Ontology Space International Journal
ISSN: 2345-6450
OISSN: 2423-7299
Journal homepage: soij.qazvin.iau.ac.ir
Winter 2024, Vol. 13, Issue 1, No. 48, Pages: 77- 91

Investigating the Effects of Physical Factors on Promoting the Objective Dimension of Quality of Life for the Physical Environments of the Elderly (Case Study: Elderly Care Centers of Isfahan, Iran)

Atena sadat Hashemi Fesharaki[a], Seyedeh Marzieh Tabaeian [b,*], Samar Haghighi Boroojeni [c], Maryam pourshams [d]

[a] *Department of Architecture, Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran.*
Tourism, Architecture and Urban Research Center, Islamic Azad University, Isfahan (Khorasgan) Branch, Isfahan, Iran.
[b] *Department of Architecture, Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran.*
Tourism, Architecture and Urban Research Center, Islamic Azad University, Isfahan (Khorasgan) Branch, Isfahan, Iran.
[c] *Department of Architecture, Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran.*
Tourism, Architecture and Urban Research Center, Islamic Azad University, Isfahan (Khorasgan) Branch, Isfahan, Iran.
[d] *Department of Psychiatry, Golestan Hospital, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.*

Received: 09 September 2023.- Accepted: 10 March 2024

Abstract

Care centers for older people are increasingly becoming important than ever before due to the growing rates of the elderly population and transforming familial functions with respect to older people care and also focus on architecture debates that involve comfort and convenience for the elderly. In this connection, the present study aimed to examine the promotion of the objective dimension of quality of life in the physical environment of the elderly and its effects on their psychological health and physical needs. The present study was performed in two combined general sections. In the first section, the elderly were interviewed and theoretical studies were performed using qualitative and descriptive-analytical methods, while theme analysis was carried out to extract physical components. In the second section, quantitative methods and survey analyses (using 88 questionnaires)were used to investigate the views of the elderly about high-quality internal space features at care centers. The features were analyzed by confirmatory factor analyses and SPSS software, as well Student's T Test. Findings indicated that based on the study's methodology, the objective dimension of quality of life in the physical environments of the elderly was dependent on six main themes of permeability, environmental diversity, flexibility, visual proportions, sense of belonging, and safety and security. According to the themes obtained from the quantitative and qualitative results, it is critical to focus on the effects of physical factors on promoting the objective dimension of quality of life by facilitating movement in the environment, increasing the relationship between the environment and the surrounding, visual and social physical elements, changing spatial structures, etc.to meet the needs of the elderly and satisfy their safety standards.

Keywords: Elderly physical environments, Objective dimension, Quality of life, Isfahan.

1. Introduction

The concept of quality of life was developed as a research topic in the early 1960s. Quality of life is a multi-dimensional and complex concept influenced by such components as time, place, individual and social values. For this, it implies different meanings for different people. On the one hand, individual quality of life implies an individual's perception of how life is lived, while it is generally referred to the quality of life situations around one particular factor, which consists of such situations as the surrounding environment or culture in a certain society. As well, from another angle, quality of life can be defined at two micro (individual-subjective) and macro (social-objective) levels. The former level includes such indicators as the individual's perception of quality of life, experiences, his values and related components such as welfare, happiness, and satisfaction with life, while the latter level includes income, employment, housing, education and other life conditions and a physical environment. Therefore, housing, together with the indicators of a physical environment can affect quality of life at a macro level (Ghaemi et al. 2022). The physical environment constitutes a human life, as humans want this environment for a comfortable life despite all its constraints. Over the past decades, worries over quality of life environment have become major problems within the modern society. Meanwhile, the fast growth of cities and their physical development have culminated in the incidence of various crises in urban life such as environmental problems and waning physical environmental quality. This has resulted in a growing focus on the concept of quality of life and its promotion within residential physical environments, as well as attention to quantitative issues. The concept of the quality of the physical environment rose with the development of the concept of quality of life and the knowledge of architecture (Mohammad Ebrahimi-Vanoushabadi, 2022). According to the U.N. over half of the world's population is currently living in cities. However, cities engender

Corresponding Author Email address: Sm.Tabaeian@khuisf.ac.ir
This article is a part of the research done for the PhD thesis with code of ethics as identifier IR.IAU.KHUISF.REC.1402.235.

health risks for people, despite services and opportunities they provide. These risks include chronic diseases such as diabetes and cardiac health issues, which arise from low physical activities, unhealthy food diets, increasing asthma, and also mental health problems, caused by life stresses. The second major issue plaguing cities is population ageing, especially in advanced countries (Gholaei et al. 2022). Hence, the elderly population is on the rise due to declining mortalities, as a result of medical and health advancements, education and rising life expectancy worldwide (Li et al. 2017). For this, not all may go unaffected by life risks in cities. However, older people (defined as above 60) are more vulnerable due to their ages (e.g., reduced mobility) and preferences (e.g., staying at home and care centers). According to the latest statistics of the Center of Iran in 2016, the number of elderly people in our country is 7 million and 450 thousand. And in 2050 AD, that is, in about 30 years, about 30% of the population of our country will be the elderly (Elmi et al., 2019).So A constructed environment can play a major role in enabling the elderly to have an independent life. Hence, one of the critical issues today is the issue of population, which has represented as an aging population, causing serious outcomes. Therefore, the world is said to be rapidly aging, with the demographic structure of most advanced countries experiencing an aging phenomenon since past decades. Meanwhile, developing nations are just experiencing a transition into this phenomenon (Gholami et al. 2022).

Major impacts of cultural, spiritual, economic and political developments in various societies have resulted in the transformation of the family context as the main and key pillar of all human societies. Families have transformed from expanded kinship systems into nuclear systems and have had their main function, i.e., care for the elderly, transformed. Because families have become smaller and experienced rising divorces and working females, they have passed this duty to special entities and organizations. The idea is to enable the elderly live in warm family environments. Hence, studies in Iran conducted on sending the elderly to care centers indicate that such factors as literacy, divorce, bachelorhood, family, vulnerability against economic, social and cultural crises, the lack of a house and the need for using special equipment could affect this phenomenon (Ghafari& Kurdistan Bami, 2022). For this, establishing care centers for the elderly will not only amount to shelters for them but also create a warm and vital social environment, which is dependent on the physical environmental architecture, proportionate to the mental and physical needs of this group of people. The reason why the elderly consider such a place to be the "last sign of failure" indicates that residence in such centers, both private and public, symbolizes a sense of isolation. When old people are admitted to these centers, they feel being rejected, sensing they are thrown away for being worthless and inferior, which is natural to cause negative feelings in them. For this, the mental and physical health of the elderly are critical to appropriate elderly residences. Meanwhile, satisfying their mental and physical needs are key to their lives (Karami et al. 2022).

In sum, rising urbanization and ageing people vulnerability under environmental conditions require that attention is paid to principles that provide for the comfort, security and peace of mind of this age group. In this connection, studies have demonstrated the importance of physical environmental factors affecting the mental and physical health of the elderly. This subject is considered as quality of life. For this, macro-scale policies should be proportionate to the population pyramid of the elderly. In this connection, it is essential to focus on the demographic conditions of the elderly. Meanwhile, this study aimed to investigate the effects of physical factors on promoting the objective dimension of quality of life in the physical environments of the elderly to meet their mental and physical needs.

