opinions or judgments.

3-2-9 Interview parts and questions:

The interview is semi-structured; the first part is oriented questions asking for personal and demographic information. The second part consisted of open-ended questions asking for their insights about their homes and the concept of “Aging in Place”; to explore their social and psychological needs. The third part is asking about their functional abilities. The fourth part is asking for daily activities in their homes (their physical needs and environmental requirements). Finally, the interview ended with exit questions about their insights about the study and their desire to be informed with feedback. Collecting data from all parts of the interview focuses on categories of the HCD model; A, B, C, and D (figure (4)). All questions of the interview were formulated according to the human-centered design pyramid discussed in section (1-4) and figure (3). Parts 1 and 3 are exploring the bottom of the pyramid (human factors) and answer the question (who). Part 2 is exploring the apex of the pyramid (meaning) and answering the question (why). Part 4 is exploring the body of the pyramid and answering questions (what, when, and how).

3-2-10 Data Collection and Storage Procedure:

Each interview session was digitally recorded using an audio recording application by a mobile device. Audio records were labeled with a number for each participant (from **P1** to **P10**). The duration of each audio record ranged from 30 to 40 minutes. The audio recordings were transcribed by the researcher into “participant profiles”. These profiles contain participants’ personal

information except participants' names according to ethical considerations. Each participant was given the chance to review his/her interview transcripts to confirm their answers; the transcripts can be orally read to participants by the author if they are asked to. This validation of transcripts allows participants to make clarifications if needed and it is called "*member checking*" (Carlson, 2010). Audio records and transcripts were stored on the researcher's personal laptop and protected with a password for access. All participants' answers were collected in a tabular format to apply the analysis process.

3-3 Analysis

Participants' answers were analyzed according to a "thematic analysis" approach. Thematic analysis is "a method for identifying, analyzing, and reporting patterns (themes) within data". This approach interprets data in a flexible way and offers a deep understanding of participants' insights (Braun & Clarke, 2006). As we mentioned above, the interview questions were categorized into three parts according to the three research questions, consequently the analysis process was conducted for each part separately. The analysis process started after transcribing all participants' answers in tables as mentioned before. The first step was reading and re-reading the data to achieve a deep understanding of participants' insights and writing initial ideas. The second step was highlighting specific meaningful statements, words, or phrases and organizing them in a systematic way to extract initial codes. In a qualitative study, codes are words or phrases that represent principles of a portion of data (Saldana, 2012). The third step was categorizing codes into potential themes. A theme is a pattern that captures something significant or interesting about the data and/or research question (Maguire & Delahunt, 2017). The fourth step was checking if the themes are working in relation to the extracted codes and the whole data, this was done by highlighting all data and codes relevant to each potential theme with a specific color. Then, clear definitions and names have been created for each theme. Finally, the author conducted a final analysis of each theme, using selected excerpts from the participants' answers, and wrote a descriptive assessment of each part.

4- Results & Discussion

4-1 Demographic characteristic

The total number of older adults who participated in the interview was ten participants: six females and four males; and their ages ranged from 69 to 85. Six participants were widowed living in their homes with a family member, and four were living alone. Table (1) summarizes all demographic characteristics of all participants.

4-2 The concept of "Aging in place"

According to research question RQ1, participants were asked about the concept of "Aging in Place" indirectly through several questions. Participants' answers then were analyzed through the thematic analysis approach that was mentioned formerly in the analysis section (3-3). Table (2) shows the different codes and the categorized themes. The analysis revealed that there are four main factors from the elderly perspective regarding the concept of Aging In place. The four main factors are related to each other's as illustrated in Figure (5) and discussed in the following subsections:

Table (1): Demographic characteristics of all participants

Characteristics	Categories	Number of participants
Gender	Male	4
	Female	6
Age	65:74 (young-old)	4
	74:84 (old)	4
	85+ (oldest old)	2
Education	Secondary School or less	3
	Bachelor's degree	6
	Professional Degree	1
Employment status	Working	2
	Retired	5
	Unemployed	3
Income (Including all sources)	Constant:	4
	Changeable Income	6
House property	Tented/rental	3
	Owner	7
Household Composition/family structure	Living Alone	4
	Living with partner	6

Table (2): Inductive coding scheme; parts, themes, and codes for RQ1

RQ/ Part	Theme	Code	
(1) The concept of Aging in place	Place belonging and loyalty.	Own home	Family home
		Current Residency	Feeling comfortable
		Home modifications	Together
		Home Preference	Refuge
		Familiar	security
	peace		
	Social connectivity	In contact with neighbors	Visit
		Meet friends.	Meet
		Family Support	Contact
		Family meeting	greetings
	Independence	Self-sufficient	Does Housework
		Drives	Independent in daily
		Cooks	activities
		By myself	Safety and Security
	Mobility & Accessibility	Outdoor activities	Long-distance near
		Gardens	home
		Grocery	House needs
		Services	delivery

