

KAJIAN TEORI: PERANCANGAN ELDERLY HOUSE DENGAN PENDEKATAN ARISTEKTUR PERILAKU**Nurlisa Ginting¹, Agnes Brigita Silalahi²**¹*Arsitektur, Fakultas Teknik, Universitas Sumatera Utara, Kota Medan, 20155, Indonesia*²*Center of Excellence for Sustainable Tourism, Universitas Sumatera Utara, Medan, Indonesia, 20155***Corresponding Author: agnesbrigitaslh02@gmail.com***Abstract**

The elderly house serves as a social facility designated for elderly individuals, especially those who live alone without family support. This type of building integrates a behavioral architecture approach, focusing on how the physical environment affects residents' social interactions, well-being, and quality of life. Through literature analysis and case studies, this research identifies design elements such as accessibility, natural lighting, and social spaces that contribute to fostering an inclusive community. The study finds that environments designed with user behavior in mind can enhance a sense of security, encourage social interaction, and support independence. Therefore, an elderly house can be a social facility that not only meets the basic needs of the elderly but also enriches the residents' social and emotional lives.

Article History*Submitted: 27 Maret 2026**Accepted: 31 Maret 2026**Published: 1 April 2026***Key Words***Elderly house, elderly, behavioral architecture***Abstrak**

Elderly house menjadi salah satu fasilitas social yang diperuntukkan bagi para lansia, khususnya lansia yang hidup sendiri tanpa di dampingi keluarga. Bangunan elderly house yang mengintegrasikan pendekatan arsitektur perilaku dengan focus pada bagaimana lingkungan fisik data mempengaruhi interaksi social, kesejahteraan, dan kualitas hidup penghuni. Melalui analisis studi literatur dan studi kasus, penelitian ini dapat mengidentifikasi elemen-elemen desain, seperti aksesibilitas, pencahayaan alami, dan ruang social yang berkontribusi pada pengembangan komunitas yang inklusif. Setelah melakukan studi literatur dan studi kasus ditemukan bahwa lingkungan yang diciptakan dengan mempertimbangkan perilaku pengguna yang dapat meningkatkan rasa aman, mendorong interaksi social, dan mendukung kemandirian. Oleh karena itu, elderly dapat menjadi fasilitas social yang dapat mendukung kehidupan lansia dengan tidak hanya memenuhi kebutuhan dasar, tetapi juga memperkaya kehidupan social dan emosional penghuni.

Sejarah Artikel*Submitted: 27 Maret 2026**Accepted: 31 Maret 2026**Published: 1 April 2026***Kata Kunci***Elderly house, lansia, arsitektur perilaku***INTRODUCTION**

Indonesia is one of the countries experiencing an increase in its elderly population. Based on Badan Pusat Statistik (BPS) in 2022 the proportion of elderly people in North Sumatra reached 8.84%, with an additional 16.34% categorized as pre-elderly who will enter old age in the future. This condition needs to be recognized by the government in order to develop appropriate planning for the care and protection of the elderly in the years ahead. Age-friendly housing that provides adequate services and care has become one of the needs acknowledged by the government. However, existing elderly housing still lacks support for the well-being of older adults due to limited facilities and activities. (Dahlia Apritasari & Antoni, 2023)

Mental activity in older adults can be understood in both positive and negative aspects. On the positive side, older adults may demonstrate improved comprehension, deeper thinking, and greater wisdom. On the negative side, however, they often experience memory decline, reduced learning capacity, and changes in personality, such as increased suspicion, stubbornness, rigidity, and indifference, along with emerging feelings of loneliness and loss. Social factors also influence the psychological condition of older adults, with the most

significant being changes in social roles and the loss of relatives and social relationships. These gradual shifts in social status and interpersonal connections can, in turn, trigger feelings of loss and isolation among the elderly. (Xu, 2024)

