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Sustainable Architecture, Structures, and Mental Health: Designing Elderly Care Centers with a Focus on Psychotherapy Principles to Enhance Well-being and Comfort

Abbas Karimi Pour Dehkordi[1], Ali Heydari Sureshjani[2], Moein Al-din Gholami[3]

1- Civil Engineering Student, College of Skills and Entrepreneurship, Islamic Azad University, Shahrekord, Iran.
Email: a_karimipour@ymail.com.
2- Civil Engineering Student, College of Skills and Entrepreneurship, Islamic Azad University, Shahrekord, Iran.
Email: ali.heydari8500@gmail.com.
3- Civil Engineering Student, College of Skills and Entrepreneurship, Islamic Azad University, Shahrekord, Iran. Email: moeinx@gmail.com

Abstract

With the increasing population of elderly individuals in various societies, there is a strong need to create suitable living spaces for this age group to ensure a calm and healthy lifestyle. Elderly care centers, as social and caregiving institutions, play a crucial role in improving the quality of life for older adults. Despite numerous designs and constructions of these facilities, many fail to meet the psychological and social needs of the elderly. This research, focusing on sustainable architecture, examines the structures of elderly care centers and their psychological and social impacts. The goal of this study is to provide solutions for designing caregiving homes that not only meet essential needs but also align with the psychological and social characteristics of older adults. Paying attention to factors such as light, form, color, ventilation, and visual appeal in the design of these spaces can enhance the living conditions of the elderly and improve their sense of calm and well-being. This article, with an innovative approach, explores the connection between environmental psychology and sustainable architectural creativity in the design of elderly care centers. The research was conducted qualitatively, with data collected through library studies, questionnaires, and interviews. The results indicate that architecturally sustainable designs tailored to the psychological and social needs of the elderly can improve the quality of living spaces and enhance their psychological and social well-being.

Keywords: Sustainable Architecture, Elderly, Elderly Care Centers, Structure, Psychological Impacts, Social Impacts, Environmental Design

1- Introduction

Elderly individuals often face specific challenges due to physiological, social, and psychological changes experienced throughout their lives. Key challenges include reduced physical abilities, depression and anxiety, loss of independence, feelings of worthlessness, and reduced energy, among others. The mental and emotional health of the elderly is of paramount importance and requires support and understanding from family, government, and society. Therefore, the design of these caregiving and therapeutic spaces must consider the psychological needs of these individuals and adopt a sustainable architectural approach. This design can improve the quality of life, preserve the environment, and reduce resource consumption. Moreover, this approach can provide a safe, healthy, and desirable space for the elderly, resulting in increased well-being and happiness. Elderly care homes are residential care centers designed to meet the physical, psychological, and social needs of older adults. These homes typically provide a secure and supportive environment with medical and caregiving facilities, comfortable living spaces, social and cultural activities, and a balanced diet, allowing the elderly to live in peace and comfort.Given the importance of the technical design of these centers, it is essential to take a deeper look at the interior design of these residential homes to enhance the mental and emotional health of these individuals. In this regard, factors such as color, light, form, and visual appeal play a significant role. This article analyzes the psychological and social impacts of elderly care homes, examining the structural and design aspects of these centers. By establishing a connection between sustainable architecture and the psychological needs of the elderly, it provides solutions that can enhance living conditions and increase their sense of security and social well-being.The aim of this research is to enhance the psychological and social well-being of the elderly and improve the quality of residential, educational, and recreational spaces through providing architecturally and sustainably designed solutions for elderly care homes. This study posits that creative design solutions, focusing on factors such as light, form, color, ventilation, and visual appeal in the design of these centers, have a direct impact on improving the quality of life for the elderly and can serve as a model for future elderly care home designs.

2- ResearchBackground

Similar research has been conducted in the field of this study, one of which is the article "Green and Sustainable Care Facilities for Elderly Homes: An Exploratory Study of Roma Seri Kembangan, Selangor". This research demonstrates that the implementation of green and sustainable practices in elderly care homes in Malaysia is still in its early stages, indicating the gaps in knowledge and application of these practices. The aim of the present study