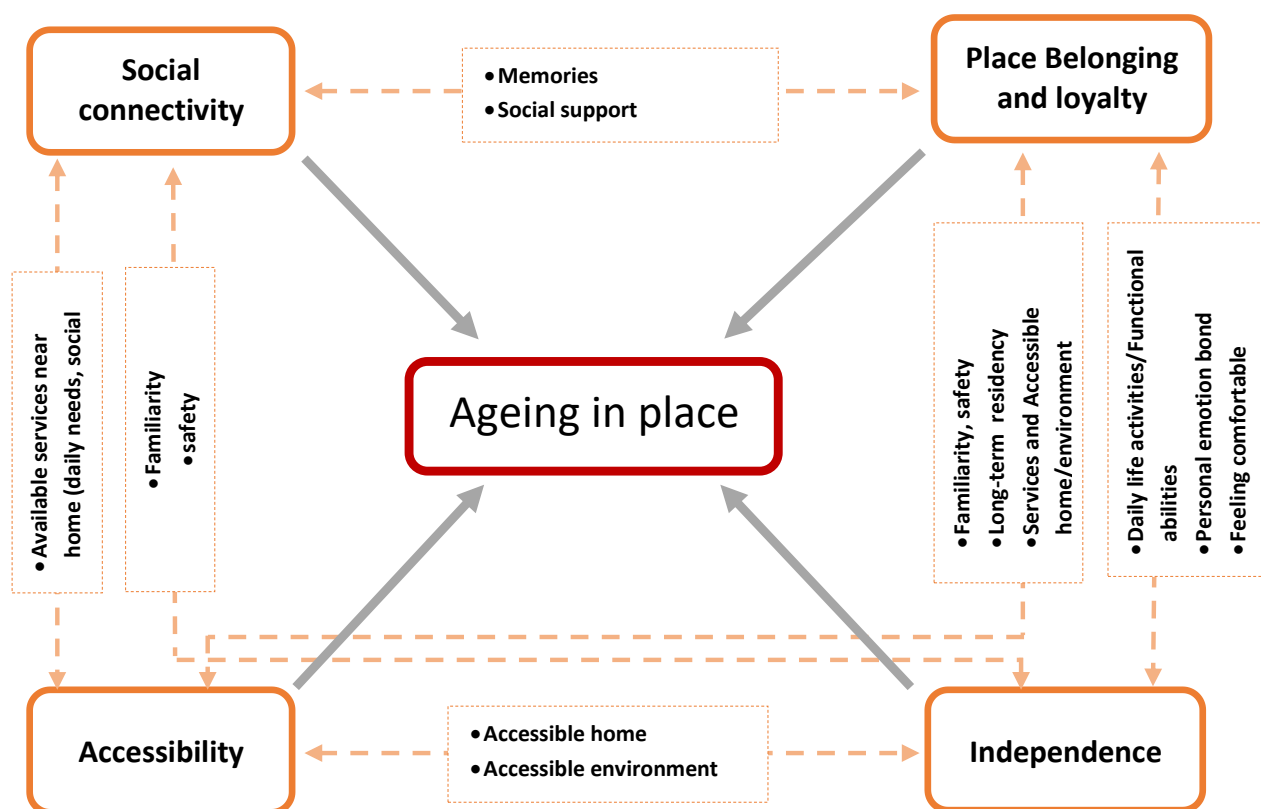


Fig. (5): The four main factors of the concept of aging in place

4-2-1 Place belonging and loyalty:

“Leave my home? That’s where I made memories and connections, where I find my comfort and privacy, where my friends were. How can I move [elsewhere]? I can’t find any reason to leave my home while I can be adapted and capable to stay and look after myself” p.9

“I love this place. Everybody says “hi” when they see me” p.5

Place belonging is a person-place bond that motivates the elderly to age in their homes. Many factors affect and support place belonging such as environmental long-term residency, personal emotional bond, memories, relation to neighbors, familiarity with home, feeling secure, safe, and comfortable, available services in the surrounded neighborhood, their daily life activities, and their personal functional abilities. Most of the participants repeat the phrase “I love my home”, also most of them are not aiming to leave their current homes; this is because of the long time they spent, and the memories they made that are important to them. Also, familiarity with home surrounding environments promotes home belonging and emotional attachment. One of the participants mentioned the dilemma between moving to a more suitable home versus losing his long-standing relations with the community, neighbors, and familiar services; he commented that he will lose his independence till he feels adapted again to the surrounding environment. On the other hand, the ability to be connected to social life, such as the relation to neighbors, enhances place belonging. As described in figure (3-3) the principle of place belonging and loyalty is related to the other three principles with some common features.