2. Literature Review

In a study entitled "Analyzing the Factors Affecting the Promotion of Life Expectancy among the Elderly (Case Study: Elderly Care Centers in Karaj City)", Miri et al. (2019) concluded that considering the industrialization of societies and resulting economic-cultural and moral consequences, as well as the rising population of the elderly and the prevalence of many diseases and problems in the aging period, caused by undesirable life situations, quality of life should be promoted to underly the health of the elderly. The goal of this study was to present the factors and components affecting the indicator of life expectancy and quality of life and to achieve a desirable and satisfactory environment for the elderly residing in such centers. Data analysis showed that the factors affecting life expectancy in the elderly's lives were easiness of access, safety and security dynamism and attractivity, unity and integration, freedom, comfort, relationship with nature, social participation, education and cultural activities and spatial belonging (Miri et al. 2019).

In another study entitled "Safety and Security", Soleimani and Samadpour (2019) concluded that one of the most important age groups using urban spaces are the elderly. They asserted that focus on the conditions of the elderly and their mental and physical problems could help them have a stronger presence in urban spaces. Results indicated that light and illumination were respectively the most important physical components affecting the sense of safety and security for the elderly in urban spaces and promoting their quality of life (Soleimani & Samadpour, 2019).

In the study entitled "A Review of Elderly Theories and its Representation in the Architectural Characteristics of the Landscape of Elderly Residence", Sharghi et al. (2020) found that man as part of nature has a beginning, a peak and an end, stating that understanding solutions that increase the elderly's quality of life was essential, considering the rising population of this age group. One of the solutions to raise the quality of the lives of the elderly is to use an appropriate natural landscape in their

residential spaces. Thus, this study aimed to understand the needs of the elderly and provide a landscape that best fits the elderly's physical, mental and social needs. Also, the study found that visual-applied landscaping or employing sentimental (sentiment stimulant, the prevention of stressful factors, the user's sense of easiness) and applied (e.g., user, easiness of displacement, meeting the user's needs, perceptibility, and creating the sense of self-consciousness) indicators could be critical for landscaping the elderly's residences, which fit their needs and can also affect their attitudes (Sharghi et al. 2020).

In a study entitled "Designing Elderly Care Center Using a Modern Approach" Armaghan and Haghir (2020) argued that development, health, foods and rising ages were the factors that increased the number of the elderly around the world. Meanwhile, old age is one stage of humans' lives that should be respected and valued in all communities. On the other hand, this period experiences its specific problems, which if not focused, could bring about social and cultural issues. The living environment and the residence are the most important parts constituting humans' surrounding environments. For this, it is essential to consider architectural facilities and design principles for these people. The goal of this plan was to provide spaces of the highest quality of life for the elderly and design a new type of housing for those living in care centers. Results suggested that from among the various identified factors related to residents' satisfaction, education, sociability, easiness of access, walkability and exercises, similarity of the care center to the old peoples' homes, etc. had the highest effects on the elderly's satisfaction and quality of life (Armaghan & Haghir, 2020).

In a study entitled "Relationship between the Design and Architecture of the Elderly Care Center and their Mental Health", Rakhshani and Zaei (2019) found that standard architectural design and principles should be prioritized in establishing elderly care centers, which will help increase the mental health of the elderly residing in care centers. Because the exposure of the elderly to light, especially sunlight, improves their mental health, it is suggested to design the interior spaces of care centers in a way that they would receive the highest light and illumination. As well, the elderly are suggested to systematically monitored by experts for exposure to light so that their sleeping disorders and mental and physical disabilities are removed. Also, because personal and public spaces, and accessibility contribute to mental health, it is essential that the design and architecture of elderly care centers include sitting and living space, secondary spaces (e.g., baths, WCs, etc.), health and cleanliness inside the buildings, private areas with open area views, furniture inside living rooms, closeness and proximity to other elderly and the presence of furniture outdoors, interior space proportions and scales, easy and comfortable access to all spaces and required equipment, courtyards or outdoor spaces for playing or exercising light sports, walkability, resting areas along with green spaces, small areas for rest outside the buildings, etc. (Rakhshani & Zaei, 2019).

Also, Zakari and Jamalzadeh (2020) discussed factors affecting the increased quality of life among the elderly and investigated quality of life of these people in care centers by considering the rising elderly populations. They also asserted that since the elderly feel rejected and experience negative sentiments, it was critical to investigate the reciprocal effects of humans on space and vice versa, which could promote the sense of belonging toward place. This sense of belonging can bring about comfort, peace of mind, security, satisfaction and the return of sentiments altered or eliminated, while affecting the individual's attitude to place (Zakari & Jamalzadeh, 2020).

3. Theoretical Framework

A review of various theories about the quality of the physical environment reveals similarities and differences about the quality of key design criteria, presented by theorists for providing a "good" design. This section concerns some of the most important theories in this regard, which underly the main components affecting the quality of the physical environment.

-Jane Jacobs: In his 1961 seminal work "The Death and Life Great American Cities", the socialist Jane Jacobs analyzed the effects of the characteristics of a physical environment on facilitating or inhibiting social communications, vitality and security. For Jacobs, the most important criteria of a "good" design were 1) Considering appropriate activities prior to focus on the environmental visual order; 2) Using mixed land use in terms of use and the age of various buildings in an area; 3) Attention to the element of "street"; 4) Permeability (accessibility) of texture, denoting the use of smaller urban blocks, and social integration and space flexibility (Jacobs, 2010).

-Kevin Lynch: Using his Theory of Good City Form in 1984, Lynch argued that the appropriate quality of design and consequently the promotion of quality of life fell under five criteria and two super criteria of 1) Vitality: denoting the biological and sociological survivability of humans in the environment; 2) Meaning (sense): denoting the subjective roles and meaningfulness of places; 3) Compatibility: denoting the adaptation of form to various activities and behavioral issues; 4) Access: denoting the easiness of "physical influence" on various sectors, and 5) Control and monitoring: denoting the possibility of citizens' selection and intervention with management related affairs and use of urban public arenas (Lynch, 1984).

-Violich was another scholar who expressed suggestions about the desirable qualities of urban design, especially from the perspective of micro-spatial scales. In an article "Urban Reading and Designing Small Urban Places" in 1983, Violich lists desirable qualities that should be determined in urban design as follows: 1) Environmental readability; 2) Freedom of selection; 3) Creating motivation by using different urban forms; 4) Possibility

of social life against private life; 5) Hearing the past call, as denoting the readability of cultural heritage, and 6) Considering local and regional bonds in the form of plans (Asiabanipour et al. 2020).

-In an article "Opportunities for Innovation in Urban Design Education" published in 1987, Coleman refers to a set of major qualities that must be considered by each successful design. He also classifies the qualities in six groups as follows: 1) Historical Preservation and urban restoration; 2) Designing for pedestrian zones; 3) Vitality and diversity of use; 4) Cultural context and environment; 5) Natural environment, and 6) Attention to environmental architectural values (Oskouee Aras & Hakimi, 2021).