As individuals age, the decline in physical capacity among older adults necessitates support and assistance in their daily lives. Essential activities of daily living, such as eating and dressing, often require additional help (RUKUN Senior Living, 2020). These physical and mental limitations can affect both mobility and social interaction among the elderly. However, a key issue arises from the limited time and resources available within families to provide long-term care for older adults. This condition often leads to feelings of loneliness among the elderly. High work demands frequently constrain individuals' ability to devote sufficient time and attention to their parents. This situation calls for innovative solutions to address the tension between professional responsibilities and familial obligations toward elderly care. (Fathan Alfariza & Soewarno, 2024)

The progressive decline in both physical and mental conditions, combined with families' limited capacity to devote time to older adults, constitutes a significant challenge in promoting the well-being of older adults. In response to this issue, elderly housing can serve as a viable solution to support the quality of life of older adults. Such facilities offer not only residential accommodation but also a range of supporting amenities that are specifically designed to respond to the physical requirements of older adults. Furthermore, elderly housing can also play a role in addressing the mental and emotional needs of older adults who require additional support.

Within the architectural context, lived experiences, habitual patterns, and the physical environment play a significant role in shaping human behavior. (Tandal & Egam, 2011) The application of behavioral architecture can be utilized to design spaces that accommodate the diverse needs of individuals. Appropriate architectural design can encourage individuals toward more positive outcomes by creating environments that support well-being and productivity. Furthermore, from a behavioral perspective, architecture can function as a strategic tool to promote positive behavior through the provision of physical elements that address needs ranging from the most fundamental to more complex levels.

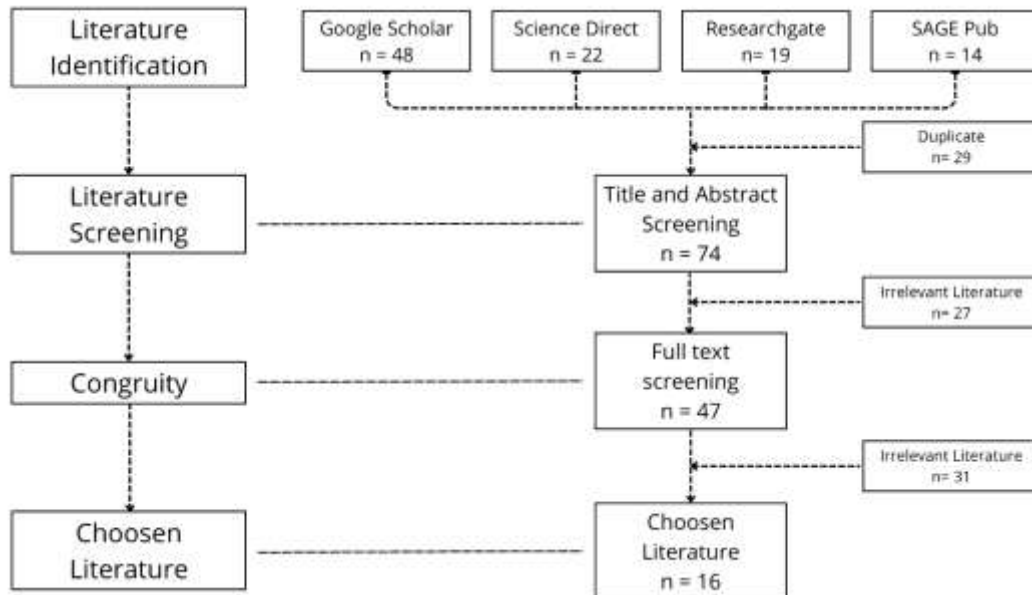
Silalahi Village is located in Silahisabungan District, Dairi Regency, North Sumatra, and forms part of the Lake Toba region. The village is characterized by its scenic landscape and relatively abundant natural resources. It has an estimated population of 5,891 residents. These conditions provide a supporting basis for the proposed development of an elderly housing facility in Silalahi Village. The relatively low population density, combined with a natural environment that offers a sense of tranquility, is considered to have the potential to attract families to entrust and accommodate elderly individuals within such a facility.

The behavioral architecture approach adopted in the design of this elderly housing facility positions the relationship between users and the built environment as a fundamental consideration. (Kezia et al., 2021). Accordingly, this study on the design of an elderly house with a behavioral architecture approach aims to provide residential facilities that address the comprehensive needs of older adults, both physical and non-physical. Through this approach, the proposed development is expected to offer a living environment that is safe, comfortable, and appropriate for elderly residents.