4-2-1 Social connectivity

“No one can live without social interaction. When we lost the chance to live family meetings because of the COVID-19 pandemic, video calls through the internet were our last resort” p.5.

“Public playground in this new city allows the older adults to accompany their grandchildren there to see them playing and it’s a kind of pleasure” p.3.

To Age in place, older adults must have the right to be connected to social life with their family members, relatives, and friends; especially those who have functional disabilities and need social support. From participants’ answers, three factors support and affect social connectivity; (1) The proximity of services in their environment (public spaces, public transportation, etc.) enables them to be socially connected with family, friends, and neighbors, (2) familiarity to the surrounding environment enhances the relation between persons and their surrounding community, (3) memories and person-place bond promotes social connectivity and support place belonging. As shown in figure (3-3) the three factors support the other 3 principles.

4-2-2 Mobility & Accessibility

“I am always a customer of the supermarket next to my home for over 20 years. The owner is honest and friendly man we have a good relationship with each other” p. 7.

“Proximity of services and market is essential for me. I do my own grocery shopping and I still drive. So having a private garage is important for me. Being older makes you unable to carry your stuff from remote parking to your house” p. 2.

“I go to pray in the mosque next to my house, and often find it difficult to walk because of the unpaved roads and high sidewalks” p. 2.

All participants mentioned the importance of living near essential services and the importance of an accessible home and built environment to age in place. The accessible built environment maintains both independence and social connectivity. When mobility from home and into home is easy, older adults can reach services, welcome guests, and entertain. This theme includes the proximity of services like pharmacies, markets, supermarkets, hair salons, and shopping malls. Older adults appreciate living near essential services and facilities to age in a friendly way in their neighborhoods. Also, accessible home spaces, free steps entrance, elevators, and other related features provide safety for older people. As what can be noticed from participants’ answers, Good “Mobility & Accessibility” for elderly homes promotes place belonging, social connectivity, and Independency as viewed in figure (3-3)

4-2-3 Independency

“I’m totally independent, especially after my retirement. I am capable of taking care of myself and doing housework. My family would help me, but I do not need assistance; I love my independence” p.8.

“My mother likes to take care of herself especially when it comes to personal hygiene or cooking food” p.6.

All participants want to stay in their current residence as long as possible. Here the need to feel independence is raised. Independence relies on the ability of the elderly to make decisions and meet their needs through their daily life routine, which also supports place belonging. When it comes to Aging in Place, social support from friends and family influences older individuals' independence. Also as previously stated, mobility and accessibility of the built environment have a significant impact on independence.

4-3 Function abilities of older adults:

According to RQ2, participants were asked about their health and their functional abilities. If applicable, the interview questions of this part were also asked to a member of the participant’s family (son, daughter, grandchildren, etc.); this method enabled the author to check reliability of participants' answers. These answers were analyzed through the thematic analysis approach that was mentioned formerly in the analysis section (3-3). Three main themes were identified according to the three main function abilities categories: mobility, sensory, and cognitive. Table (3) shows the functional abilities categories and the defined codes. The analysis revealed the common obstacles to function abilities among participants as below:

Table (3): functional abilities categories and the defined codes for RQ2

RQ/ Part	Theme	Code
(1) Functional abilities	Mobility	Back pain Arthritis Cannot walk for long-distance. Cannot use stairs
	Sensory	Temperature perception Visual Cannot see well. Hearing Lighting
	Cognitive	Memorize Cannot remember

4-3-1 Mobility functions

“Arthritis in my knees prevents me from using stairs” p.3.

“I always use my elderly canes while moving in the home, and this requires safe paths” p.1.

Most participants complained of difficulty in mobility functions within their home environment, such as walking, climbing stairs, or moving from one space to another. Also, some common chronic conditions were detected among participants such as back pain, arthritis, etc.

4-3-2 Sensory functions

“I can’t see well, especially at night while moving from the living area to my bedroom. I hope the corridor has more lights” p.10.

“I sometimes feel cold while my family members are enjoying the weather” p.7.

The majority of participants mentioned their age-related changes in visual functions and their need for high illumination. Two participants commented about the weakness of hearing function and complained that sometimes they cannot hear their phone or doorbell. Also, one of the participants commented on his perception of temperature.

4-3-3 Cognitive functions

“My mom got infected with COVID-19 in May 2021, which temporarily affects her memory as a side effect. We have to remind her about small details in her daily activities, such as prayers times, day and date and what we are going to do” p.6.

When designing the built environment, account should be taken of the cognitive challenges that the elderly is often exposed to, these challenges may lead to falls due to misperception of space. Many older adults may have lapses of memory; this can increase hazards in their environment, for example, a forgotten pot of boiling water or a turned-on stove may cause burn hazards.