Table 1
Environmental quality criteria described by theorists (Source: authors)

Theorists	Components of environmental quality
Jane Jacobs (2001)	Considering appropriate activities prior to focus on the environmental visual order; using mixed land use in terms of use and the age of various buildings in an area; attention to the permeability (accessibility) of texture, social integration and space flexibility
Kevin Lynch (1984)	Vitality, meaning (sense), compatibility, access, control and monitoring, efficiency and justice
Violich (1983)	Environmental readability; freedom of selection; creating motivation by using different urban forms; possibility of social life against private life; hearing the past call, as denoting the readability of cultural heritage, and considering local and regional bonds in the form of plans
Coleman (1987)	Historical preservation and urban restoration, design of pedestrian zones, vitality and diversity of use, cultural context, attention to the architectural values of the environment
Alan Jacobs & Donald Appleyard (1987)	Vitality, identity and control, access to opportunities, imagination and happiness originality and meaning, social and public life, urban self-reliance, an environment for all
Tibbalds (1988)	Places should be considered prior to the buildings; past lessons should be learned and existing textures should be respected; mixed uses should be used in cities; human scales should be included in plans; pedestrian comfort should be met; all groups in society should be consulted; environmental readability should be set as a goal; environments should be flexible enough to adapt to designs; urban environmental developments should serve as a gradual process and measures should be taken to promote the complexity, vitality, happiness and visual pleasantness of the environment
Michael Southworth (1989)	Structure, readability, form, sense of place, identity, views and landscapes, human or pedestrian scales
Prince Charles (1989)	Place, hierarchy, scale, harmony, enclosure, materials, decorations, art, signs, lights, local community
Green (1992)	1) Function, including communication, security, climatic comfort, and environmental diversity; 2) order, including coherence, clarity, consistency and balance; 3) identity, including forming centers, unity, personality and specificity, and 4) attraction, including scales, visual and functional alternation, vitality and harmony
Francis Tibbalds (2001)	Places should be considered prior to the buildings; past lessons should be learned and existing textures should be respected; mixed uses should be used in cities; human scales should be included in plans; pedestrian comfort should be met; all groups in society should be consulted; environmental readability should be set as a goal; environments should be flexible enough to adapt to designs; urban environmental developments should serve as a gradual process and measures should be taken to promote the complexity, vitality, happiness and visual pleasantness of the environment
Brian Goudie (1993)	Vitality, harmony with the existing context, diversity, human scales, permeability, place personalization, readability, flexibility, enrichment, controlled and measured possibility of the environment
Hutton & Hunter (1994)	Diversity, concentration, democracy, permeability, security, good scales, organic design, economy and its good relations, creative relations, flexibility, consulting and involving plan users
Ian Bentley et al. (1998)	Permissibility, diversity, readability, flexibility, visual compatibility, sensory enrichment, sense of belonging, environmental personalization, efficient energy consumption, cleanliness, support for nature and the wild

-Alan Jacobs and Donald Appleyard, meanwhile, described a set of urban design qualities, which were presented as a manifesto. In 1987, they published an article entitled "Toward an Urban Design Manifesto" in the Journal of the American Planning Association to discuss the promotion of a set of qualities, which can be summarized as follows: 1) Vitality; 2) Identity and control; 3) Access to opportunities, imagination and happiness; 4) Originality and meaning; 5) Social and universal life; 6) Urban self-reliance and 7) An environment for all (Jacobs & Appleyard, 1987).

-Prince Charles: In 1989, Charles published a book "The British Perspective" to describe his personal views and theories about the British society, especially the society's approach to old traditions and values, while setting out some qualities for environmental design as follows: 1) Place; 2) Hierarchy; 3) Scale; 4) Harmony; 5) Enclosure; 6) Materials; 7) Decorations; 8) Art; 9) Signs, symbols and lights, and 10) Focus on local communities (Paknezhad & Latifi,2019).

Table 2
Samples of interview open-coding (Source: authors)

Primary codes	**Statements**
Elders' sociability, intimacy between old people in the center, security, knowledge of the space, design diversity accessibility, view of the space, knowledge of people in the center, space separation	"I've been in this center for 7 years… Many people have come to this center, some of whom have left here and some newcomers are here. Some of them are also dead. There is no much difference in here. Each time, people come and go to other rooms…. I know all parts of this section. Previously, when there was no Corona, I used the elevator or the stairway to visit those who were in a bad condition; however, by the outbreak of the Coronavirus, it was impossible for me. They no longer allow me to do so…. All know me. You see two rooms facing each other. There is a lady there who is blind. … Throughout the day, I visit my friends or they come to see me. If the weather is ok, we go to the gazebos. If it is cold, we sit in here and come together. You know, it feels like being at home. I have found a number of friends in here. If I don't see them after the breakfast, I'll get worried about them."
Secondary codes	**Environmental diversity - safety and security - sense of belonging – permeability**
Scales and proportions, security, space scope, view communication in spaces, crowdedness, attention to design details, coherence, confusion, diversity, design details, communicating with the surrounding environment	"I really fear twisted and dark corridors. It feels frightening. The corridors on this side are straight; you can see the end of them. They are large, not so crowd. You can sit by them and they have handles. You can sit there and reach out to the chairs to sit together. You can also ring the bell. The corridors are impressive. If the corridors of the other side had no twist or turns and were a bit lighter, it could have given you a good feeling. However, that's frightening"
Secondary codes	**Permeability- safety and security - visual proportions - sense of belonging - environmental diversity – flexibility**
Attention by personnel and management to the needs	"A while ago, we had our TV set malfunctioned. I told the personnel; they came and fixed it… Sometimes, I need two fruits, they give them to me. Every time I need mattresses and blankets, they give them to me; thanks God, they do everything for me."
Secondary codes	**Sense of belonging**
Spatial design diversity, social interaction, knowledge of other people, recognition, belonging, participation in ceremonies, attention to design details, communicating with management, knowledge of space, knowledge of people	"This is an old center. We have been here for a couple of years… it's been for a while. We are living together. We are friends of each other. We go eating every day. We visit each other's rooms. We go outside to the court. When the air is good, we celebrate and visit the halls. We go to the library. Sometimes, we have quarrels, with Dr. Kasiraei conciliating us.
Secondary codes	**Spatial diversity - flexibility - sense of belonging**
Dependent on space and objects, association of memory, habits, diverse accessibility, belonging, bond with place, communicating with society, attention to place details, sense of security, knowledge of space, attention to light	"Every morning when the lights are on, the sound of a radio rings in our ears in the opposite room…. I have brought my own tools from home. This is the photo of my parents' wedding. This is my embroidery. You see how good it is. I clean my objects with a piece of handkerchief every off and on. I am living with my tools"
Secondary codes	**Permeability - sense of belonging - safety and security - visual proportions - environmental diversity**
Controlling peoples' entry into the center, the status and acceptance of the individual in society, sense of security habits, identity, social participation, belonging, attention to design details, diversity of spatial design	"Yeah, when it was Corona, nobody was allowed to visit us, even our children... Thanks God, the situation is better and much more coordinated. You know, they come and visit us. A couple of days ago, two female tailors came and held some ceremonies for us. They set the chairs and the objects, and held ceremonies for us like Moharram's Day, Mother's and Father's Day, you like it".
Secondary codes	**Flexibility - safety and security - sense of belonging - environmental diversity**

-Michael Southworth: Southworth was one of the graduates of the Lynch Urban Design School who reviewed a number of American urban design programs to provide a series of urban design qualities in the form of seven categories, as suggested by the article "Contemporary Urban Design Theory and Practice": 1) Structure; 2) Readability; 3) Form; 4) Sense of place; 5) Identity; 6) Views and landscapes; 7) Human scales (Southworth & Eran, 2007).