is to address these gaps. This study specifically focuses on Roma Seri Kembangan (RSK) in Cheras, Selangor; a center functioning as a long-term care home for the elderly, particularly those in economically vulnerable positions. The center provides a range of services, including personal care, medical treatment, and recreational activities, to enhance the quality of life for its residents.The research identified six key features of green and sustainable practices at RSK, which are: 1. Geographic location and surrounding area, 2. Integrated operations and maintenance, 3. Creation of a healthy environment that enhances resident well-being, 4. Effective waste management systems, 5. Energy efficiency measures such as the use of solar panels, and 6. Sustainable management of green landscapes, including rain gardens and edible plants.(Rafiei, H., & Hashem, H. (2018). "Impact of Environmental Design on the Well-being of Elderly Residents in Nursing Homes: A Case Study in India." Indian Journal of Public Health, 9(11), 1430.). In another study titled *"Psychotherapy in the Elderly,"* the vital role of psychotherapy in enhancing mental health and overall well-being for elderly patients is emphasized. In this article, the authors stress the need for healthcare providers, especially physicians, to recognize and address the psychological needs of the elderly. The research indicates that psychotherapy is an essential part of healthcare for the elderly. It also presents a combination of different approaches such as conflict-centered therapy, supportive therapy, family therapy, and behavioral therapy, emphasizing the importance of a tailored approach to meet individual needs. Each method plays a crucial role in addressing the unique psychological challenges faced by the elderly. (Ferris, H. - 1987, *German Journal of Gerontology and Geriatrics*). In another study titled *"Application of Behavioral Architecture in Elderly Homes at Taman Malibou in Medan,"* several key findings are discussed, highlighting the goal of using behavioral architecture in the design of elderly care homes. One of the main objectives of this research is to enhance the overall well-being of elderly residents in these centers. By creating an environment that meets their physical and psychological needs, the design aims to strengthen feelings of comfort and security for the residents. Additionally, design concepts are considered to facilitate daily activities for older residents. This includes creating accessible and functional spaces that allow residents to participate in various activities, thereby enhancing their independence and quality of life. Additionally, it is expected that the application of behavioral architecture will have a positive psychological impact on the elderly. By providing physical comfort and safety within the elderly home, the design aims to reduce feelings of anxiety and depression, which are often experienced by older individuals. This article supports a thoughtful and informed approach to designing elderly homes that prioritizes the unique needs of older adults and creates environments that enhance physical and psychological well-being using behavioral architecture. (Fauzan, F., Putra, N. A., and Adriana, M. - 2023, *Arkid Indonesia Journal of Architecture*). Therefore, it can be claimed that despite numerous studies in the field of sustainable architecture and elderly care design, this article is the first to analyze the structural and psychological-social impacts in elderly homes, providing innovative and creative solutions for designing these spaces with the aim of improving the quality of life for the elderly.

Methodology

In this article, a library-based data collection method was used, incorporating previous studies based on sustainable architecture and psychological science in the context of designing elderly care homes. Additionally, semi-structured interviews were conducted with experts and specialists actively engaged in the design of these centers to gather their experiences and insights in this field.

Research Implementation Steps:

1. **Library Information Gathering**: Review existing documents, specialized journals, and articles, and observe relevant websites to complete the theoretical foundations of the research, focusing on the theoretical basis and empirical background in sustainable architecture and psychological impacts in elderly care homes.
2. **Hypothesis Development**: Based on the information obtained from library studies and empirical background, hypotheses regarding the psychological and structural impacts of these centers were formulated.
3. **Semi-Structured Interviews**: Conduct interviews with relevant experts and specialists, collecting qualitative data based on the theoretical framework of the research to gain deeper insights into sustainable architecture and the design of elderly care homes.
4. **Data Analysis**: Analyzing the obtained findings using a deductive approach to examine the hypotheses and achieve the research results.
5. **Recommendations**: Based on the results obtained, suggestions for improving the design of elderly care homes for the elderly are provided, which can be effective in enhancing the quality of life, selecting the most efficient type of interior design, and increasing their psychological well-being.

Discussion

Sustainable architecture has emerged as a modern approach in design and construction, aiming to reduce negative impacts on the environment and conserve natural resources. This architectural style focuses on efficient energy use, waste and pollutant reduction, and the utilization of renewable resources. In this context, environmentally friendly principles and materials are employed to create structures and spaces with the least destructive impact on the environment, using natural resources in a responsible manner. Sustainable design, as an integral part of this approach, aims to minimize environmental harm at every stage of design—from products and spaces to systems and cities. The primary goal of this approach is to reduce resource consumption, minimize waste, and create environments that balance the relationship between human, nature, and architecture harmoniously. This design represents a deep approach to architecture based on three fundamental principles: quality, future orientation, and respect for the environment. In fact, sustainable architecture, as a subset of sustainable design, focuses on three main pillars: **1. Resource Conservation**: This principle focuses on the efficient use of renewable energy and reducing dependence on fossil fuels, emphasizing smart management of natural resources. **2.**