Accordingly, it is clear that the change in the different functional abilities of the elderly has an immense impact on their interaction with their home environment, as it hinders them from continuing to perform their daily activities easily, safely, and independently. consequently, the designers have to know and identify the needs of the elderly, which are appropriate to changes in their functional abilities through the course of life. This is what will be discussed in the next section.

4-4 Needs of elderly in their home environments

As we mentioned before, needs are a crucial factor to consider while deciding whether to accept a design, especially for older people. Through the third part of the interview, the needs of the elderly in their homes were classified. Three main categories of needs are demonstrated: physical, social, and psychological needs. According to RQ3, participants were asked indirectly several questions; (1) What are their needs, (2) what their challenges are, and (3) how they can adapt to their environments. Participants' answers were then analyzed and categorized by the thematic analysis approach. Three main codes were identified according to the "ecological model of aging" (Lawton & Nahemow, 1973). These three codes are Needs, Challenges, and Adaptive Strategy. The term "Need" describes the task or activity the older person wants to accomplish, the term "challenge" describes the difficulty that they face in their home environments to get the task done and the term "adaptive strategy" describes the action they do to adapt to a specific need and challenge. Table (4) shows examples of analyses of participants' answers about their Needs, Challenges, and Solutions in their home environment. below sub-sections illustrate the findings through participants' answers.

Table (4): Examples of applying the coding scheme to induce essential needs in home environments

Example	<i>"I will have to add an elevator to help me and my wife in moving to the first floor" p.3</i>	
codes	Need	Safety -levels
	Challenge	moving to the first floor
	Adaptive Strategy	add elevator (home modification)
Example	<i>"I think, for example, the distance between the kitchen and my dining room is so long for me. So, I designed a movable table can deliver my breakfast to the dining room" p.1</i>	
codes	Need	Support- Spaces
	Challenge	distance between rooms is not suitable for me
	Adaptive Strategy	I designed a movable table can deliver my (adaptation)
Example	<i>"Spaces with two-floor levels cannot be identified if they have harmony colors" p.4</i>	
codes	Need	Cognitive- visual contrast
	Challenge	Distinguishing harmony colors
	Adaptive Strategy	Using color contrast
Example	<i>"The last modification I did was to change the door of the balcony to avoid street noise" p.1</i>	
codes	Need	Wellbeing (comfort)
	Challenge	street noise
	Adaptive Strategy	change the door of the balcony (home modification)

By analyzing participants' answers through the three main codes, a vast number of elderly needs were explored. these needs were categorized into three main themes that represent the essential needs of the elderly in their home environment which are safety, support, and well-being. Figure (6) and below sub-sections illustrate the three main themes and their sub-needs through participants' answers. It is worth mentioning here that according to the purposive sample, these results do not represent all needs for aging in place; however, it is considered an exploratory of Egyptian elderly needs.

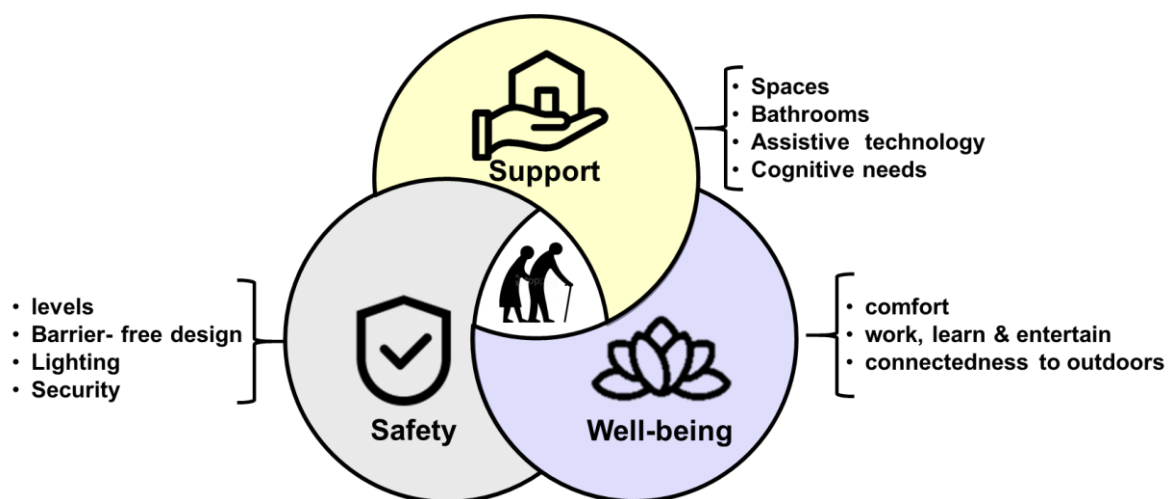


Fig. (6): The three essential needs of the elderly in their home environments

4-4-1 Safety

Safety is considered the first principle of designing home environments for the elderly. Preventing hazards for the elderly in their homes is crucial. To enhance safety in elderly home environments, participants addressed the following:

- **Levels**

“I will have to add an elevator to help me and my wife in moving to the first floor” p.3.