-Francis Tibbalds: Francis Tibbalds has been a renowned urban design theorist who has presented a set of criteria for achieving a desirable environmental quality. For Tibbalds, a desirable urban design is characterized by the following: 1) Places should be considered prior to the buildings; 2) Past lessons should be learned and existing textures be respected; 3) Mixed uses should be used in cities; 4) Human scales should be included in plans; 5) Pedestrian comfort should be met; 6) All groups in society should be consulted; 7) Environmental readability should be set as a goal; 8) Environments should be flexible enough to adapt to designs; 9) Urban environmental developments should serve as a gradual process and 10) Measures should be taken to promote the complexity, vitality, happiness and visual pleasantness of the environment (Tibbalds, 2001).

Later in the study, data were collected from interviewing 43 male and female elders at three Sadeghiyeh, Ghadir and Yas care centers in Isfahan City, Iran. In this stage, interview texts were studied several times both in writing and audio forms to perform a qualitative analysis via deductive theme analysis in two stages until theoretical saturation was met. Meanwhile, note-taking was manually performed for taking the major points. These points are given in Table2 Also, the sample themes of each paragraph or sentence are summarized in the form of a statement.It should be noted that the themes derived from the primary and secondary codes are based on open interviews with the elderly in their care centers, which are presented in Table 2, which are in accordance with the concepts Environmental quality criteria described by theorists In Table 1.

The goal of the present study was to identify the physical components of environmental quality and their effects on promoting the quality of life of the elderly's lives at care centers. Based on the interviews with the elderly at the above-mentioned centers (Sadeghiyeh, Yas and Ghadir of Isfahan) and measuring the interview texts with 20 experts, as well as the views of those experts concerning the components of environmental quality, six components of environmental quality affecting the objective dimension of quality of life were identified, which were permeability, environmental diversity, flexibility, visual proportions, sense of belonging, safety and security. It is noteworthy that the resulting components from the interviews corresponded to the quantitative results provided by experts. Below in the conceptual model, the physical components of environmental quality are classified based on quality of life indicators, which consist of two subjective and objective dimensions.

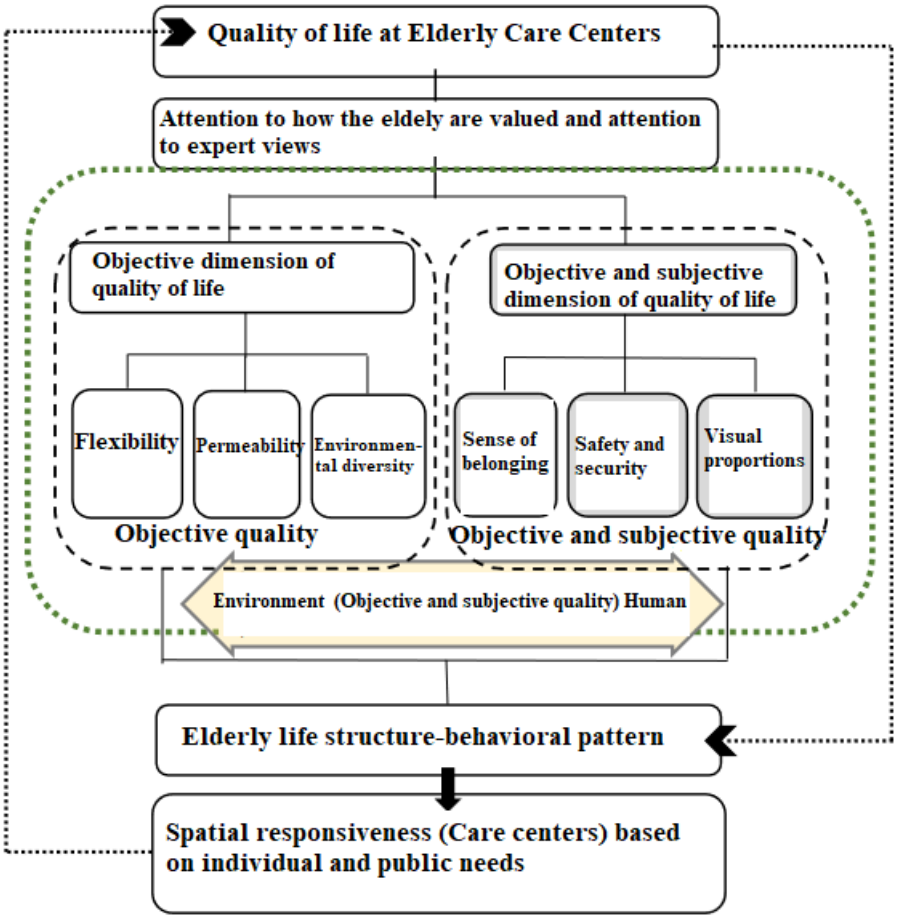

Fig. 1.Conceptual model of classifying the physical components of environmental quality based on quality of life indicators (Source: authors)

4. Research Methodology

This study used a mix research method. In the first part, effective physical components at elderly care centers were extracted by interviewing the elderly at the care centers and also 20 experts, using descriptive-analytical qualitative methods and theme analyses. In the second part, the quantitative method and survey analyses (questionnaires) were used to examine the views, beliefs, behaviors and group characteristics of the members of the statistical population. In this regard, 88 questionnaires were given out to three care centers in Isfahan's Sadeghiyeh, Ghadir and Yas Care Centers.

4.1. Tools

The questionnaires, which aimed to investigate the components of quality of life from the view of experts and via the interviews with the elderly, were divided into the sub-criteria of sense of belonging, permeability, environment diversity, flexibility, visual proportions, safety and security, using the deductive reasoning method and based on the objective dimensions. Meanwhile, the questions were answered on a five-option scale of very much, much, moderate, low and very low.

4.2. Procedure

To fill in the questionnaires, individual interviews were conducted with the elders meeting the criteria of being above 60, being conscious, willing to participate in the study, not diagnosed with cognitive nerve disorders and capable of answering the questions. Meanwhile, some psychiatrists and their assistants were also selected to offer help in this regard. Also, elderly care centers were selected purposively. After the questionnaires were filed in, confirmatory factor analysis and SPSS software were used to analyze data, as Student's T test was used to compare the components.

4.3. Areas under study

This study investigated three care centers in Isfahan, namely, Sadeghiyeh, Ghadir and Yas under similar conditions. The samples enjoyed some specific conditions, including being located in the city center, the round-the-clock timing of the centers, meeting the elders' ability to respond to the questions, creating appropriate perception of the place and allowing for the performance of activities there, which led to the selection of the public Sadeghiyeh Center (between Mahmoud Abad and Amin Abad St. Industrial University Sq. the end of Imam Khomeini Ave. Isfahan), the private Ghadir Center (No. 24, Aeineh St., first Apadana Ave. Isfahan) and the private Yas Center (No. 46, Shahid Enayati Alley, Shahid Mohsen Soleimani Juncture, Allame Amini St. 22 Bahman St. Bozorgmehr, Ave. Isfahan).