Design for Lifecycle Return: In this section, designers have a responsibility to use materials that cause the least environmental pollution and are recyclable. **3. Human-Centered Design**: The most important principle of sustainable architecture, which is the focus of this article, is designing to meet human needs while also preserving the elements of the ecosystem chain—since the survival of these elements ensures human survival. In this article, the concepts of sustainable architecture and design are used, considering psychological and psychotherapeutic issues, to provide solutions for designing elderly care homes. The main goal is to create spaces that are not only environmentally sustainable but also have a positive impact on the mental and psychological well-being of their residents by applying these principles. In today's world, sustainable architecture plays a crucial role in designing spaces that contribute to both the environment and the mental and psychological well-being of humans, particularly the elderly. Designing elderly care homes using sustainable architectural principles can effectively reduce psychological issues among seniors and provide a space that enhances their quality of life. In designing elderly care homes with a sustainable architectural approach, the goal is not only to improve physical spaces but also to consider the psychological and emotional aspects of seniors. The use of sustainable architectural principles can have positive effects on the mental well-being of the elderly, as these principles involve designing spaces that help reduce stress, anxiety, depression, and feelings of loneliness. In this context, significant and noticeable differences between internal and external examples of elderly care homes have been examined, which can be related to the degree of application of these principles in the design environment.

International Case Studies Examined:

1. The Green House Project, USA
2. Dementia Village, Netherlands

These foreign examples are specifically designed with the explicit aim of promoting the mental health and physical well-being of elderly individuals while adhering to sustainable architectural design principles. The designs of these projects are especially focused on enhancing the psychological well-being of seniors and reducing psychological issues such as depression, anxiety, and isolation. These projects utilize social spaces, common areas, private rooms, open and green spaces, sustainable structures, and psychological impact assessments, employing natural light to strengthen the independence of seniors, reduce feelings of isolation, and improve their quality of life.

Domestic Case Studies Examined:

1. Mehr Elderly Home, Tehran
2. Alvand Elderly Home, Hamadan

Elderly care centers in Iran generally provide services for the care and supervision of elderly individuals. However, compared to global projects, they often focus more on care and medical aspects rather than on sustainable design and approaches based on well-being and quality of life. Elderly homes in Iran usually face limitations in terms of sustainable architecture and human-centered designs. Although the use of these centers is significantly increasing in Iran, psychological and psychotherapeutic considerations in the design of these centers remain at an early stage. This approach highlights the necessity for a review in the design of elderly homes in Iran to pay more attention to the psychological and social aspects of the elderly's lives. Therefore, based on the analyses conducted, it is suggested to model the design of domestic elderly homes after successful international examples. This action can help enhance the quality of these centers and improve the lives of elderly individuals, especially in cases where psychological support is needed.

Table 1. Comparison between Iranian and Foreign Samples

Features	Iranian Elderly Care Homes (Mahr, Alvand)	Dementia Village (Netherlands)	The Green House Project (USA)
Design Features	Typically simple design focused on medical needs	Village-like design with public and private spaces for seniors	Small and cozy residential units with green spaces and natural light
Care Approach	Primarily focused on medical and therapeutic care	Human-centered care and environmental design for well-being and independence	Focus on the independence of seniors with individualized and humanistic care
Social Environment	Limited social spaces, with group activities	Village community with spaces for interaction and social activities	Small units with common spaces for senior interaction
Sustainable Architecture	Limited use of sustainable architectural principles	Village-like design with attention to natural light, ventilation, and green spaces	Emphasis on natural energy utilization, green spaces, and the use of sustainable materials
Independence of Seniors	Seniors are generally more supervised	Seniors feel independent and interact within a natural community	Seniors live independently in small homes with responsibilities
Mental and Emotional Well-being	Less focus on mental and emotional well-being of seniors	Spaces for social interaction and maintaining seniors' spirits	High emphasis on mental and social well-being of seniors, daily cultural and social activities

Based on the comparisons conducted, it is evident that a successful design should not only address the physical and welfare needs of the elderly but also have a positive psychological impact on them. Therefore, the importance of incorporating psychological principles into the design of elderly care homes, particularly in comparison to the examined case studies, becomes essential. In this context, several key factors should be considered: color, light, water, ventilation, form, and visual appeal.

1- Colorin Architecture

In architecture, colors are not only aesthetic elements but also have profound effects on individuals' psychological, physiological, and emotional states. Sustainable design for elderly care homes should effectively utilize colors to create spaces that are not only visually appealing and pleasant but also promote psychological tranquility for the residents.

