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THE ARCHITECTURAL FEATURES OF NURSING HOMES AFFECT THE RESIDENTS' SENSE OF HOME

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Research Article

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ABSTRACT: Following the increase in the elderly population in Europe and other parts of the world, taking proper care of elderly people has recently become a significant concern in Iran as well. The architecture and design of nursing homes can have a profound impact on the sense of home and well-being of the elderly residing in these facilities. Therefore, the aim of this study is to determine the relationship between influential architectural factors in the nursing homes of District 10 of Tehran and the sense of home among the elderly. The research method used in this study was descriptive correlational, and data collection was carried out in two stages: library and documentary research, as well as field survey. A purposive sample of 45 elderly residents of nursing homes in District 10 of Tehran was studied using two questionnaires on design and architectural factors of nursing homes and the motivation for living. The results showed that the correlation coefficients of the design and architectural factors and their components concerning lighting, public private and spaces, accessibility, and green spaces with the sense of home among the elderly were 0.521, 0.224, 0.621, 0.413, 0.281, and 0.403, respectively. Based on the findings of this research, it can be concluded that the design aspect has a direct impact on the formation of the sense of home in the elderly, and it is not possible to separate the physical and environmental aspects from the psychological dimension of the elderly.

KEYWORDS: Elderly, Sense Of Home, Architecture, Care

INTRODUCTION

The global increase in life expectancy is associated with a significant rise in the number of highly elderly individuals who are profoundly affected by disabilities, dependencies, and multiple chronic illnesses, including neurocognitive disorders. Predictions indicate that by the year 2020, the global elderly population will reach one billion individuals. In 2006, the United Nations estimated the world's elderly population to be 687 million and 923 thousand, and it is projected to reach 1 billion and 968 million and 153 thousand by 2050. This represents approximately 21.4% of the population at that time. Iran is not exempt from the phenomenon of population aging, as the average life expectancy of Iranians increased by about 10 years from 1365 to 1375. According to the 2011 census in Iran, there were 6.2 million elderly individuals aged 60 and above in the country, accounting for 8.2% of the total population [1]. These figures indicate that if the country's planners and policymakers do not have a specific and effective plan from now on, the country will face a significant crisis and fundamental challenges in addressing the economic, health, and social issues faced by this group in the next 20 years.

A considerable portion of the elderly population lives in nursing homes. These nursing homes face a significant challenge: how to provide care services that meet the increasing needs of their residents while creating a pleasant living environment that fosters well-being and allows residents to engage in new projects. In this regard, many publications regularly highlight the physical environment as a crucial factor in determining the quality of life (QoL), well-being, and health [2].

Elderly individuals should be able to continue their lifestyle before entering nursing homes [3]. Therefore, several healthcare organizations strive to create arrangements that focus on "good living" rather than being centered solely on healthcare, and aim to create an environment that resembles a home for its residents [2]. Providing good clinical care and a homely environment poses challenges. Emphasizing safety and hygiene requirements can create risk-prone environments that compromise the quality of life in nursing homes.

One of the challenges of caring for elderly people at home in modern times is creating a sense

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of home and motivation for the residents. The sense of home is a multi-factorial phenomenon heavily influenced by social and individual characteristics, as well as the built environment and architectural facilities. The sense of home is related to personal experiences and emotions. It does not happen overnight; rather, it develops gradually in individuals who require independence, security, a source of identity, choices, controls, and memories [4]. Creating a sense of home is closely connected to the theory of place attachment [5]. Place attachment is a multi-dimensional phenomenon that describes the emotional bond between individuals and a place, which is influenced by personal experiences.

Rijnaard et al. [4] systematically examined the factors influencing the sense of home in elderly residents of nursing homes. Their study revealed that the sense of home in nursing home residents is influenced by 15 factors, which can be divided into three themes. The first theme includes psychological factors such as a sense of belonging, maintaining personal habits and values, autonomy and control, and coping. The second theme encompasses social factors, including interactions and relationships with staff, residents, family, friends, and pets, as well as activities. The third theme is the built environment, which includes private and (semi-)public spaces, personal belongings, technology, aesthetics and ambiance, and outdoor spaces. Van Hoof et al. [6] studied the factors influencing the sense of home in elderly residents living in nursing homes from the perspectives of residents, relatives, and care professionals through a photo elicitation study. The findings indicated that building design and interior design are the main factors in creating a sense of home.