“I wish my flat was on the ground floor, so I can go out easily” p.8.

Three participants complained about moving up or down using stairs through their daily life and appreciated having elevators in any building they entered. Elevators and/or escalators are more convenient means of vertical transportation instead of stairs for the elderly. When stairs are provided, safety features such as handrails and cautions of steps’ ends should be provided.

- **Barrier-free design**

“My home entrance has a marble threshold fixed under the door and many times I was about to fall because of it” p.4.

Participants commented about barriers in their homes and many obstacles that may cause falling hazards, such as fully furnished living areas, marble steps at entrances, carpets, etc. They appreciated adding ramps in the designs of entrances to facilitate getting in and out. Also, they addressed adding handrails for more safe mobility and to support people who may lose self-steady when needed. Handrails must be securely attached to a reasonable height, easy to grip, and easy to maintain to perform their intended function. Many other features considered hazards in home environments such as sharp corners/edges of partitions and furniture must be avoided in design.

- **Lighting**

“My flat has no access to sun-light; I need the natural light for enjoying reading, sun-bathing, and feeling happy; especially in winter season” p.6.

“I need more lighting in the corridor to see well, especially at night” p.4.

Other participants mentioned illumination problems in their homes, artificial and natural lighting. Participants with poor eyesight support the need for natural lighting not only for their visual problems but also for their psychological and physical health. As we mentioned in the RQ2 results, elderly eyes lose sensitivity and need extra illumination to enable them to see well. Corridors, stairs, and ramps with poor lighting can become more dangerous. Adequate lights can help the elderly in wayfinding, provide them with a feeling of security and assist them to adapt to their surrounding environment.

- **Security**

“My flat is on the ground floor with three entrances, this makes me feel insecure” p.10.

“a theft has occurred from the ground floor of my house while I was on the first floor, and I didn't feel the thieves” p.2.

Feeling safe and secure is very powerful. Living independently makes older adults feel insecure. One participant complains about having more than one entrance to his flat, making him feel afraid of living alone. Adding a security system with surveillance cameras and alarms can help the elderly from detecting strangers and intruders, thus enhancing their sense of security.

4-4-2 Support

Changes in the functional abilities of the elderly affect their physical and psychological needs. Therefore, designing their home environment should meet high levels of supporting a variable range of functional needs and promote physical independence. The following points illustrated participants' answers regarding their supporting built environments:

- **Spaces**

“I think the distance between rooms is not suitable for me for example, the distance between the kitchen and my dining room is so long for me. So, I designed a movable table to deliver my breakfast to the dining room” p.1.

“I am living alone in this huge flat with four bedrooms. This area is much more than my needs I often just use my bedroom, bathroom, kitchen, and the living area” p.8.

Home environments for the elderly should maximize accessibility between zones. This can be done by; 1) providing direct routes among essential functional spaces, 2) providing aid for walking such as rails along corridors, and 3) providing appropriate steps or ramps. Older people need fewer spaces; this is called “empty nesting”; “Empty rooms become out-of-sight, out-of-mind storage areas, providing no impetus to discard any possessions” (Stafford & Carter 2021). All participants confirmed that they prefer small home spaces and closeness to their main rooms and amenities.

- **Bathrooms**

“I think adding rails along toilets wall will decrease falling hazards” p.6.

Too many problems were detected among participants for bathrooms. They complain about using tubs as they cannot leave up their legs to get into the tub. They also find using the toilet at its default height is difficult, they support adding rails in bathrooms to prevent falling hazards. The appropriate size of toilets with non-slipping floors and adequate illuminance and adding rails along walls are essential to support independency.

- **Assistive technology**

Passive and active assistive technologies for the elderly are not common for most of the participants. Most of them see the technologies are fancy and cannot be applied. However, some participants appreciate providing means of assistive technology such as using an emergency call button in an accessible place to allow them to call for help in critical situations. However, some participants feel confused about using these technologies for fear of making mistakes.

- **Affordability**

Some participants (residents of rented houses) indicated that paying the monthly rent represents a financial burden that is not suitable for their current income. Regarding applying Assistive technology, some mentioned to participants that these kinds of technology may not be affordable to them, especially those who are living in rented houses or have a fixed income. Not only assistive technologies but also making modifications to their homes or keeping up with home maintenance may not be affordable for them.

- **Cognitive needs**

As we mentioned before, the cognitive abilities of the elderly change as they age, it takes them a long time to memorize and process information. Some elderly with cognition difficulties may lose orientation and wayfinding in their home environments. Participants' answers showed some considerations to minimize confusion and anxiety.

“Big and clear signs of the surrounding environment are helpful in going outdoor” p.6.