- **Calming Colors**: Studies have shown that cool colors such as blue, green, and purple can have positive effects on reducing anxiety and stress in elderly individuals. These colors evoke a sense of calm and help alleviate psychological tension, thereby reducing symptoms of depression and anxiety. **Blue**: The color blue, particularly in resting and sleeping areas, helps reduce stress and promotes mental tranquility. **Green**: The color green can enhance the sense of connection to nature and foster feelings of safety and calm in older adults. Green is also associated with improved focus and reduced stress. **Purple**: Traditionally associated with spirituality,

creativity, and tranquility, the color purple promotes a sense of peace and relief from stress. It is also effective in reducing anxiety and psychological tension.

- **Bright and Cheerful Colors**: In spaces designed for social interactions, such as community halls or art therapy rooms, warm colors like yellow, orange, and red can enhance feelings of energy and happiness. Yellow, in particular, is beneficial for uplifting mood and alleviating mild depression. **Yellow**: Yellow is commonly associated with optimism, energy, and creativity. While being a bright and stimulating color, it can evoke positive emotions. In environments where individuals might feel boredom or depression, yellow can help elevate mood and boost motivation. **Orange**: Orange is an energetic color that can evoke warmth, enthusiasm, and vitality. It stimulates feelings of excitement, joy, and liveliness, making it an excellent choice for uplifting and invigorating environments. **Red**: Red, due to its stimulating and energizing properties, can evoke feelings of excitement and intensity. However, in some individuals, it may lead to heightened anxiety or agitation and could cause an increase in heart rate or blood pressure.
- **Natural Colors**: In sustainable design, the use of natural colors inspired by the environment (such as wood or earthy tones) can enhance a sense of connection with nature among the elderly and positively impact their mental well-being. **Wooden Natural Colors**: Colors like light brown (cedar), oak, pine, or walnut, due to their association with nature and natural materials, create a sense of security, calmness, and stability in individuals. Light wooden tones (such as oak or pine) and darker wooden tones (such as walnut or cedar). **Earthy Colors**: Brown is one of the natural, warm colors. Psychologically, due to its association with nature, soil, and wood, it conveys a sense of security, comfort, and stability to individuals. **Beige**: Due to its qualities of softness, warmth, and naturalness, beige can create a cozy and pleasant environment for residents.

1. **Light in Architecture**: Light, whether natural or artificial, plays a crucial role in the perception of space and its functionality. Proper lighting can enhance focus, reduce fatigue, and generally contribute to better working and living conditions.
2. **Water in Architecture**: In various cultures, water symbolizes purity and renewal. Using water in architectural design, such as in fountains, ponds, or decorative elements, can help create a sense of tranquility and serenity in both indoor and outdoor spaces.
3. **Ventilation in Architecture**: Access to fresh air and high indoor air quality is essential for maintaining physical and mental health. Proper ventilation can help create a healthy and comfortable environment by reducing pollutants and inappropriate temperatures.
4. **Form and Visual Appeal in Architecture**: Forms can convey emotions and ideas of the architect. Each form can have different impacts on human feelings and behaviors. Circular forms typically evoke feelings of unity and softness, while angular forms can stimulate a sense of strength and solidity. The visual appeal of elderly care homes is crucial as it can have a positive psychological impact on residents, enhancing feelings of pride and value. Using diverse patterns and textures can make spaces more attractive and inviting. When these elements are effectively incorporated, considering the needs of the users in elderly care homes, they can create meaningful and sustainable experiences. The intelligent use of colors, lighting, water, ventilation, and various forms can help build a space that is not only soothing and calming but also provides positive stimuli for behavioral changes and enhances the quality of life and well-being of the elderly.This design approach can not only serve as an effective short-term solution but also as a model for designing elderly care homes in the future. Considering the growing number of elderly, adopting a creative and human-centered approach to designing these spaces can be a significant step toward improving their living conditions.