METHOD

The method employed in this study is a literature review approach, conducted through the collection, examination, and analysis of relevant sources such as research articles and related publications to obtain information aligned with the research topic. The search strategy involved initially identifying articles with similar titles in both English and Indonesian, followed by the use of English keywords, namely "Elderly House" and "Behavioral

Architecture". A total of 103 research articles were identified, which were then screened based on their relevance to the study, resulting in 16 selected articles. The selected publications were issued within the last five years, ranging from 2019 to 2024. These articles were sourced from several platforms, including Google Scholar, ResearchGate, and ScienceDirect.



LITERATURE REVIEW ELDERLY HOUSE

The term elder refers to older individuals, while house denotes a dwelling or residence. Accordingly, an elderly house can be understood as a residential facility for older adults, commonly referred to as a nursing home or residential care facility. According to the Indonesian Dictionary (KBBI), this term describes a place that provides both accommodation and care services for older adults who may be unable to live independently or who require assistance in their daily activities.

With advancing age, manusia akan mengalami beberapa perubahan fisiologis, they undergo various physiological changes, including visual changes (decline in vision), hearing changes (reduced auditory capacity), cognitive changes (decreased ability to process information), and muscle changes (loss of strength in muscles and joints). In response to these physiological transformations in older adults, age-friendly design principles are applied to address the diverse needs arising from such conditions (Wardhani et al., 2024). Although older adults commonly face declines in physical health and overall condition, the proportion of those living independently continues to rise (Shahril & Zahari, 2020) In this context, four primary design principles are commonly applied in developing environments that are responsive to the needs of the elderly, namely:

- Safety, establishing an environment that ensures safe mobility and supports secure daily activities.
- Support, creating an environment that facilitates assistance while promoting comfort and independence in everyday living.
- Cognition, designing an environment that enhances cognitive functioning and reduces anxiety by supporting spatial orientation and environmental understanding.
- Wellbeing, shaping an environment that fosters a sense of enjoyment and empowerment, enabling older adults to remain physically and socially active within the community.

The allocation of land for healthcare, recreational facilities, and supportive services for the elderly holds significant potential as a viable development sector. The allocation of land for healthcare, recreational facilities, and supportive services for the elderly holds significant potential as a viable development sector. However, factors such as intense property competition, noise pollution, traffic congestion, high maintenance costs, and other urban challenges have led many older adults to prefer returning to rural areas.

In carrying out daily activities, individuals inherently require space, both in physical and spatial terms. Spatial standards and requirements differ across generations, particularly with regard to safety and comfort. Environments that provide a pleasant and comfortable atmosphere can support increased productivity among older adults, while spaces that are monotonous and lack comfort may contribute to the emergence of depressive conditions (Ricardo & Solikhah, 2023). Accordingly, several key aspects should be considered in designing spaces that ensure safety and comfort for older adults, as follows:

- a. Flooring, Floor materials should be selected with consideration for the needs of older adults. Slippery finishes must be avoided to minimize the risk of accidents, while textured or rubberized surfaces can provide safer alternatives.
- b. Furniture, the use of furniture should be limited to essential items to avoid obstructing circulation and movement. Excessive furniture increases the risk of injury if accidentally bumped into; therefore, only necessary furnishings should be provided.
- c. Vertical Circulation, In buildings with more than one level, the design of stairs must be carefully addressed. Non-standard step dimensions can create difficulties for older users. Thus, the integration of ramps and elevators should be considered to support safe and accessible vertical mobility.
- d. Bathroom, Bathroom materials and fixtures must be selected carefully. Seated toilets are generally more suitable for older adults, although squat toilets may still be used. The primary concern is to ensure that bathroom activities can be carried out safely and comfortably.
- e. Bedroom, the height of the bed should be designed to allow ease of access, enabling older adults to get on and off comfortably. Proper ventilation is also essential to ensure adequate air circulation and to allow natural daylight to enter the space.
- f. Surrounding environment, in addition to the aspects above, it is important to consider and provide a supportive surrounding environment that meets the needs and comfort of older adults. This may include facilities such as exercise areas, gardens, and other amenities that are easily accessible.