Architecture and urban planning are among the most important elements related to the lives of the elderly. The presence of the elderly in their homes and communities requires an initial response to their needs. This response should consider the physical limitations and mental conditions of these individuals. In order to maximize the elderly's access to services and the community, the lives and psyches of the elderly must be carefully analyzed. Physical and mental conditions, needs, and characteristics of the elderly are factors that contribute to achieving this goal. Paying attention to human needs in each stage of an individual's health leads to a healthier society. The elderly are one of the vulnerable populations in society. In architecture, not only should specific principles and standards be defined, established, and observed for this group, but also a dedicated spatial pattern should be defined for these individuals.

Despite the existing evidence, creating a sense of home in elderly care homes is challenging in daily practice. The care environment often does not align with therapeutic goals that person-centered care approaches seek to achieve [2]. Therefore, the present study aims to explore the relationship between architectural factors and the sense of home in elderly care homes.

METHODOLOGY

The present study is a descriptive correlational research. The statistical population consisted of all elderly residents of the nursing home in District 10 of Tehran in December 2022. Using purposive sampling, a sample of 45 individuals from this nursing home was selected for the study.

The selected site is located in District 10. District 10 is situated in the western part of Tehran and is bordered by Districts 17, 11, 9, and 2. On the right side of this site is Jeyhoon Street, which runs north to south. Hashemi Street is located above the site, intersecting with Jeyhoon Street. The hierarchy of the access network surrounding the site is indicated on the map, including main streets and secondary streets. The site's functions include healthcare, educational, and commercial purposes.

(A) Questionnaire on the Factors of Design and Architecture of the Elderly Care Centers:

This questionnaire was developed by the researcher and consists of 46 items and 5 factor components: lighting (7 items), public space (8 items), personal space (10 items), accessibility (10 items), and green space (11 items). The questionnaire is designed on a five-point Likert scale ranging from "completely disagree" to "completely agree," with a scoring range from 1 (completely disagree) to 5 (completely agree). The minimum and maximum scores in this questionnaire are 46 and 230, respectively. The closer the elderly person's score is to 230, the higher their satisfaction with the factors of design and architecture of the nursing home, and vice versa.

In this study, the content validity of the questionnaire was determined using the method of content validity. In this regard, the questionnaire was approved by 9 professors from the departments of fine arts, architecture, educational sciences, and psychology at Sistan and Baluchestan University, ensuring that the questionnaires measure the intended characteristic of the researcher and possess

the necessary validity. To determine the reliability of the tool, the questionnaires were first administered to 30 randomly selected elderly individuals, and then the Cronbach's alpha test was used. The coefficient value for the questionnaire on the factors of design and architecture of the nursing home is 0.903, and for the sub-scales, the values are: lighting 0.833, public space 0.968, personal space 0.975, accessibility 0.797, and green space 0.863.

(B) Sense of Home in Elderly Care Centers:

This questionnaire is adapted from the Life Motivation Questionnaire and consists of 32 items and 5 main scales: learnability and encouragement of spaces, comfort and environmental attractiveness, personal calmness and silence, perception of a sense of ownership, and similarity to home environment. The learnability and encouragement of spaces scale includes 8 items, the comfort and environmental attractiveness scale includes 7 items, the personal calmness and silence scale includes 7 items, the perception of a sense of ownership scale includes 5 items, and finally, the similarity to home environment scale includes 5 items. Each question is scored on a five-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree). Zarqami and Olfat [7] demonstrated that this tool has a good fit and the five factor indicators have good reliability. The combined reliability mean of the entire scale is 0.782. The convergent validity between the indicators of the sense of home in the elderly was confirmed with correlation coefficients ranging from 0.42 to 0.88.

The procedure for conducting the study involved obtaining research approval from the University of Art, Tehran, and coordinating with the officials of the nursing homes. The researcher personally visited these centers and selected the elderly participants. The criterion for inclusion in the study was a minimum residency period of three months in the nursing homes. Therefore, elderly individuals who had resided in the nursing homes for less than three months were excluded from the study. This is because those who have recently entered the nursing homes have not yet adapted to their current living conditions, and their life motivation is likely to be more concerning compared to those who have spent longer periods in the nursing homes. The elderly answered the questionnaires individually. In cases where elderly individuals were illiterate or had disabilities, the researcher asked the questions orally and recorded their responses. The maximum time allowed for completing the questionnaires was 30 minutes. Before distributing the questionnaires, the research objective was explained to the elderly participants, and they were assured that the collected information would be completely confidential and used only for research purposes. They were also assured that none of the demographic questions could identify them. They were given the choice to participate voluntarily in the study and could withdraw their participation at any time. In this study, all questionnaires were completed in a complete and reliable manner, and no missing or incomplete responses were observed.