Yas center

Ghadir center

Sadeghiyeh center

Fig. 2. Pictures of the studied centers

4.4. Architectural analysis of samples under study

Sadeghiyeh Center (Public): This center is located next to the Mahmoudabad Jungle Park and consists of a main three-story building for the elderly, together with some special sections for men and women and elder couples. Both buildings have green spaces, fountains, sports sections and benches. The main building enjoys multi-purpose spaces, stairways, elevators, check-up and treatment rooms, an amphitheater, WC sections, a bath on each floor, accommodation rooms, a president's room, a meeting room and a dining room.

Yas Center (Private): This center is confined within an alley and has a main two-story building for the elders' accommodation, which sits in the middle of a green court. This center has various spaces, including a management building, a kitchen, WC services, a pool, a fountain, gazebos, and benches in a green court. Each floor has some multi-purpose spaces, including WC services and a bath, a stairway and elevators.

Ghadir Center (Private): It is a three-story building that serves to accommodate the elderly and lies by a school, has a backyard and a green space. Each floor has WC services and bathes, a stairway and an elevator. Also, the building has a courtyard, which is used if the climate is conducive.

5. Findings

After questionnaire data were analyzed, the highest percentage of the effects of the physical components of environmental quality (based on the views of experts and the elderly) that affected the promotion of the objective dimension of quality of life were determined. These components fell under six categories of permeability with two secondary indicators, environmental diversity with two secondary indicators, flexibility with one secondary indicator, visual proportions with a secondary indicator, sense of belonging with a secondary indicator and safety and security with one secondary indicator. Each of the secondary indicators were divided based on effective factors and relevant items (Table 3, Table 4, Table 5, Table 6, Table 7, Table 8). Each of the themes will be explained in detail below.

5.1. Permeability

Permeability in care centers is one of the major visual and physical indicators and is of high importance in establishing such centers. This component is concerned with valuing the elderly's mind in experiencing smaller space units and selecting paths. It is somehow the power to select an environment that enables an elder to go from one place to another. The quality of permeability should be adjusted based on environmental conditions, visibility and accessibility, which enable the elder to have the right to choose within his area and to access and view different spaces. This component, meanwhile affects the promotion of the elderly's quality of life, considering spatial organization, including the hierarchy of public spaces and private residences at care centers.

Table 3
Ranking responses to each component of the permeability indicator

Main indicator: Permeability (with 2 secondary indicators)				
Secondary indicators	**Effective factors**	**Questions**	**Factor loads (percent of effect)**	
			Public center	**Private center**
Facilitating movement in the environment (with three effective factors)	Increasing field of view inside the area (lack of blind spots, with two questions)	1.How important is it for you to have easy and convenient access to all spaces and required equipment?	92.60	95.80
		2.Are all spaces and accesses easily visible and accessible?	84.50	85
	Increasing the width of the paths (with three questions)	3.Are the widths of the corridors at this center suitable for traffic and the full turn of wheelchairs?	85.50	83
		4.Are not there any problems with the corridors for reaching to all internal spaces at this center?	76.30	89.60
		5.Is there direct access to the residence?	78	84.90
	Providing a straight and smooth path, removing physical barriers and any other factors causing pause or deviation from the path (with three questions)	6.How important is furniture (chairs, trash bin, etc.) in internal spaces?	67.90	91.70
		7.How is access to the entrance of the internal space made? By at-grade surface or mild ramp?	92	94.60
		8.Does the form of the corridor help better accessibility to the residence's wayfinding?	68.90	79.20
Increasing the relationship between the environment and the surrounding areas (with two effective factors)	Increasing the visibility of the area (with two questions)	9.How important are the internal spaces with views of outdoors?	83.60	79.10
		10. Do the windows of the internal space provide visibility and accessibility to the surrounding spaces?	84.10	82.60
	Avoiding area enclosure (with two questions)	11. How much do green spaces (like patios) between internal spaces affect space enclosure?	72.70	74.90
		12.How important are fountains, and low-depth pools in internal spaces?	75	85.90

5.2. Environmental quality

The promotion of the quality of environmental diversity at care centers is associated with secondary indicators such as diversity of form, color, and materials. Diversity increases life quality unless it eliminates unity, while its absence may also cause boredom. Applied spatial diversity, together with form, color and material diversity affect quality of life of the elderly. Environmental diversity also creates attractivity and beauty and encourages the elderly to have a greater presence in space, thus increasing vitality for them. On the other hand, apparent diversity affects environmental readability, makes the environment perceptible, and makes orientation easy and convenient.

Table 4
Ranking responses to each component of the environmental diversity indicator

Main indicator: Environmental diversity (with two secondary indicators)				
Secondary indicators	**Effective factors**	**Items**	**Factor loads (percent of effect)**	
			Public center	**Private center**
Physical (with one effective factor)	Physical elements of the internal environment: color, materials/ light/spatial, etc. (with three questions)	1.Have diverse materials been used in constructing the internal spaces of the care center?	94.80	98
		2.Are there creative and various color combinations at the care center?	87.40	89.60
		3.Are there internal spaces with user diversity at the care center?	88.30	86.30
		4.Do the internal spaces of the care center provide various illumination and lighting during the day?	84.90	84
Social (with one effective factor)	Training/ sociability/ recreation in internal spaces (with three questions)	5.Are there spaces for learning art such as music, painting, etc. for the elders at this care center?	82.20	83.30
		6.To what extent do you agree with the presence of educational spaces at this care center?	85	86.10
		7.To what extent do you agree with intimate and group spaces inside the care center for exchanging experiences and gatherings with other elders?	83.40	70.70
		8.To what extent do you agree with handicraft workshops and fairs for displaying handicrafts at the care center?	76.40	67.80

5.3. Flexibility

Table 5
Ranking responses to each component of the flexibility indicator

Main indicator: Flexibility (with one secondary indicator)				
Secondary indicator	**Effective factor**	**Items**	**Factor loads (percent of effect)**	
			Public center	**Private center**
Changing current functions in space, changing spatial structures to meet the users' needs (with three effective factors)	Multi-functional space (diversity) with 2 questions	1.Is there the possibility of using flexible furniture for various functions in internal spaces?	80.80	63.10
		2.Is there a space at this care center to be used for various goals (i.e., multi-functional spaces for special ceremonies)	72.40	66.70
	Separating and consolidating spaces (variability) with three questions	3.Does the care center provide rail separating walls and variably light partitions in the internal spaces?	97.50	94.40
		4.Is it possible to add to the built-up area of the unit of residence or separate the spaces without changing the area of the units?	90.10	88.90
		5.Are there uses in the internal spaces of the care center that have changed based on the elderly's needs?	88.90	92.10
	Adaptability (daily and seasonal displacement) with one question	6.Can internal components and their combination be fixed?	91.30	78.60

The quality of flexibility at elderly care centers relates to meeting the needs of the elderly, who usually suffer from mobility, hearing, visual, sense concentration and memory problems. A flexible space allows residents to organize their place of residence proportionate to their culture, behavioral patterns, spatial behaviors, etc. Since stagnant environmental conditions cause dissatisfaction for the elderly, there is a need for making spatial changes to their living environments, which would help their life quality. For this, it is essential to improve the elderly's activities and efficiency and spatial adaptability to help them cope with these problems.