In designing structures for elderly care homes, which not only emphasize functional aspects but also have a significant impact on psychological treatment and mental well-being, several innovative elements can be focused on, integrating architectural science with principles of environmental psychology. In this regard, the following suggestions are provided:

1-Using natural and sustainable materials: Wood: Characteristics: Renewable, lightweight, durable, and good thermal insulation. Applications: Used in lightweight structures, walls, flooring, and furniture. **Natural stone:** Features: Durable, resistant to temperature changes, and with beautiful texture. Applications: Facades, flooring, and decorative details. **Natural brick:** Characteristics: Durable, thermal insulation properties, and suitable for natural ventilation. Applications: Walls and flooring. **Non-toxic colors:** Characteristics: Free from harmful chemicals, biodegradable, and suitable for indoor spaces. Applications: Walls and ceilings. **Natural insulation:** Characteristics**:** Made from sheep wool, cotton, or cork, non-toxic, and renewable. Applications: Walls, ceilings, and floors. **Sustainable flooring:** Characteristics: Uses recycled wood or bamboo, durable, and biodegradable. Applications: Public and private spaces.

2-Recycled and cost-effective materials: Recycled concrete, recycled wood, recycled natural fibers (wool or cotton), recycled tires (for flooring or sound insulation), recycled metals (steel and aluminum).

3-Renewable energy applications: Solar panels, small wind turbines, geothermal heating systems, hot water recycling systems, solar skylights.

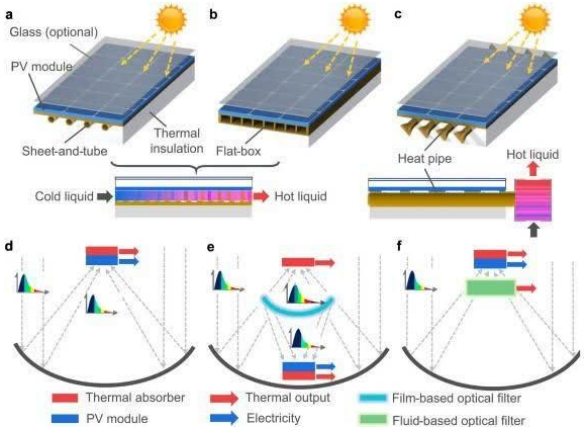

Figure 1: Schematic of Photovoltaic and Membrane Distillation (PV-MD) Integration Devices.

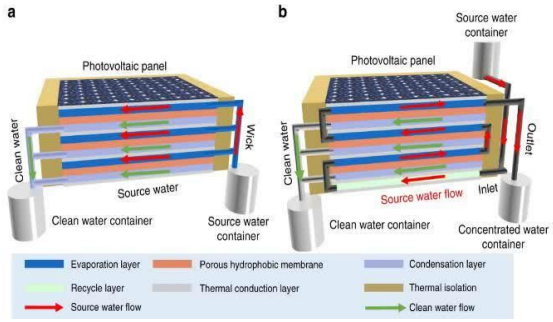

Figure 2: Designs of Liquid-Based PVT Collectors, (a) Plate and Tube Thermal Absorber, (b) Flat Channel Thermal Absorber, (c) Heat Pipe Thermal Absorber, Concentrated PVT Collector Designs:(d) Normal Design,(e) Spectral Split Design with Selective Reflective Optical Filter,(f) Spectral Split Design

4-Modern and smart technologies: Smart lighting and illumination control • Smart temperature and ventilation control • Smart audio systems and noise reduction • Smart monitoring systems: Security and peace of mind• Smart glass: Ability to change transparency and color

5-Sustainable Design and Connection to Nature (Biophilic Design): Biophilic Design: In sustainable design for nursing homes, applying biophilic design principles can have numerous positive effects on the mental well-being of the elderly. Biophilic design involves incorporating natural elements such as light, plants, and natural views, which enhance the sense of well-being and improve mental health. **Green and Natural Spaces:** Connecting to green spaces through large windows or garden courtyards and creating green roofs can help reduce stress and anxiety among the elderly. In natural environments, seniors can engage in calming activities such as walking in the garden, which has significant positive effects on mental health.

6-Adherence to Ergonomic Principles and Physical Comfort: These designs aim to reduce fatigue and physical strain for residents of nursing homes, ensuring easy movement and comfortable use of spaces. Ergonomic principles include aspects such as appropriate furniture height, comfortable design for chairs and beds, wide and obstacle-free corridors, proper lighting, and optimal temperature settings. These principles can be applied in the following areas: Open and Obstacle-Free Spaces, Wide Hallways, Ergonomic and Comfortable Furniture, Step-Free and Barrier-Free Design. In designing nursing homes, various spaces should be planned to be both functionally efficient and psychologically beneficial for residents. These spaces can include:

Recommendations:

The design of nursing homes should comprehensively address the physical, psychological, and social needs of the elderly. These spaces must both be functionally efficient and have a positive impact on the residents. A detailed analysis of the internal and external spaces is provided below.