Using signs that are clear and easy to recognize around their homes and for surrounding services can minimize the hazards of disorientation. Not only using signs but also integrating a way of finding in the interiors that help the elderly to find their destination independently.

“Spaces with two levels cannot be identified if the levels have harmony colors” p.4.

Some elderly may suffer from difficulty in distinguishing harmonious colors. The use of color contrast can help in the perception of risks or emphasize attention to something important. For instance, visual contrast of steps may prevent fall hazards.

4-4-3 Well-being

Well-being can be assessed by the sense of satisfaction of the older adult within his/her living environment. Emotional and social behavior by individuals can be influenced by the built environment. For example, spending all day in an enclosed space may cause negative feelings and affect physical and psychological health. In contrast, exposure to fresh air and sunlight may brighten the elderly mood. A pleasant elderly-friendly environment can empower and maintain their physical, social, and psychological life.

- **Comfort**

“You have to feel comfortable in your own home. The last modification I did was to change the door of the balcony to avoid street noise” p.1.

“The sun rays don't enter my house, so I have to move from my house in the winter to another house that the sun enters through the day, and this makes me feel warm” p.7.

Convenience is a commonly expressed requirement. Comfort level varies from one participant to another; however, all of them see comfort as essential. According to participants' answers, comfort includes many issues such as indoor air quality (their need for natural ventilation), their perception of thermal comfort, also acoustic comfort (some participants found it difficult to adapt to noisy environments).

- **The ability to work, learn and entertain.**

“I love family meetings where I can see my daughters and son and grandsons. Mainly we gather every weekend here in this family home. Sometimes we meet friends or family members in a club or café” p.3.

As the elderly spend most of their time indoors, their home must be designed to meet their needs of working, learning, or entertainment. Household requirements, hobbies, and learning or professional work in some cases are categorized under the need to work, learn and entertain. Also, the built environment should encourage them to socialize through multi-generational activities; this will help them to overcome the feeling of loneliness.

- **Connectedness to outdoors**

“I am pleased to have a large balcony connected to my living area. I spend all day inside my home and cannot get out. This balcony gives me the chance to be connected to outside areas” p.7.

“I think the private outdoor area every day, I come and sit because I need sun, I look for my plants, read Quran in a nice clean weather” p.3.

The ability to be connected to an outdoor area is vital to the elderly. Most of them spend their day inside their homes. The need for outdoor views, terraces, patios, private or semi-private gardens, or top roofs is highly needed. Some participants showed their desire to have a balcony or small outdoor area to feel connected to the outside, provide pleasant views, enjoy natural ventilation, and have access to natural lights and sun rays. Many benefits can be gained from exposure to natural lighting in elderly home environments, such as mental well-being and maintaining physical and psychological health.

4-5 Adaptive Strategies

The thing that was obvious and clear from the analysis is the multidimensional experience of aging and the variety of types of home environments. Economic, Social, and psychological factors impact individuals' perspectives of home environments and adaptive strategies performed during aging.

Adaptive Strategy (home adaptation, home modification, or moving to another home) is how older adults deal with their functional abilities. Although the literature describes the importance of home modification for the adaptation to the elderly's needs (Nygren, et. al, 2007; Tang & Lee, 2010; Tenenbaum, 2010), most participants make home modifications only when they need to overcome a loss in functional abilities. Adaptive Strategies are only implemented for their essential or critical needs (injury accident, functional health event, etc.).

“Why? I don't need any modifications so I can adapt to my home, however, my age is” p.9.

The lack of awareness or cultural background arises from the denial of limited functional abilities or the need for home environmental support. Participants of this case cannot recognize the environmental barriers; they just adapt within home facilities.

“I can't reach the upper kitchen cabins, so I stored all my essential kitchen tools in the lower cabinets or on the top of the marble bench” p.8.

Some participants think they can overcome functional abilities with the aid of a family member.

“I only modify my home settings when I feel that it cannot fit my daily activities” p.5.

Some participants deny their limited functional abilities and consider that making modifications in their home environment or using assistive technology is a shame.

“I live on the first floor, and I cannot use stairs on my own, my granddaughter helps me in upstairs/downstairs journey” p.7.

Some participants linked to home adaptability their sense of place belonging to their home and their surrounding community. Feeling comfortable, familiar with the surroundings, and socially

connected gives them the ability to adjust their daily activities; whatever challenges they face. This proves the link between physical, social, and psychological needs.

“Feeling that you are in your home, and you know each part of it, gives you the energy to adapt and live independently” p.2.

“After my husband's death, my daughter gets married, and I was living alone. One day I fell down inside the house, and for this reason, my daughter and her husband decided to come to live with me” p.6

According to the strategies, it can be noticed that aging and the impact of limitation of functional abilities on daily life were well-known by all participants, however, the aging experience was not the same.

