

Senior Housing Design Concepts for the Elderly with Alzeimers

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Abstract: The number of elderly people in Indonesia shows a continuous increase, in particular an increase in the number of Alzheimer's sufferers has been detected. One of the right places for Alzheimer's elderly is Senior Living housing which is specifically designed to meet the needs of the elderly, both physically, emotionally and socially, so that it can provide a safe, comfortable place to live to support the quality of life of Alzheimer's elderly who are starting to experience limitations in daily activities. The observation method of data collection, followed by analysis carried out on the behavior. The elderly Alzheimer's identified short-term memory loss, disorientation in time and place, difficulty in recognizing faces and objects, problems in speaking and finding words, changes in mood, anxiety or irritability. The building design, from outdoor design to interior design, along with the furniture prepared must be able to reduce the deficiencies of Alzheimer's sufferers. The Implication for Design will be in the Outdoor and Indoor Space Design Concept, both in terms of design layout, landscaping, signage, window size, use of outdoor, indoor and interior material colors, use of acoustic walls, arrangement of distances between spaces and selection of outdoor and indoor building materials and the right interior. Improving the conditions of the elderly with Alzheimer's, one is from creating a good environment which is then supporting the physical and psychological health of them.

Keywords: Elderly; Alzheimer; Design for Elderly; Senior Housing; Behavioral Architecture; Behavioral Design.

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I. INTRODUCTION

Indonesia is currently facing demographic challenges with the increasing number of elderly people. There are around 9.92% of Indonesia's population aged 60 years and over (Data from the Central Bureau of Statistics, 2020). The dependency ratio for the elderly population increased to 10.8% in 2021 and continues to increase to 13.82% in 2022, indicating that every 100 people of productive age aged 15-59 years must support at least 17 elderly people, and this figure is expected to continue to increase. This increase is a major concern in the field of health and social welfare, especially in providing adequate and friendly housing facilities for the elderly (Central Statistics Agency Data, 2022).

The Health Social Security Administering Agency (BPJS) recorded an increase in participants with the number of Alzheimer's diagnoses reaching 87% in 2022 in Indonesia. One condition that is often experienced by the elderly is Alzheimer's, almost 10 million new cases of Alzheimer's occur every year (WHO data, 2019). In Indonesia, in 2016 it is estimated that there will be 1.2 million people with Alzheimer's (ODD). This figure is projected to increase to 2 million people by 2030.

Elderly people with Alzheimer's condition need a physical and mental environment that is safe, easy to

recognize, and supports daily activities independently or with assistance. Not only physically, elderly people also experience cognitive, mental, spiritual and psychosocial changes (Kholifah, 2016). In general, the psychological problem that usually occurs in the elderly is loneliness. Loneliness can also be interpreted as feeling marginalized, isolated from other people, because you feel different from other people (Probosuseno, 2007). Social support is a major factor fighting loneliness (Tomaka, Thompson, and Palacios). Therefore, an architectural approach is needed that considers user behavior, or known as Behavioral Architecture, to create spaces that are able to respond to the specific needs of elderly residents with Alzheimer's.

Data from the Central Statistics Agency shows that East Jakarta has the highest number of elderly people in DKI Jakarta, namely around 250,600 people (Untar Journal, 2024). As one of the areas with a high number of elderly residents, but there are still not many special residential facilities for the elderly that are designed specifically for Alzheimer's needs, there are still many senior housing that adopt a standard approach without paying attention to aspects of psychological comfort and spatial orientation for the elderly. In fact, the physical environment has an important role in improving the quality of life of the elderly, reducing confusion, and supporting social involvement.

Through a behavioral architecture approach, senior housing design can be developed to become an environment that is adaptive to elderly behavior patterns, by paying attention to factors such as clear wayfinding, optimal natural lighting, safe open spaces, and a familiar and calming atmosphere (Senthong, 2024). This approach not only improves the quality of life of residents, but also supports the performance of nurses in providing the best service.

Based on this background, the author is interested in making a final project by designing senior housing specifically for Alzheimer's sufferers in Jakarta. This design will use the implementation of Behavioral Architecture. This application is expected to be able to solve problems by presenting an innovative and safe design so that it can create comfort for Alzheimer's elderly around the DKI Jakarta area.

- Identify behavioral and space needs for elderly people with Alzheimer's.
- Apply the principles of behavioral architecture in designing senior housing in Jakarta.
- Plan and design senior housing specifically for Alzheimer's with various facilities that can support the activities of the elderly based on the perception and behavior of the elderly in it.
- Plan and design senior housing specifically for Alzheimer's that considers the safety and comfort of elderly people in East Jakarta

II. LITERATURE REVIEW ON SENIOR HOUSING FOR ELDERLY WITH ALZHEIMERS

➤ Senior Housing

Senior housing is a type of residence specifically designed to meet the needs of the elderly, both physically, emotionally and socially. Senior Housing aims to provide a safe, comfortable place to live and support the quality of life of the elderly, especially when they begin to experience limitations in daily activities (Arxiv, 2023). Different from ordinary houses, senior housing considers aspects of ergonomics, accessibility and social interaction between residents. Senior Housing can also be said to be a Premium Class Nursing Home which has buildings that are more adapted for seniors or the elderly.