1. **Private and Shared Rooms:** Rooms should be at least 15 to 20 square meters to provide sufficient space for elderly residents to move comfortably. Essential equipment includes appropriately elevated beds with comfortable mattresses, accessible wardrobes, and large windows or skylights to allow natural light. Decoration using soft and calming colors, artwork, and family photographs enhances comfort and familiarity. **Suggested Colors:** A combination of soft blue and pastel green can be an excellent choice for creating a calming and soothing atmosphere in elderly residents' bedrooms. Each of these colors independently has positive effects, and together they can provide an ideal environment for relaxation and psychological therapy. **Shared Rooms:** Shared rooms with multiple beds are suitable for elderly residents with similar needs. These rooms should be designed to fully meet safety and comfort standards. The use of ergonomic furniture and adjustable lighting creates an appropriate space for rest and social interaction among residents. **Suggested Colors:** Soft blue and pastel green: The combination of these two colors creates a calm and natural space that helps reduce anxiety and improve social interactions.

2. **Living and Relaxation Spaces:** Common areas for rest and social interaction should include comfortable furniture with ergonomic design that is adjustable in height and angle. Soft, adjustable lighting, along with sound insulation on walls and ceilings, helps create a calm and comfortable space. **Suggested Colors:** Soft pink and beige or cream: This combination creates a sense of warmth and comfort, providing a cozy and inviting space for relaxation.

3. **Garden and Green Space:** The garden and green space should be designed to reduce stress, enhance well-being, and promote social relationships among elderly residents. Wide, obstacle-free walking paths, comfortable benches and seating, and fragrant plants and flowers create a serene and beautiful environment. An area for gardening can also provide physical activity and a sense of independence for residents. **Suggested Color:**
Earthy and beige with touches of blue and green: This color combination is warm and calming,

aligning with principles of sustainable architecture. Earthy tones and beige add warmth and comfort to the space, while shades of blue and green evoke a sense of tranquility and connection to nature.

4. **Kitchen and Dining Area:** The kitchen should be designed with safety in mind, featuring work surfaces at appropriate heights and lightweight appliances. Large dining tables with comfortable seating are essential for group dining and sufficient space for elderly residents to move freely. Using soft and suitable colors in the decor aids in comfort and mental well-being for the residents. **Suggested Color:** Soft yellow + light green: This combination brings a sense of freshness and joy to the kitchen and dining area. Light green with soft yellow brightens and makes the space more pleasant, and it can even stimulate appetite.
5. **Technology and Entertainment Space:** Access to computers, tablets, and high-speed internet can help elderly residents stay connected with family and friends. Holding classes to teach how to use these devices can enhance the digital skills of the elderly.

Suggested Color: Soft orange + olive green: This combination creates a dynamic and energizing space that can encourage elderly residents to engage with technology and participate in entertaining activities.

6. **Therapeutic and Care Spaces:** These spaces should be designed to best meet the medical and psychological needs of elderly residents. Medical rooms, rehabilitation areas, and specialized care units should include appropriate equipment and easy access for the elderly. **Suggested Color:** Soft blue or light green: These colors create a calm and natural space that helps reduce stress and fosters a sense of relaxation and comfort. They are particularly suitable for therapeutic and care rooms.
7. **Service Spaces:** These spaces include medical/therapy rooms, laboratories and test rooms, rehabilitation rooms, specialized care rooms, kitchen and dining area, pharmacy or medicine room. These spaces should be designed to ensure safety and access to essential equipment and services. **Suggested Colors:** Matte white or pearl for a sense of cleanliness and brightness, light gray for a modern and professional look in kitchens and utility spaces, and soft blue to evoke a sense of cleanliness and tranquility in bathrooms and laundry rooms. Using matte or semi-gloss finishes also helps reduce reflection and facilitates cleaning.
8. **Recreational and Social Spaces:** These include socialization/community halls, cinema or theater rooms, music and art halls, libraries, group games, a fitness club, and entertainment rooms such as a billiard or chess room. These spaces are essential for enhancing social interaction and entertainment for elderly residents. **Suggested Colors for Social Halls and Art Rooms:** Gray, to reduce light reflection and create a sense of interaction. For sports spaces, a combination of bright orange and lemon yellow is suitable, as it helps increase motivation and creates a sense of vitality and fun.
9. **Leisure and Relaxation Spaces:** These include green spaces and gardens, pergolas and courtyards, tea houses or cafes, and mood care rooms. These spaces help elderly residents to relax in a peaceful and enjoyable environment and engage in social interaction. **Suggested Colors:** Olive green or sky blue combined with natural wood tones help create a connection to green spaces, evoke a sense of tranquility, and enhance warmth and naturalness.
10. **Safety and Accessibility Spaces:** These include wide hallways and easy access, elevators for access to different floors, security systems such as surveillance cameras and secure doors, and assistance systems for the elderly, including help buttons in rooms and bathrooms. **Suggested Colors:** Light gray or white for walls or hallway backgrounds to make safety signs and equipment more prominent. Red and yellow are used for warning signs, fire extinguishers, and directional guides.