Table (5): different situations of adaptive strategies

		Constraints	
		Economic, social, and psychological factors (Income level, house property (ownership/rent), dependence on a family member, social stigma)	
		With constraints	Without constraints
Adaptive Strategies	"Take action"	The elderly, here, tend to depend on a family member, either to obtain financial resources to make the required home modifications, or to move to live with a family member to obtain support and assistance.	The elderly's perception of environmental barriers is promoted and anticipated, either through direct experience or through the experience of another family member. The elderly, here, can either move to another new home or make proactive, preventive home modifications to prepare for growing old.
	"Wait-and-see"	Making home modifications to prepare for new horizons in old age is not a current top priority for the elderly with low levels of income or resources, especially those who live in private rental accommodation. This category of the elderly may sometimes be resigned to their inability to make modifications; thus, they did not reflect or dwell on the matter. Their daily life demands take priority rather than thinking about their future and simple modifications may be done to make sure they could age in place as much as possible and to prevent at all costs going into a retirement home.	Some of the elderly, despite being conscious of the challenges that come with aging, were able to maintain a lifestyle that required little modifications to the home and, importantly, one that would allow for future changes. This category of the elderly, who were fully in charge of their life, were unconcerned about modifying or adapting their homes because they were secure in their ability to handle any problems that might arise in the future. This was not due to a lack of information or understanding about potential problems in their home environment brought on by becoming older, nor was it due to a denial or dread of the aging process. Instead, they would act when the time was appropriate, knowing that they had the means to do so, despite difficult choices

On the one hand, some participants tended to be deeply ingrained in their daily routines at home, thus they consider any home modifications or adaptations as potential threats that may destroy these routines and the durability of their person-environment identity. These participants were somewhat aware that modifications could raise the level of comfort and quality in their living environment. However, they felt that, because they were associated with aging, such modifications were not suitable for them at the time or that they did not want to require any assistance or adaptations (or negative representations of aging).

On the other hand, the analysis found other participants who have positive perceptions of space and items of their own, so they consider home modifications as potential opportunities that make them

adapt to their living environments. For the analysis's purposes, these two adaptive strategies are termed "take action" and "wait-and-see" see Table (5). The "Take action" strategy refers to a situation in which the person anticipates new circumstances to adapt to the home environment and accordingly make modifications to their living space, objects, or residential location. The "Wait-and-see" strategy refers to situations in which the person does not adapt to the home environment, instead, they postpone any modifications and see the way they age, and their circumstances alter. The adoption of one of the two previous strategies is affected by economic, social, and psychological factors that represent constraints for the elderly to take adaptive decisions in their home environment. These constraints include income level, house property (ownership/rent), dependence on a family member, and social stigma. Table (5) explains the different situations of adaptive strategies according to the impact of constraints or no-constraints existence.

5- Conclusions

The aim of this paper was to understand issues related to the home environment of the elderly, as older adults tend to stay and live in their homes for as long as possible, what is known as "aging in place". In-depth qualitative interviews were conducted for a group of older adults focusing on exploring their visions, living experiences, and challenges they face in their home environment. The results revealed four main factors that shape their concept of aging in place: place belonging and loyalty, social connectivity, mobility and accessibility, and independence. These factors are interrelated to each other in a complex way; however, each factor motivates the elderly to continue to age in their current homes and communities; where it is the most desirable option in later life compared to other options such as nursing homes. The need for privacy, dignity, and independence is greatly appreciated by older adults. Also, the religious background and traditions of the Egyptians make them take care of their elderly parents in their homes and not in nursing homes. There is no doubt, there are many circumstances in which "aging in place" can be harmful to the well-being and health of the elderly when it comes to severe limitations in functional abilities (mobility, sensory, cognitive) and their living environment become inappropriate for those changes associated with aging. Therefore, "aging in place" should not be viewed as a one-size-fits-all approach unless older adults are able to thrive in an environment that is well-planned and designed to support their quality of life. In this regard, the research on the relationship between the health and well-being of older adults and "aging in place" should be further explored.

Older adults have experienced the consequences of living in an inappropriate environment that does not meet their needs while spending more time (if not all the time) indoors. For sure, older people do not want to spend the rest of their lives in an inappropriate or uncomfortable home environment that makes performing their daily activities more difficult and probably more dangerous. The results revealed many challenges faced by the elderly in their home environment throughout the day. These challenges are categorized into three main themes that represent the basic needs of the elderly (safety, support, and well-being). Preventing hazards in the elderly's homes is a top priority, thus safety is the first principle of designing home environments for the elderly. As changes in the functional abilities of the elderly can affect their physical and psychological needs, designing their home environment should meet high levels of supporting a variable range of functional needs and promoting physical independence. Well-being can be obtained by the sense of satisfaction of the

elderly within their living environment as emotional and social behavior by individuals can be influenced by the built environment. A pleasant elderly-friendly environment can empower and maintain their physical, social, and psychological life.