Pearson correlation coefficient was used to analyze the data using SPSS software version 21.

RESULTS

To evaluate the research variables (architectural factors of the nursing homes and their life motivation), a one-sample t-test was used, and the findings are presented in Table 1. Based on the results in Table 1, the average scores for the factors of brightness, personal space, and green space are higher than the theoretical average. Considering that the calculated t-values are significant at a level less than 0.05, it can be accepted that the elderly are moderately to highly satisfied with these factors. However, the average scores for public space and accessibility are lower than the theoretical average. Since the calculated t-values are significant at a level less than 0.05, it can be inferred that the elderly are not highly satisfied with public spaces and their accessibility.

Also, in the investigation of the variable of sense of place attachment in the nursing homes, the average scores for learnability, spatial stimulation, comfort and environmental desirability, personal tranquillity and silence, and perception of ownership are higher than the theoretical average. Since the calculated t-values are significant at a level greater than 0.05, it can be concluded that the elderly have a sense of life motivation or home attachment below the average level.

Next, the correlation between the design and architectural factors of the nursing homes and their life motivation was assessed using the Pearson correlation coefficient, and the results are reported in Table 2. According to the findings in Table 2, there is a positive and significant relationship between the architectural factors of the nursing homes (light and brightness factor, public space, personal space, accessibility, and green space) and the life motivation of the elderly.

Table 1. Participants' Response to Research Variables

Variable	Mean	Standard Deviation	t	Theoretical Mean	P
Lighting Factor	23.31	4.31	60.51	21	0.03
Public Space	25.34	5.27	30	68.91	0.002
Private Space	26.21	6.34	24	42.43	0.001
Accessible Space	29.64	5.23	30	96.23	0.002
Green Space	37.71	6.35	33	72.81	0.04
Learnability	3.54	0.094	3	51.32	0.001
Environmental Stimulus	3.84	0.61	2.96	69.21	0.002
Comfort and Environmental Pleasantness	4.18	0.88	3	51.99	0.005
Personal Serenity and Silence	4.153	0.77	3.25	61.33	0.002
Sense of Ownership	4.22	0.84	3.34	52.32	0.001
Resemblance to Home	3.48	0.651	3.12	60.71	0.001

Table 2. Correlation Coefficients between Design and Architectural Factors of Elderly Care Centers and Sense of Home in the Elderly

Variable	Learnability	Environmental Stimulus	Comfort and Environmental Pleasantness	Personal Serenity and Silence	Sense of Ownership	Resemblance to Home
Lighting Factor	0.56**	0.268**	0.347**	0.512**	0.71**	0.419**
Public Space	0.27**	0.136**	0.224**	0.136**	0.412 ns	0.126**
Private Space	0.314*	0.352 ns	0.526**	0.622**	0.515**	0.321**
Accessible Space	0.188**	0.284**	0.194**	0.312**	0.197**	0.367*
Green Space	0.361*	0.229**	0.417**	0.127**	0.651**	0.427*
Total Factors	0.521**	0.224**	0.621**	0.413*	0.281**	0.403**

ns: Not significant; *: Significant at $p < 0.05$; **: Significant at $p < 0.01$.

DISCUSSION

Throughout all stages of life, from childhood to old age, humans need a suitable environment for growth and well-being. In this context, architecture is not merely a material and functional issue; it is about space and thought. Architecture can create a suitable foundation for meeting human needs, growth, and flourishing. In such an environment and space, individuals can find their creativity and self-confidence optimally. Therefore, a nursing home is not just a place for the elderly to reside and survive; it should also provide a dignified and vibrant environment. To achieve this, the design and adherence to architectural principles, as well as maximizing the interaction of the elderly with nature, are among the factors that have a direct impact on their mental and physical health.