5.4. Visual proportions

A spatial visual proportion quality attracts the elderly into space and enables them to use their senses to perceive space. The effect of this quality on observers present in space creates happiness and joyfulness and helps them express what is inside them. Thus, visual proportions fall under the category of environmental physical qualities. Failure to pay attention to this can, over time, reduce the elderly's presence in space and leave negative consequences on them. Also, the indicator of fabric in space based on visual proportions support the elderly's behaviors in two ways. On the one hand, in each fabric, physical elements provide comfort and convenience and improve the elderly's activity patterns. On the other hand, a human-constructed environment improves the feelings, experiences, behaviors and needs of the elderly and thus links social interactions.

Table 6
Ranking responses to each component of the visual proportion indicator

Main indicator: Visual proportions (with one secondary indicator)				
Secondary indicator	**Effective factors**	**Items**	**Factor loads (percent of effect)**	
			Public center	**Private center**
Physical (with one effective factor)	Visual physical factors include: attention to using color and texture in designs/ space-congruent proportions/ form and sizes/ decorations/ arrangement, etc. (with six questions)	1.Have public internal spaces been designed in combination with green spaces (e.g., patios) on various scales at this care center?	92.60	95.80
		2.Are the height and width of the access corridors proportionate to the height and width of your unit of residence?	84.50	85
		3.Are the sizes of the lateral spaces (bath, WC services, kitchens) proportionate to the unit of residence and public internal spaces?	85.50	83
		4.To what extent do you agree with the regular and hospital-form arrangement of the units of residence?	76.30	89.60
		5.Do units of residence hold a capacity of 4 people and a bed or a working desk for each people, along with special decorations for preventing the sense of monotony?	78	84.90
		6.Are the dimensions and sizes of the windows in internal spaces proportionate to the dimensions of the corridors and the unit of residence?	67.90	91.70

5.5. Sense of belonging

Findings indicated that the elderly have repetitive behavioral patterns and have different characters, which make them select various spaces for their privacy and residence. Meanwhile such factors as providing privacy and personal spaces, as well as a territory-finding behavior can help them meet other needs such as identity, motivation, self-actualization, self-esteem and sense of attachment to the environment and satisfaction with life. Thus, sense of belonging is associated with a kind of sense of satisfaction. Sense of satisfaction denotes meeting one's expectations and desires, which will strengthen positive emotional bonds and attachment to the environment. Also, sense of satisfaction is evaluated by the elderly's mentally constructed patterns, which pertain to their previous experiences and result in sense of closeness and relationship with the surrounding physical environmental promotion of quality of life.

Table 7
Ranking responses to each component of the sense of belonging indicator (Source: authors)

Main indicator: Sense of belonging of the objective dimension (with one secondary indicator)				
Secondary indicator	**Effective factors**	**Items**	**Factor loads (percent of effect)**	
			Public center	**Private center**
Physical factors / satisfaction (Objective dimension) (with one effective factor)	Providing space/ spatial organization/ readability/ hierarchy/ privacy (with ten questions)	1.Are there any good sub-spaces (such as traffic, sports, talking to others, rest, green spaces, and gathering places) for any of the internal spaces o the care center?	75.10	69.70
		2.How do you evaluate the distance between internal spaces based on the location of the units of residence?	79.70	77.10
		3.How easy is finding the way in internal spaces at the care center?	96.60	96.30
		4.Are there places at the center where you can sit comfortably without others' interference (such as a terrace space and a private courtyard at the unit of residence)?	87.50	89.20
		5.Are strangers allowed to easily enter the care center and introduce the privacy of the elderly?	84.60	83.30
		6.Are there suitable and independent bath and WC rooms for each of the units of residence?	82.70	79.80
		7.Are there any signs and symbols of the past at this care center?	82.80	85.30
		8.Is the overall form of the care center attractive for you?	82.20	84.40
		9.Is the flooring (carpeting) of the building good?	86.90	72.70
		10.Are the diversity and form of the furniture at the care center appropriate?	79.50	68.40

Table 8
Ranking responses to each component of the safety and security indicator

Main indicator: Safety and security (with one secondary indicator)				
Secondary indicator	**Effective factors**	**Items**	**Factor loads (percent of effect)**	
			Public center	**Private center**
Physiologic (physical health) (with two effective factors)	Safety standards and monitoring over the proper implementation of construction (with seven questions)	1.Is this care center a safe and secure space for living?	83.20	83.80
		2.Are handles and railings embedded on the walls for facilitating movement?	77.70	72.20
		3.Are there stairways or difference of ground for movement paths?	77.60	77.30
		4.Are there enough spaces for your movement with wheelchairs, walkers and stick to approach to the handles and to open the doors?	58.30	64.40
		5.Have the scales and proportions of internal spaces and their harmony with your physical abilities been considered?	85.30	77.10
		6.Are there enough sitting and resting spaces with less distances from each other for your movement balance?	83.20	83.80
		7.Is there good flooring for avoiding falling down and slipping on the ground?	88.60	82
	Safety standards and monitoring over the proper implementation of light and illumination/ Safety standards and monitoring over the proper implementation of color (with two questions)	8.Do access corridors and public internal spaces provide good lighting and ventilation for the care center?	85.30	77.10
		9.Is good lighting with outstanding color embedded on entrances and door handles for easiness of recognition?	98.30	99

5.6. Safety and security

The safety and security indicator helps create a healthy environment, provided that it meets the safety and security standards in buildings, including light and illumination, color, spatial components, spatial proportions and harmony with the physical abilities of the elderly in the internal spaces and residential settings. Therefore, it is essential to focus on management to provide services and monitoring over construction. This enables the elderly to get engaged in activities that relate to the design of care center environments. Performing activities in a living space refers to the continuation of lifestyle based on the elderly's mentality, thereby increasing their presence, interactions and improving their activities in spaces. Therefore, the concept of activity in functional quality promotes quality of life in the elderly's residential environments.