BEHAVIORAL ARCHITECTURE

Behavior can be understood as the result of the dynamic interaction between humans and their environment, expressed through cognitive processes, emotional responses, and actions (Notoatmodjo, 2014). This behavior is shaped by a combination of biological, psychological, and social influences. Behavioral architecture is an architectural approach that incorporates insights from human psychology into the design process, a concept that began to emerge in the United States during the mid-20th century. (Halim, 2005)

Based on the manner in which individuals respond to various stimuli, human behavior can be classified into two categories (Averina & Raadiyah, 2023), namely :

1. Covert behavior refers to an individual's response to stimuli in an internalized form. Such responses are reflected in processes such as perception, attention, and attitude, and are not directly observable by others.
2. Overt behavior refers to an individual's response to stimuli in the form of observable actions. In this case, the response is expressed through actions or behaviors that can be directly perceived by others.

According to Carol Simon and Thomas G. David, several key principles should be considered when designing buildings based on a behavioral architecture approach, including:

- Buildings should be conceived to communicate effectively with their users. The architectural form and expression need to be clear and intuitive, enabling users to readily interpret the building's function.

The criteria that should be fulfilled for a building to be comprehensible and appreciable by users include:

- a Legibility of function: The design should clearly express the primary function of the building.
 - b Appropriate scale and proportion: The relationship between the dimensions of building elements should be harmonious and visually comfortable.
 - c Material visibility: The use of materials should be clearly expressed and aligned with the overall design concept
- Buildings should be designed to accommodate a range of user activities in a manner that is both physically and psychologically comfortable and engaging.
 - User behavior and conditions should serve as primary considerations in the architectural design process.

DISCUSSION

An elderly house is a residential facility specifically designed to accommodate the care needs of older adults. It is developed with careful consideration of accessibility and the provision of facilities that support both the physical and mental well-being of its users. This approach responds to the physiological changes that occur with advancing age. Despite the decline in health conditions, the proportion of the elderly population continues to increase each year. In designing age-friendly environments, four primary principles are applied—safety, support, cognition, and well-being—which collectively contribute to enabling older adults to live independently in a safe and comfortable manner..

Elderly housing incorporates a variety of facilities with diverse spatial requirements. These spatial needs must be aligned with their respective functions to create environments that are both effective and comfortable. Spaces that offer a pleasant and supportive atmosphere can enhance the productivity of older adults, whereas monotonous and less conducive environments may contribute to depression (Ricardo & Solikhah, 2023). Several key aspects should therefore be considered in designing safe and comfortable spaces for the elderly, including flooring, furniture, vertical circulation, bathrooms, bedrooms, and the surrounding environment.

The application of behavioral architecture in elderly housing extends beyond addressing the influence of the physical environment on emotions, behavior, and well-being. It must also prioritize the safety and security of residents. Communal spaces, in particular, should be designed to facilitate comfortable social interaction and engagement among users. In addition, the use of bright and contrasting colors—especially within corridor areas—can function as clear visual cues, assisting older adults in recognizing and differentiating spaces within the building.

Based on findings derived from the literature review, a comparative study was conducted on four buildings with functions as elderly housing facilities, as presented in the following table:

N o.	Kerselaere Residential Care Center	Residential Care Home Andritz	Aomori Elderly Nursing Home	Elderly Care Skarvet	House of The Elderly In Palaudaries
1.	Bathroom	Bathroom	Bedroom	Aula Pertemuan	Bathroom
2.	Kitchen	Meeting Room	Kitchenette	Physiotherapy Facility	Bedroom
3.	Storage Room	Kitchen	Staff Toilet	Bedroom	Communal Space
4.	Walk-In Closet	Nurse Room	Nurse Room	Dining Area	Kitchen
5.	Communal Space	Bathroom	Storage Room	Communal Space	Hall
6.	Balcony	Storage Room	Receptionist	Conservatory	Office
7.	Bedroom	Dining Area	Dining Area	Bathroom	Nurse Room
8.	Dining Area	Office	Office	Kitchen	Therapy Room
9.	Staff Room	Archive Room	Kitchen	Nurse Room	Receptionist
10		Communal Space	Archive Room		
11			Communal Space		
12			Therapy Room		
13			Bathroom		