Based on the research results, five factors including learnability, spatial stimulation, comfort and environmental desirability, personal tranquillity and silence, and perception of ownership and similarity to the home environment, are identified in relation to the sense of home or life motivation in the elderly residing in nursing homes. In Western countries, where planners' attention to the elderly and their needs is much higher than in Iran, innovative methods have been adopted to determine housing for the elderly. In Denmark, constructing one-story small-scale residences as part of the country's housing complex is a prevalent approach. In England, a new approach approved by the government involves building small houses equipped with all necessary facilities and amenities [8]. In contrast, in Iran, the term "nursing home" is recognized only as the sole residential center for the elderly, and the environmental quality and type of elderly housing have not been adequately addressed from their perspective and the perspective of experts. The consequence of this neglect is a decrease in life motivation and the sense of home in the elderly.

This study was conducted with the aim of examining the relationship between architectural

factors influencing the sense of home in nursing homes. According to the findings, there is a positive but meaningful relationship between the satisfaction of the elderly with the design and architecture factors of the nursing home and the sense of home or life motivation in nursing homes. In other words, the higher the satisfaction of the elderly with the quality of design and architecture of the nursing home, the stronger their feeling that the nursing home is like a real home.

The findings also indicate a significant relationship between public, personal spaces, and accessibility with the sense of home. According to Ahmadi et al. [9], the creation of various sports spaces as motivational factors can improve physical and mental conditions, fill leisure time effectively, and create interactive spaces to reduce social relationship problems during leisure time. Creating spaces such as individual gardens, greenhouses, or art and educational workshops where the elderly can engage as a daily occupation and practically benefit from life experiences during leisure time can help reduce problems and enhance their sense of self-worth. Andersson [10] demonstrated that architectural aesthetics, appropriateness of spaces, and the social fabric of the environment significantly contribute to prolonging life in a place. The results of Nasiri et al. [11] indicate that improving the compatibility between elderly residents of nursing homes and their living environment through comprehensive design has a meaningful impact on their capabilities and adaptability to the elderly environment.

The sense of home is associated with having a private room in nursing homes. A shared bedroom is often unacceptable for most residents. The desire for a private room may be based on having opportunities for solitude, a preference for maintaining privacy and personal belongings, and a sense of ownership. Residents, value spending time in their own room or apartment and engaging in household tasks. They have a need for solitude, retreat to their own space, and create their environment. These feelings are shared by their family members as well.

The perception factor of ownership sense is related to having a sense of ownership over their own bedroom or having a personal space, the quality of the bedroom, the manageability and controllability of the space for the elderly, and the presence of recreational spaces such as a chess room, card games, and entertainment, as well as the size of the kitchen. It seems that the need for privacy is the main motivator for having a private room. Self-closing doors in private rooms are one of the actions that hinder the preservation of privacy. Residents want to maintain control over their room and its appearance [12].

The similarity factor to home is related to fine-grained factors such as the quality of the living room and reception area, the size of adjacent spaces (bathroom, toilet), the quality of adjacent spaces (bathroom, toilet), the ability to rearrange furniture within and proximity and closeness to other elderly residents.

Rijnaard et al. [4] systematically examined the factors influencing the sense of home among elderly residents in nursing homes. Their study showed that the sense of home among nursing home residents is influenced by 15 factors, which can be divided into three themes. The first theme includes psychological factors, such as a sense of belonging, maintaining personal habits and values, autonomy and control, as well as coping. The second theme includes social factors, encompassing interactions and relationships with staff, residents, family, friends, and pets, as well as activities. The third theme is the built environment, which includes private and (semi) public spaces, personal belongings, technology, aesthetics and ambiance, and outdoor spaces. Van Hoof et al. [6] investigated the factors influencing the sense of home among elderly residents in nursing homes from the perspectives of residents, family members, and care professionals through a photovoice study. The findings indicated that the building and interior design are the primary factors in creating a sense of home. The main challenge for architects, facility managers, and interior designers is translating these aspects into an integrated and feasible design. The elements constituting the sense of home need to be described and aligned with healthcare organizations in every planning and design phase.