6. Discusion

In a study entitled "Analyzing the Factors Affecting the Promotion of Life Expectancy among the Elderly (Case Study: Elderly Care Centers in Karaj City)", Miri et al. (2019) concluded that considering the industrialization of societies and resulting economic-cultural and moral consequences, as well as the rising population of the elderly and the prevalence of many diseases and problems in the aging period, caused by undesirable life situations, quality of life should be promoted to underly the health of the elderly. The goal of this study was to present the factors and components affecting the indicator of life expectancy and quality of life and to achieve a desirable and satisfactory environment for the elderly residing in such centers. Data analysis showed that the factors affecting life expectancy in the elderly's lives were easiness of access, safety and security dynamism and attractivity, unity and integration, freedom, comfort, relationship with nature, social participation, education and cultural activities and spatial belonging (Miri et al. 2019).Which is in line with the findings of the current research under the title of the main physical indicators of environmental quality including: permeability, environmental diversity, sense of belonging and safety and security, which are effective in improving the objective dimension of quality of life in care centers for the elderly. In the study entitled "A Review of Elderly Theories and its Representation in the Architectural Characteristics of the Landscape of Elderly Residence", Sharghi et al. (2020) found that man as part of nature has a beginning, a peak and an end, stating that understanding solutions that increase the elderly's quality of life was essential, considering the rising population of this age group. One of the solutions to raise the quality of the lives of the elderly is to use an appropriate natural landscape in their residential spaces. Thus, this study aimed to understand the needs of the elderly and provide a landscape that best fits the elderly's physical, mental and social needs. Also, the study found that visual-applied landscaping or employing sentimental (sentiment stimulant, the prevention of stressful factors, the user's sense of easiness) and applied (e.g., user, easiness of displacement, meeting the user's needs, perceptibility, and creating the sense of self-consciousness) indicators could be critical for landscaping the elderly's residences, which fit their needs and can also affect their attitudes (Sharghi et al. 2020).Which is in line with the findings of the current research under the title of the main physical indicators of environmental quality including: permeability, environmental diversity, flexibility, visual proportions and sense of belonging which is effective in improving the objective dimension of the quality of life in the country. Care centers for the elderly. In a study entitled "Relationship between the Design and Architecture of the Elderly Care Center and their Mental Health", Rakhshani and Zaei (2019) found that standard architectural design and principles should be prioritized in establishing elderly care centers, which will help increase the mental health of the elderly residing in care centers. Because the exposure of the elderly to light, especially sunlight, improves their mental health, it is suggested to design the interior spaces of care centers in a way that they would receive the highest light and illumination. As well, the elderly are suggested to systematically monitored by experts for exposure to light so that their sleeping disorders and mental and physical disabilities are removed. Also, because personal and public spaces, and accessibility contribute to mental health, it is essential that the design and architecture of elderly care centers include sitting and living space, secondary spaces (e.g., baths, WCs, etc.), health and cleanliness inside the buildings, private areas with open area views, furniture inside living rooms, closeness and proximity to other elderly and the presence of furniture outdoors, interior space proportions and scales, easy and comfortable access to all spaces and required equipment, courtyards or outdoor spaces for playing or exercising light sports, walkability, resting areas along with green spaces, small areas for rest outside the buildings, etc. (Rakhshani & Zaei, 2019).Which is in line with the findings of the current research under the title of the main physical indicators of environmental quality including: permeability, environmental diversity, flexibility, visual proportions and safety and security, which are effective in improving the objective dimension of the quality of life in the country. Care centers for the elderly**.**

7. Conclusion

This study investigated the effects of physical factors on promoting the objective dimension of quality of life in elderly's physical environments (Case studies included private and public care centers in Isfahan). Consistent with qualitative and quantitative results, components were extracted from interviews with the elderly in the care centers (data were collected from interviews with 43 male and female elders at three Sadeghiyeh, Yas and Ghadir care centers). In this stage, interview texts were studied several times both in writing and audio forms to perform a qualitative analysis via deductive theme analysis in two

stages until theoretical saturation was met. Meanwhile, note-taking was manually performed for taking the major points. It is noteworthy that the interviews were measured by experts. As a whole, the components extracted from environmental quality, as suggested by experts and interviews conducted, yielded six sub-components of permeability, environmental diversity, flexibility, visual proportions, sense of belonging and safety and security. From an objective and subjective dimension, it was concluded that environmental quality components led to improving the elderly's quality of life. From an objective dimension, the components of environmental quality can be divided into permeability, environmental diversity and flexibility. Also, in the objective and subjective dimensions, the components of environment quality can be divided into visual proportions, sense of belonging, and safety and security.

In sum, as revealed by the components, questionnaire questions were drawn up to measure the quality of internal spaces at the care centers, which could help promote quality of life among the elders. It is noteworthy that a review of demographic, social, psychological and physiological characteristics, an investigation of the objective dimension of quality of life (meeting needs and cultural norms) and the existential dimension of these needs helped extract the six physical spatial components.

Concerning the component of environmental diversity at the three centers, the secondary indicator of the physical factor with the effective factor of the physical elements of the internal space such as color, materials, light, etc. helped create some visual environmental diversity for the elderly.

Concerning the component of flexibility, the effective factor of changing spatial structures was used to meet the needs of the users; this factor included separating and consolidating spaces at the Sadeghiyeh center, attention to retaining walls, variably light partitions in internal spaces

The number of 88 elders with consciousness, willingness to participation and capable of communicating were selected from among the elders of three centers. For this, all the elders who filled in the questionnaires were specified and coded. Then, all physical measurements at the living places of the elderly were examined by specifying the questionnaire codes. This was aimed to investigate the relationship between the measurement of physical components and quality of life, as announced by the elderly. In this connection, such variable as gender, education, duration of stay, etc. were analyzed. After a review of the physical spatial components at the care centers in terms of the spatial desirability of the internal environment on promoting quality of life of the elderly, the following results were obtained: Concerning the component of permeability at the three care centers, the secondary indicator of movement facilitation with the effective factors of increasing the field of view inside the area and removing the obstacles led to easy and convenient access to all spaces, as intended by the elderly. Also, at the Ghadir and Yas centers, the secondary indicator of movement facilitation in the environment with the effective factors of removing the obstacles and placing furniture in internal spaces, such as chairs for creating pause and continuing the path for easiness of access, was found to be essential.

and adding area to the spaces were important. Also, the effective factor of adaptability at the unit of residence was key in terms of unstable internal space components, which helped combine them with the entrances, kitchen rooms and WC services. Also, at the Ghadir and Yas centers, the Effective factor of changing spatial structures was used to meet the needs of the users, which included separating and consolidating spaces at the Sadeghiyeh center, attention to retaining walls, variably light partitions in internal spaces and adding area to the spaces were important.

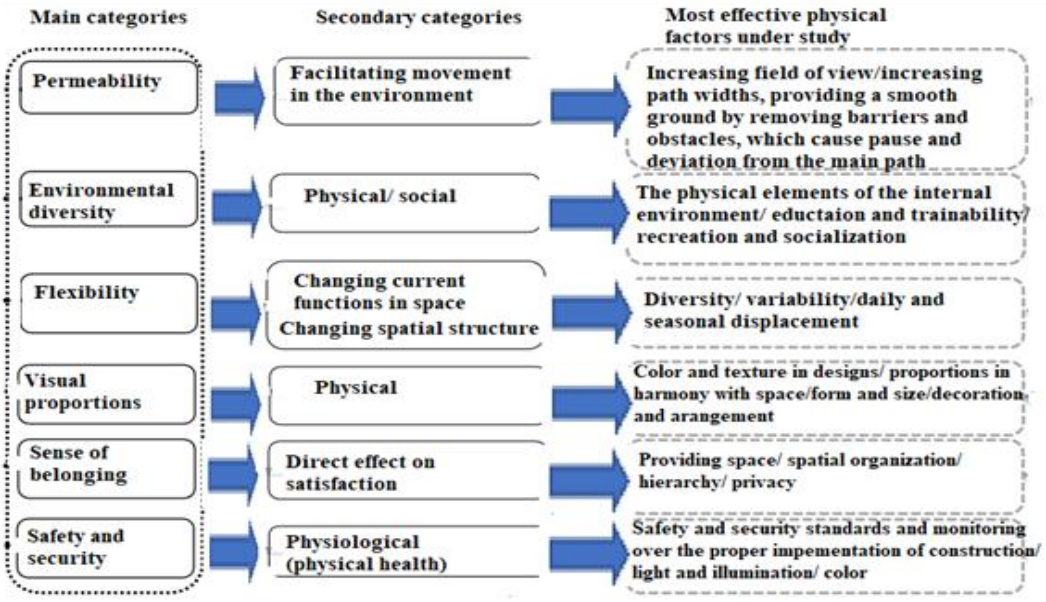

Fig. 3. Model of physical components affecting the objective dimension of quality of life

Concerning the component of visual proportions, the secondary physical indicator included the effective factor of proportions harmonious with space, form, and size at the three centers, the presence of green spaces, etc. At the Ghadir and Yas centers, the dimensions of the windows of the internal spaces were found to be proportionate to the dimensions of the corridors and units of residence.