Every day the elderly have activities that have been prepared by the activity team. Wellness services aim to provide elderly people with a better quality of life. Senior Housing has the same functions and objectives as Nursing Homes in general, but has a target market of elderly people from the middle to upper economic class. Senior Housing has

more facilities and better care, in a safe environment to help senior citizens live comfortably in their environment.

There are various types of senior housing, ranging from independent living, assisted living, to intensive care facilities such as nursing homes and geriatric hospitals. For seniors with dementia, the design approach must be even more specific to help them live their day more calmly, independently and safely.

➤ History and Development of Senior Housing

The term senior housing emerged in the post-World War II period, before World War II, the elderly lived with extended families and were cared for by children or relatives, during this period the family was still the center of care. Also, several monasteries or churches still ran charity organizations for the elderly at that time. (The Evolution of Senior Living in the U.S., 2020).

In the early 20th century, to be precise from 1900-1950, the term nursing homes began to appear which were more like dormitories or hospitals for the elderly, but only focused on medical needs, not the comfort or privacy of the elderly. In 1950-1970, after World War II, the elderly population increased due to increasing life expectancy, countries such as the United States began to develop subsidized housing for the elderly, with designs that were still monotonous, but from here there began to be a change to the form of multifamily housing for the elderly. The "Aging in Place" movement in 1970-1990 saw the awareness that the elderly had to be healthy not only physically, but also mentally, by creating a familiar environment for them, in this period the concept emerged. Assisted Living, as a combination of housing and caregivers, with the aim of quality of life, social activities and independence, so that it focuses on accessibility, natural lighting and green space for the elderly (themckendree, 2025).

Until now, Senior Housing has become increasingly varied along with technology and the needs of the elderly, some of these options are Independent Living, Assisted Living, Memory Care Units, with designs that are more communal, flexible and inclusive, because they are driven by contemporary developments such as smart home technology, universal design and behavioral architectural approaches that focus on well-being, social interaction and respect for privacy. (foxtailmemoryliving, 2024).

➤ Characteristics of Senior Housing

There are several characteristics of senior housing that are commonly found, both globally and in Indonesia, including:

Table 1 Characteristics of Senior Housing with Resident Characteristics

Type of Senior Housing	Level of Independency	Services Provided	Occupants' Target	Public Facilities
Independent Living	High (Independent)	Basic Services (Cleaning, Security, Social Activities)	Healthy Elderly, Active, Independent who are willing to stay with Elderly Community.	Private Apartment, Gathering Space, Dining room, Social Activities and

				Leisure/Recreation.
Assisted Living	Medium (Light Assistance required)	Assistance with daily activities (eating, bathing, dressing, light medication)	Elderly people who are still quite independent but need help with several daily activities	Private/semi-private rooms, dining room, basic medical services, community
Nursing Home	Low (Requires Intensive Caring)	24 hour intensive medical care, physical/occupational therapy	Seniors with chronic medical conditions or disabilities	24 hour nursing service, medical facilities, space

(Source: Researcher Analysis)

Even though there are cultural differences in caring for the elderly between Western and Eastern cultures, Senior Housing is already available in Indonesia. One example is RUKUN Senior Living.



Fig 1 RUKUN Senior Living
(Source: <https://rukunseniorliving.com/>)

RUKUN Senior Living was founded in 2012 by Herman Kwik, an entrepreneur who wanted to build a premium class residence for senior citizens. According to him, the premium class nursing home business is very promising because in other developed countries many luxury nursing homes have been established and have a target market of senior citizens with a middle to upper economic level. Apart from that, premium class nursing homes are still considered rare in Indonesia, so the market is still quite wide.

RUKUN Senior Living was built in the Sentul area, Bogor. Where senior citizens can live comfortably and are surrounded by various facilities like a star hotel. Apart from

that, RUKUN Senior Living also provides care services for elderly residents who need help with daily activities. RUKUN Senior Living is a resort where senior citizens who want to be happy, active and independent can stay and enjoy the comfort of life every day.