Educational Space: Has an important role in the design of nursing homes. This space not only improves the physical and mental health of elderly residents but also provides them with opportunities for learning, social interaction, and entertainment. Key features of the educational space include suitable halls for conducting training sessions, lectures, and various workshops with modern equipment such as video projectors and whiteboards, a counseling center for processing psychological and social issues, technology classes to teach computer and internet use, and practical workshops such as arts and crafts and cooking.This space should be designed to allow elderly residents to use it easily and feel a sense of independence, value, and social participation. **Suggested Colors:** Soft blue and light-yellow help to create a sense of focus and enhance attention.

3- Conclusions

This article examines the importance of integrating sustainable architectural principles and environmental psychology in the design of nursing homes to enhance the tranquility and well-being of the elderly. Through an interdisciplinary approach to designing these spaces, each section is crafted to meet the psychological and social needs of the residents. The use of architectural elements such as form, water, ventilation, and the smart use of colors in the architecture of these homes plays a crucial role in reducing anxiety and creating a sense of security and stability.This article demonstrates that attention to both structural and psychological aspects in the design of these caregiving spaces not only meets the physical needs of elderly individuals but also, by considering their psychological and social well-being, enables the restoration of confidence and the creation of a sense of calm.The use of sustainable methods in constructing these homes, in addition to reducing costs and increasing efficiency, creates a calming

and stimulating environment by integrating natural elements and smart design. This contributes to improving the residents' mental health. Overall, this article emphasizes that integrating sustainable architectural principles and psychological impacts in designing nursing homes serves as an effective approach for sustainable and innovative design of these spaces in the future. This approach enables the improvement of the quality of life for elderly individuals by creating a safe, calm, and supportive environment.