According to Eijkelenboom et al. [12], in order for nursing homes to provide a sense of home to the elderly, residents need to step out of their private rooms and interact with others. A shared living space can sometimes reflect ambiguous and conflicting expectations. Occasionally, communal spaces can also lead to distraction and confusion. Interior symbols in the living room, such as family photos, carpets, and tables, should be clear and consistent to create a living room atmosphere instead of an waiting room ambiance. The boundaries between public and private domains are often blurred, and as a result, a distinctive home is

defined by relatively sharp boundaries. In general, less residential density, including family-style dining, enhances the sense of belonging. In many facilities, residents may have their designated spot around the table (e.g., dining table). Having a personal chair can help residents feel like they are in their own home. Familiarity-wise, relatives prefer to talk about chairs, dedicated dishes, and having a individual seat at a preferred spot.

Proper closets, display spaces, and storage areas should be provided for personal belongings and professional equipment. The building should be designed in a way that care professionals cannot isolate themselves from the residents as they need to be easily accessible. Other important aspects of public spaces include the need for walking areas (e.g., oval shape so that people don't reach a dead end). Residents should be able to access all points of a space with a wheelchair. Wide hallways and wide doors are considered vital for easy access by individuals using wheelchairs [12].

Suitable space for personal belongings and professional equipment, such as a closet, display space, and storage space, should be provided. The building should be designed in a way that caregivers cannot lock themselves away from the residents because they need to have easy access. Other aspects of public space are also important, such as the need for a walkway (for example, an oval shape so that people don't reach a dead end). Residents should be able to access all areas of a space with a wheelchair. Wide hallways and wide doors were considered vital for easy access for wheelchair users [12].

Findings have shown a meaningful correlation between green spaces and the feeling of home. Nature and its beauties have always inspired humans to create unique works and soothe their minds and souls, helping them escape from the noise of the external and internal world. This study has shown a positive relationship between green spaces and the motivation to live. Mohammadian [13] demonstrated that green spaces provide the possibility of creating peace and also resting throughout the day, just like being comfortable at home, for elderly individuals.

Furthermore, the results of the present study demonstrated a positive correlation between personal tranquility and attachment to a place. It can be stated that reducing noise pollution, the presence of shade-providing trees outside the building, the presence of outdoor furniture such as benches and waste bins, an interior space with personal solitude and appropriate and cheerful views, the presence of fountains, waterfalls, and ponds, and the presence of rest areas in outdoor spaces contribute to this tranquillity in the elderly. Eijkelenboom et al. [12] stated that some residents need an environment that is free from excessive noise or visual stimuli. The physical environment that enables activities enhances enjoyment and stimulation, supports all senses from light, acoustics, fresh scents, and tactile qualities, especially for individuals with limited mobility.

The findings of Mazbieh Baf et al. [14] show that the most important characteristics for creating a sense of belonging to a place for users are the physical elements of that place. The research results indicate that the sense of belonging to a place is a fundamental factor in creating ideal spaces that lead to the establishment of a meaningful and identity-based living environment for the elderly, resulting in the prevention of isolation and an increase in participation, interaction, and life satisfaction.

Some residents mentioned that access to daylight, fresh colors and appearance without unpleasant odors is crucial. Lighting has an impact on improving various forms of depression, sleep disorders, as well as many physical and mental disorders. Bright lighting can utilize natural light from outside the house or special lamps and other artificial light sources for individuals.

One limitation of this research is that the study was limited to the elderly residents of care facilities, therefore, it may not be universally applicable to all cases. Another limitation of the research is the difficulty of filling out questionnaires and establishing relationships with them for elderly individuals, which was addressed by researchers and the executive staff who had emotional connections with them. The collaboration with some nursing homes also posed significant interruptions to the research process.

CONCLUSION

The factors that contribute to the "appearance and feeling" are related to architecture, interior design, and public maintenance. A facility should both look and feel like a home or have a sense of homeliness to be considered as a home. The building should be homely, organized, and welcoming to its family members. Based on the research findings, it can be stated that increasing the sense of home in the elderly is related to the design and architecture of the environment. The results showed a positive and meaningful relationship between the architectural factors of elder care facilities and their components (lighting factor, public space, personal space,

accessibility space, and green space) with the motivation for elderly people's lives. Generally, this article focuses on the sense of home in the environment of elderly care facilities and how these aspects integrate into a physical design. Apart from these design features, architects and staff of elder care facilities also consider other aspects of the environment that affect health, performance, and safety. These features support independence, self-care, and functionality among the residents of elder care facilities.

DECLARATIONS

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Data availability

The datasets used and/or analysed during the current study available from the corresponding author on reasonable request.

Competing interests

The author declares that there is no competing interest.

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