Concerning the component of sense of belonging, the effective factor of satisfaction included spatial organization, readability, hierarchy, and privacy at the three centers, which led to the easy access of the elderly.

In sum, concerning the component of safety and security, the secondary physiological indicator with the effective factor of safety and security standards and monitoring over the implementation of color at the three centers led to the easiness of recognition for the elderly.

References

Armaghan, A, & Haghir, S. (2020). Nursing home design with a new approach. *Studies in geography, civil engineering and urban management*, *20*(6), 182-203. https://civilica.com/doc/1500163**.**

Asiabanipour, E., panahi, A., & Ahmadzadeh, H. (2020). The effect of urban livability factors on the present situation using Structural Equation Modeling of Partial Least Squares (Case study: district of Tabriz city). *Geography and Planning*, *24*(73), 23-46. doi: 10.22034/gp.2020.10798.

Ghaemi, F., Hosni, M., Khan Mohammadi, M. H., & Mohammad Hamed. (2022). Presenting a comprehensive model of the economic dimension of quality of life by the method of grounded theory. Financial Economics , 16 (58), 23-46. *16*(58), 23-46. doi: 10.30495/fed.2022.691494.

Ghafari, A, & Kurdistan Bami, M. (2022). Analyzing and investigating the transcendental components of the space of the elderly home, focusing on the promotion and exaltation of the feeling of attachment to the place. *Interdisciplinary studies of Iranian architecture*, *1* (1), 63-76**.** doi: 10.22133/ isia. 2022.321809.1009.

Miri, F S, Ghayi, M, & Khodai, Z. (2019). Analysis of factors affecting the improvement of the life expectancy of the elderly, a case study: nursing homes in the city of Karaj. Social Welfare Quarterly, 19 (73), 301-339. https://doi.org/ 10. 29252/ refahj. 19.73.301.

Mohammad Ebrahimi,M & Ashnoi Noushabadi,A. (2022). Prioritizing the components affecting the quality of the urban environment (case study: Shiraz city).SpatialPlanning,12(3),47-66. doi:10.22108/sppl.2022.125087.1534.

Oskouee Aras, A., & Hakimi, H. (2021). Measuring Indicators of Urban Vitality in Informal Settlements (Case study: Seilab Qoshkhane Tabriz). Geographical Urban Planning Research (GUPR), 9(1), 143-163. doi: 10.22059/ jurbangeo. 2021. 309948. 1363.

Gholami, M, Amininejad, gh, & Benari, kh. (2022). Measuring and evaluating the indicators of the elderly-friendly city (case study: Barazjan city). *Urban Environment Planning and Development*, *2*(5),17-30. DOR: 20.1001.1.27833496.1401.2.5.1.4.

Elmi,Z, Hashempour,p, & Madqalchi,L. (2020). Physical sociability of residential complexes for the elderly in Tabriz (case study: Sattarkhan, Aseman, Allameh Amini and Sepidar residential complexes). Architecture and Urban Planning of Iran (JIAU) , 11 (1), 187-207. https://sid.ir/paper/373860/fa.

Jacobs,J.(2010) The Death and Life Great American Cities.Translated by Dr. Hamid Reza Parsaei and Arezu Aflatony, second edition,Tehran University Publications,Tehran.https://www.iranketab.ir/book/67384-the-death-and-life-of-great-american-cities.

Jacobs, A., and Appleyard, D. (1987). Toward an Urban Design Manifesto. Journal of American Planning Association,53,112-120. https://doi.org/10.1080/01944368708976642.

Karami,I,Najafi,M,JavanFaruzandeh,A&Abdolahi,R.(2022). Explaining the architecture design strategies of the nursing home from the point of view of the satisfaction of a case study: nursing homes ("Ata", "Merhamat" and "Aftab") in Ardabil. *Scientific Journal of Architectural Thought* , *6* (11),55-72. https://doi.org/10.30479/at.2021.14377.1640.

Li, W. P., Neradilek, M. B., Gu, F. S., Isquith, D. A., Sun, Z. J., Wu, X., ... & Zhao, X. Q. (2017). Pregnancy-associated plasma protein-A is a stronger predictor for adverse cardiovascular outcomes after acute coronarysyndromeintype2diabetesmellitus. *Cardiovasculardiabetology*, *16*(1),1-11. https://doi.org/10.1186/s12933-017-0526-6.

Lynch, K. (1984). A Theory of Good City Form. Cambridge,Mass,MITPress. https://books.google.com/books?hl=fa&lr=&id=flJdgBoKQHQC&oi=fnd&pg=PA1&dq=A+Theory+of+Good+City+Form&ots=WHhujEU_TM&sig=fGblvFE60YYWITUGu7ZDBrBQn3Q.

Paknezhad, N., & Latifi, G. (2019). Explanation and Evaluation the Impact of Environmental Factors on the Formation of Behavioral Patterns in Urban Spaces (From Theory to Practice: Study of Tajrish Square). The Monthly Scientific Journal of Bagh-e Nazar,15(69),51-66.doi: 10.22034/bagh.2019.82313.

Rakhshani, Z & Nasti Zaei, N. (2019). The relationship between design and architecture factors of nursing homes and their mental health. Almand Scientific Research Journal, 14(3), 342-355. doi.org/ 10. 32598/ sija. 13.10.460.

Sharghi,A, Qanbaran, A, &Salehi Kosalari, F. (2020). A review of the theories of aging and its reflection in the landscape architectural features of the elderly residences. Man and Environment , 18 (4), 55-70. https://journals.srbiau.ac.ir/article_17495.html**.**

Soleimani, A & Samadpour, H. (2019). Measuring the physical factors affecting the sense of security in

urban spaces from the perspective of the elderly (case example: Velayat Faqih Square, Urmia). Architectural Quarterly, 7(2), 50-64. https://civilica.com/ doc/898392.

South worth, M., Eran, B.J. (2007). Street Standards and the Shaping of Suburbia. Journal of the American Planning Association, 61(1). https://doi.org/ 10.1080/01944369508975620.

Tibbalds, F. (2001). Making people-friendly towns: improving the public environment in towns and cities:Taylor & Francis. https://scholar.google.com/ scholar? hl=fa & as_sdt=0%2C5 & q=Making+ people- friendly+ towns%3A+ improving+ the+ public+ environment+ in+towns+ and+ cities%3 ATaylor%26 Francis & btnG=.

Transic, R. (1991). Finding lost space: theories of urban design. John Wiley & Sons. https://scholar.google.com/ scholar? hl=fa & as_sdt=0%2C5&q=Finding+lost+space%3A+theori es+of+urban+design.JohnWiley%26Sons&btnG=.

Zakari, A, & Jamalzadeh, S. (2019). Evaluation of factors of sense of belonging to place in improving the quality of life of nursing home residents. Utopia Architecture and Urbanism, 11 (25), 293-300. SID. https://sid.ir/paper/202501/fa.