The results also showed the response of the elderly towards the challenges they face in their home environments to adapt to age-related changes. As well as attitudes and perceptions related to aging that are affected by economic, social and psychological factors. The paper demonstrated two different ways adopted by older adults towards adaptive strategies in their home environments; the “take action” strategy or the “wait-and-see” strategy. The economic and social characteristics of family and house property are considered constraints that determine how older adults perceive the need to modify their home and environment. Independent older adults, who possess adequate financial and social resources as well as a degree of independence from other family members, can either predict challenges and take preventive action to avoid them, or they can wait until a problem arises and act, when the time is right. Older adults with lower levels of resources tend to act with other family members or give up and not make any modifications to their living environment. Their personal experience of aging and growing old is one of the keys that affect how people approach decision-making about their homes and local environment. These findings contribute to a better understanding of why some persons 'adapt' to their home environments on a personal and practical level while others do not. They highlight the complexity of how people and their environments interact.

Aging in place is a philosophy that supports independence and the ability to live in various types of living environments regardless of someone's age or abilities. Additionally, it is considered a shift in human culture will alter the way we perceive our living environment. All studies confirm that Egypt is on the cusp of an aging population in the forthcoming decades, in which the elderly generation will enjoy different characteristics, styles, and life goals compared to previous generations. This can arise the need for more participatory research on the challenges of aging in place. understanding the needs of older adults and how they interact and adapt to their built environment can help planners, architects, designers, and stakeholders to create elderly-friendly homes; and even a larger scale of elderly-friendly communities and cities in Egypt. These environments enable older adults to continue to live in their current homes and communities safely and independently and maintain or improve their quality of life.

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نحو بيئات منزلية صديقة لكبار السن في مصر: استكشاف التحديات، الاحتياجات، واستراتيجيات التكيف لكبار السن لتعزيز الشيخوخة في المكان

يتزايد عدد كبار السن في جميع أنحاء العالم؛ هذا التغيير الديموغرافي له عواقب كبيرة على البيئة المبنية، والرعاية الاجتماعية، وخدمات المجتمع. من المتوقع أن تشهد مصر تغيرات ديموغرافية سريعة ودراماتيكية في العقود المقبلة ستزيد من نسبة السكان المسنين. تدفع هذه الزيادة المصممين وأصحاب المصلحة وواضعي السياسات إلى معرفة احتياجات كبار السن وتفسيرها إلى تصميمات للبيئات، والخدمات، والمرافق، والمنتجات. تركز هذه الورقة على البيئة المنزلية حيث يميل كبار السن إلى البقاء في منازلهم لأطول فترة ممكنة بموجب مفهوم "الشيخوخة في المكان". في مصر، هناك نقص أو حتى ندرة في الدراسات المعمارية التي تناقش البيئة المنزلية لكبار السن. يتم بناء البيئات المنزلية المصرية في الغالب وفقًا للتكلفة والقوانين والمساحات والمعايير ورغبات المقاولين، دون مراعاة الاحتياجات المتغيرة على مدار عمر الأشخاص. لذلك، فإن الهدف من هذه الورقة هو تحديد الاحتياجات الأساسية للمسنين داخل بيئاتهم المنزلية؛ مع مراعاة التغيرات المتعلقة بالشيخوخة لمنحهم القدرة على التقدم في العمر في منازلهم وبيئاتهم المحيطة مما يعزز مفهوم الشيخوخة في المكان. يمكن تطبيق ذلك من خلال اعتماد نهج "التصميم المتمحور حول الإنسان" لاستكشاف تجارب الحياة لمجموعة من كبار السن؛ من خلال إجراء مقابلات عميقة معهم. تهدف هذه المقابلات إلى التحقيق في رؤاهم حول الشيخوخة في منازلهم، وتحليل التحديات التي واجهوها، وكيف يمكنهم التكيف مع هذه التحديات في بيئاتهم المنزلية. تم تحليل إجابات المشاركين باستخدام نهج "التحليل الموضوعي" وتصنيف احتياجات كبار السن. كشفت النتائج عن أربعة عوامل رئيسية تقدم رؤى المشاركين حول الشيخوخة في منازلهم. أظهرت النتائج أيضًا احتياجات المسنين في بيئاتهم المنزلية وصنفتهم إلى ثلاث احتياجات أساسية؛ السلامة والدعم والرفاهية. إن معرفة وفهم احتياجات المسنين يمكن أن يساعد المماريين والمصممين وأصحاب المصلحة في خلق بيئات منزلية صديقة لكبار السن؛ تمكن كبار السن من الاستمرار في العيش في منازلهم الحالية بأمان واستقلالية والحفاظ على نوعية حياتهم أو تحسينها.