The comparative analysis of the four case studies indicates that the spatial components within an elderly housing facility include the following:

- a) Bedrooms
- b) Bathrooms
- c) Dining areas
- d) Kitchen
- e) Communal spaces
- f) Staff / Nursing rooms
- g) Physiotherapy facilities
- h) Archive room
- i) Storage room
- j) Staff toilets
- k) Office spaces

Based on insights derived from the literature review, a comparative study was conducted on four buildings employing a behavioral architecture approach, as presented in the following table:

No.	Zhongshan Kaiyin Nursery School	Nursing Home Gartner Neururer	The Hawkhead Centre	Lasalle College Of The Arts	The School For Blind And Visually Impaired Children
1.	Building Function: Children's School (Playgroup)	Building Function: Elderly Housing	Building Function: Facility for the Visually Impaired	Building Function: Art School (University)	Building Function: Facility for the Visually Impaired
2.	Concept: Creating a spatial experience through the interplay of visual elements and light, evoking the sensation of moving through an urban environment.	Concept: An integrated building mass composition that establishes a cohesive relationship with the surrounding landscape.	Concept: Designing interconnected spaces with a prominent roof form that symbolizes wings, providing shelter for all activities beneath.	Concept: Developing a building that reflects a strong sense of creativity within the campus environment.	Concept: An integrated massing strategy that harmonizes the building with its landscape context.
3.	Building Form: A single elongated and solid mass, optimizing circulation and natural lighting.	Building Form: Three rectangular, solid masses, with one portion oriented toward a shared landscape.	Building Form: Two integrated masses in the form of wings and a rectangular volume.	Building Form: A single cubic building mass.	Building Form: A rectangular, solid mass, with one side oriented toward the landscape.
4.	Interior: <ul style="list-style-type: none"> • Use of bright and contrasting colors • Unique forms and geometries • Safe material selection • Adequate lighting • Proper ventilation • Flexible spatial arrangements 	Interior: <ul style="list-style-type: none"> • Strong contrasting colors • Optimized lighting • Materials with varied textures • Tactile elements • Flexible spaces • Connection to nature • Emphasis on art and culture 	Interior: <ul style="list-style-type: none"> • Strong contrasting colors • Optimized lighting • Materials with varied textures • Tactile elements • Flexible spaces • Connection to nature • Emphasis on art and culture 	Interior: <ul style="list-style-type: none"> • Use of colors adjusted to spatial functions • Adequate lighting • Organized furniture layout to enhance comfort • Flexible spatial arrangements 	Interior: <ul style="list-style-type: none"> • Strong contrasting colors • Optimized lighting • Materials with varied textures • Tactile elements • Flexible spaces • Connection to nature • Emphasis on art and culture

The comparative analysis of the four buildings employing a behavioral architecture approach reveals the following:

- a) The buildings provide adequate lighting, incorporating both natural and artificial sources.
- b) The use of color is adjusted according to the function of each space to create environments that are both comfortable and safe.
- c) The spaces are designed to be flexible.
- d) The design maintains a connection with nature.
- e) Safe and appropriate materials are utilized.
- f) Furniture selection and arrangement are carefully organized to support a comfortable environment.

CONCLUSION

Elderly housing represents a comprehensive residential solution for older adults, integrating aspects of living, care, and community to create an environment that supports both physical and mental well-being. The findings indicate that an elderly housing facility should incorporate several essential spaces, including bedrooms, bathrooms, dining areas, kitchens, nursing rooms, therapy rooms, and communal spaces. The planning of elderly housing through a behavioral architecture approach results in an environment that not only fulfills physical needs but also promotes the mental and social well-being of its residents through design strategies that are responsive to user behavior.

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