Another more specific example is Alzheimers Village in France, which was established in 2020 with a land area of 10,700 m² in Dax City, France. The Architects: Champagnat & Gregoire Architects, NORD Architects; Consultant: L'atelier Couleur, In Situ Ergonome; as well as Contractors: Cesma, ACE, Energeco, Comeron, Cuisinorme, Cauros, Bet Hedont



Fig 2 Alzeimers Village
(Source: Archdaily)

The number of people with dementia is increasing in Denmark and Europe, along with the increasing number of elderly people in the world. NORD Architects has designed

several dementia villages, including the Alzheimer's Village in Dax, which is France's first care home for people with dementia.



Fig 3 Site Plan of Alzeimers Village, Prancis
(Source: Archdaily)

Alzheimer's Village is designed as an inclusive community for people with Alzheimer's and dementia, mimicking the structure of a small town to create a sense of normality and independence. NORD Architects has taken individual residents, healthcare staff, and local culture and nature into consideration, so that everyone, from relatives to researchers, will experience the lives of people – including those with dementia – in an environment that prioritizes aging with dignity.

NORD Architect's goal in building Alzheimer's Village is to reduce stress and confusion for Alzheimer's sufferers, and improve quality of life through a design that is intimate, purposeful, and supports social interaction that provides safety and freedom of movement.

Design Characteristics Created Like a Small City, consisting of residential houses, small shops, restaurants, salons, parks, and other public facilities, the environment is designed to feel like an ordinary public space, not a medical institution.



Fig 4 Alzeimers Village Facilities
(Source: Archdaily)

➤ *Eldery with Alzeimers*

• *Eldery Category: Physical Aspect*

According to the Second World Assembly on Aging in Madrid (8–12 April 2002) which produced the Advanced International Action Plan, a person is said to be an elderly person if they are aged 60 years and over (in developing countries) or 65 years and over in developed countries.

According to the Big Indonesian Dictionary (1995), old age is the stage of old age in individual development with an age limit of 60 years and above.

According to Law of the Republic of Indonesia no. 13 of 1998 concerning the Welfare of the Elderly states that an elderly person is someone who has reached the age of 60 years and over. The Ministry of Health of the Republic of Indonesia makes the following groupings:

• *Middle Age Group:*

The age group in the fertility period, namely the preparation period for old age which shows physical strength and mental maturity (45–54 years).

- ✓ *Early Age Group:* group in the presenium period, namely the group starting to enter old age (55 – 64 years).
- ✓ *Elderly Age Group:* senior group (65 years and over).
- ✓ *High Risk Elderly Group:* group over 70 years old

• *Eldery Category: Biological Aspect*

Viewed from a biological aspect, elderly people are individuals who have undergone the aging process, namely a decline in physical endurance which is characterized by the body becoming increasingly susceptible to attacks by various diseases that can cause death. This is caused by changes in the structure and function of cells, tissues and organ systems, along with increasing age.

• *Eldery Category: Psychological Aspect*

The elderly experience a decline in everything, including a decline in memory, intelligence or intelligence in processing information. (Alzheimer's Indonesia). This is due to the fact that they are not motivated to remember things, lack of attention, unclear hearing and what they hear is different from what people say. (Development Psychology A Life-Span Approach)

In social life, humans cannot be far from the social life between one human being and another human being who needs each other. Just like the elderly, they need more attention from the people around them. There are 3 aspects of social relations in the elderly, namely friendship, social support and social integration (psychemate, 2007)

• Elderly Category

Cooper and Francis (1998) divided elderly people into several age categories based on their abilities and activities. 14 These three categories are directly related to the categories of elderly people based on their level of activity.

Table 2 Elderly Categories Based on Activity

	Young-Old	Old	Old-Old
Age	Between age of 55-70	Between age of 70-80	Age of 80 above
Capability	Independent in movement	Quite independent in moving	Lacks independence, has limited movement and requires care more.
Activity	Own initiative, relaxing, recreation, socializing, health related	Own initiative and groups, starting to move less frequently (sitting all the time), socializing, related to health.	Limited initiative (usually from the person taking care of them), rarely moving around, socializing, Therapy

➤ Alzheimer's Classification

Alzheimer's can be classified based on the age at which symptoms appear:

• Early-Onset Alzheimer's (Early Alzheimer's)

- ✓ Appears at age under 65 years.
- ✓ Rare (approximately 5–10% of cases).
- ✓ Often associated with genetic factors or genetic mutations

• Late-Onset Alzheimer's (Advanced Alzheimer's)

- ✓ Appears at ages above 65 years.
- ✓ It is the most common form of Alzheimer's.
- ✓ The main risk factors are age, lifestyle, and family history. (Reitz & Mayeux, 2014)

• Clinical Symptoms of Alzheimer's

Alzheimer's symptoms develop gradually and get worse over time.