*1, 2, 3 **authors contributed equally to this work.**

References

1. Bishop, P. A., & Anderson, C. (2015). "Lighting and its Psychological Impact on Older Adults: A Review of the Literature".
2. Davoodi, M., (2023). Form and beauty in architectural design and analysis of lightweight structures in terms of structural design. The 19th international conference on civil engineering, architecture, and urban planning, Iran, 1-10, https://www.researchgate.net/publication/382485030.
3. Davoodi, M., & Akhlaghdoost, S. (2024). Principles of Sustainable Architectural Design in Environmental Conservation. The Third International Conference on Civil Engineering, Architecture, and Information Technology in Urban Life, Tbilisi, Georgia, 1-8, https://www.researchgate.net/publication/382648854.
4. Davoodi, M., & Akhlaghdoost, S. (2024). Investigating Styles in Interior Architecture and the Impact of Beauty in Creating Spaces. First international conference on architecture, advanced technologies and construction management, Khatam university, Iran, 1-11, https://www.researchgate.net/publication/382635862.
5. Davoodi, M., & Fotuhi, E. (2023). Principles of Airport Design in Hot and Humid climates with a Focus on Lightweight Structures as a Design Element in Architecture. *Scientific journal of Research studies in Future Art*, *1*(1), 1-13, https://journalhi.com/index.php/arc/article/view/161/230.
6. Davoodi, M., & Zanjirei, S. (2025). Identification and Necessity of Using Sustainable Architecture in Smart Green Buildings. 9th. International Conference on Researches in Science & Engineering & 6th. International Congress on Civil, Architecture and Urbanism At: Kasem Bundit University, Bangkok, Thailand, 1-10, https://www.researchgate.net/publication/383858983_Identification_and_Necessity_of_Using_Sustainable_Architecture_in_Smart_Green_Buildings.
7. ESMAEELI, A., DEHGHAN, D. E., ANSARI, S. A., & SALIMI, M. (2015). SUSTAINABLE TOURISM AND ITS RELATIONSHIP WITH ARCHITECTURE IN CHAHARMAHAL AND BAKHTIARI PROVINCE. INTERNATIONAL CONFERENCE ON RESEARCH IN CIVIL ENGINEERING, ARCHITECTURE, URBAN PLANNING AND SUSTAINA, SID. https://sid.ir/paper/909133/en.
8. Fauzan, F., Putra, N. E., & Adriana, M. (2023). "Sustainable Approaches in Designing Elderly Homes: A Case Study in Indonesia." JurnalArsitektur Arcade, Universitas Kebangsaan.
9. Farhan, M., & Nasar, J. (2017). "Sustainable Design in Nursing Homes: Integration of Renewable Energy Systems".
10. Feiereis, H. (1987). "Environmental Design and the Well-being of the Elderly: A Study in the Context of Nursing Homes." Zeitschrift für Gerontologie, 20(1), 44–48.
11. Gracia, M., & Ferreiro, J. (2016). "Impact of Light and Color on the Elderly: A Comparative Study in Nursing Homes".
12. Goudarzi, M. (2021). "An Investigation of the Impact of Architectural Design on the Quality of Life of Elderly Individuals: A Case Study of the Mehr Elderly Care Home in Tehran." Iranian Journal of Architectural Research.
13. Hosseini, M. (2020). "The Role of Light in Improving the Quality of Life of the Elderly: A Case Study of Nursing Homes." Journal of Health Research.
14. Hébert, R. S., & Bravo, G. (2016). "Dementia Villages: A New Model of Long-Term Care in the Netherlands." Journal of Aging & Social Policy, 28(3), 233–247.
15. Kahansal, S. (2021). "The Role of Architectural Design in Enhancing the Quality of Life for Elderly Individuals: A case study of Alvand Elderly Care Home, Hamadan." Iranian Journal of Social Studies.
16. Kuo, T. Y., Chen, P. C., & Hsieh, S. H. (2021). "A Framework for Green Nursing Home Design and Sustainability." Journal of Aging and Environment, 35(3), 234–256.
17. Karlsen, J. R. (2010). "Color and Architecture: Designing the Exterior of Buildings".
18. Mahmoudzadeh, S. (2018). "Light and Its Effects on the Elderly: A Case Study of Nursing Homes." Journal of Environmental Design Studies.
19. Ministerie van Volksgezondheid, Welzijnen Sport (2016). "Evaluation of the Dementia Village in the Netherlands".
20. McLennan, J. F. (2004). "The Philosophy of Sustainable Design." Ecotone Publishing.
21. Rafiei, H., & Hashem, H. (2018). "Impact of Environmental Design on the Well-being of Elderly Residents in Nursing Homes: A Case Study in India." Indian Journal of Public Health, 9(11), 1430.
22. Roberts, P., & Teitelman, J. (2015). "The Green House Model of Care: A Case Study in Transforming Elder Care." The Gerontologist, 55(2), 184–191.
23. Salimi, K., & Abbasi, M. (2022). "Developing Nursing Homes with a Green Architecture Approach." National Conference on Energy and Sustainable Architecture.
24. Samani, A. A., (2023). Analyzing Trends in Healthcare Construction Projects in California, 1-5, https://github.com/Azamsamani/Construction-analysis-/tree/main.
25. Samani, A. A., & Abbasi, N. (2024). Application of Architecture as a Therapeutic Tool: Design Solutions for Residential Addiction Treatment Camps Based on Environmental Psychology Principles to Enhance Motivation for Quitting. *Scientific journal of Research studies in Future Art*, *2*, 27-31, https://journalhi.com/index.php/arc/article/view/130/168.
26. Samani, A. A., & Davoodi, M. (2024). Sustainable Architecture in Service of the Homeless: Structural Analysis and Psychological Impact of Prefabricated Housing to Improve Quality of Life. *Scientific journal of Research studies in Future Art*, *2*, 46-54,

https://journalhi.com/index.php/arc/article/view/166/203.

27. Salimi, M. (2020). "The Role of Architectural Spaces in Enhancing the Quality of Life for the Elderly: A Case Study of Mehr Elderly Care Home, Tehran." Iranian Journal of Architecture and Urban Studies.

28. Scholz, P., & Lowe, R. (2004). "Wood and Aging: Designing for the Elderly".

29. United Nations Environment Programme (UNEP). (2022). "Sustainable Buildings and Climate Initiative".

30. UNEP (2020). "Guidelines for Sustainable Building Design in Healthcare Facilities".

31. Wang, Y., & Song, H. (2020). "Sustainable Architecture for Elderly Care Facilities: Lessons from Case Studies." International Journal of Environmental Studies.

32. Wells, M., & Sample, P. (2018). "Living Well in a Dementia Village: A Case Study of a New Model of Dementia Care in the Netherlands." Health & Place, 51, 70–75..