- ✓ Initial Stage: Forgetting recent events or conversations, difficulty finding words.
- ✓ Intermediate Stage: Disorientation, mood swings, difficulty with daily activities.
- ✓ Advanced Stage: Loss of ability to speak, move, and control basic body functions. (WHO, 2022)

➤ Factors that Influence Alzheimer's

There are various risk factors that contribute to the emergence of Alzheimer's disease. Age is the biggest risk factor; The chance of developing Alzheimer's increases drastically after the age of 65. Genetic factors also play an important role, a family history of Alzheimer's can also increase a person's chances of experiencing a similar condition. In addition, lifestyle factors such as lack of

physical activity, unhealthy eating patterns, and lack of cognitive stimulation also influence the development of Alzheimer's.

Cardiovascular diseases such as hypertension, diabetes and hypercholesterolemia have also been shown to be closely related to brain damage which accelerates the appearance of Alzheimer's symptoms. Some studies also show that individuals with low levels of education have a higher risk of Alzheimer's, because their brain's cognitive reserve is lower to withstand the effects of degeneration (Livingston et al., 2020).

➤ Common Symptoms of Alzheimer's

Symptoms can vary, but some common signs include:

Short-term memory loss (forgetting new things, but remembering the past)

- Disorientation towards time and place
- Difficulty recognizing faces or objects
- Disturbances in speaking or finding words
- Mood changes, anxiety, or irritability
- Loss of the ability to carry out routine activities such as dressing or eating
- People with Alzheimer's often feel confused in unfamiliar surroundings, even if they are only slightly different from what they are used to.
- They can also feel anxious in rooms that are too bright, too noisy, or full of confusing visual information.

From the explanation above, the author wants to create a good environment for the elderly, not only providing shelter, but also very importantly maintaining their dignity, sense of security and quality of life.

Table 3 Observation Results

Gender	Observation
Male	<ul style="list-style-type: none"> • Dementia generally appears at the age of 65-80 years and above. Men tend to experience a slightly earlier onset than women in some cases. • In men, vascular dementia is more common (due to microstrokes or chronic high blood pressure). <ul style="list-style-type: none"> • Limited mobility, often requires assistive devices or a companion. • Weak and less responsive to physical instructions.

	<ul style="list-style-type: none"> • Significant changes in eating and sleeping patterns.
Female	<ul style="list-style-type: none"> • More women develop dementia because they live longer. <ul style="list-style-type: none"> • Typical range: 70–85+ years. • Women are more likely to suffer from Alzheimer's Disease, with <ul style="list-style-type: none"> • Progression is slower but lasts longer. • Respond better to light interactions such as music <ul style="list-style-type: none"> • or aromatherapy. • Still able to do light movements (exercise, eating <ul style="list-style-type: none"> • alone) with assistance. • Often experiences confusion at night <ul style="list-style-type: none"> • • (sundowning).

(Source: Author's Observations)

III. ANALYSIS & CONCEPTUAL DESIGN

Table 4 Implications of the Characteristics of Elderly People with Alzheimer's on Senior Housing Design Concepts

Symptoms/Characters of Elderly People with Alzheimer's	Proposed Conceptual Design
Short-term memory loss (forgetting new things, but remembering the past)	<p>Outdoor:</p> <p>Site Plan should be easily memorized by using the linier system design</p> <ul style="list-style-type: none"> • Materials used for Outdoor with colors and different texture, therefore stimulate their memory by visual helps every time elderly passed the site <p>The used of landscaping design by using types of trees which easily to recalled as a signage</p> <ul style="list-style-type: none"> • Signage required as many as possible for outdoor space <p>Indoor/Interior:</p> <p>Layout should be easily memorized by using the linier system design</p> <ul style="list-style-type: none"> • Materials used for Interior with colors and different texture, therefore stimulate their memory by visual helps once elderly visit the space/room/corridor • Signage required as many as possible for Indoor space
Disorientation towards time and place	<p>Outdoor:</p> <p>Outdoor Design should be made totally different with the Indoor, in terms of the used of materials, colors difference (contrast)</p> <p>Indoor/Interior:</p> <p>Room design with more or big windows in order to help elderly notice on the time difference (morning/afternoon/evening)</p> <ul style="list-style-type: none"> • Room design with different used of materials, colors and furniture which helps elderly to remember where they are in.
Difficulty recognizing faces or objects	Room for Cognitive therapy should be designed with high privacy, so that the elderly will be easily focus to improve their memory
Disturbance in speaking or finding words	Room for Speech therapy should be designed with high privacy, using the acoustic walls, therefore the elderly will be easily focus to improve their memory
Mood swings, anxiety, or irritability	<p>Outdoor/Indoor/Interior:</p> <ul style="list-style-type: none"> • Space should be designed in Open Plan design which psychologically feels safe and calm. The Open plan space will give more distance with others and avoiding over interaction among them who create more contacts and dispute. <p>The use of rooms' materials and colors must be fit with the type of space. It is advised to select the cheerful colors and safe materials to ensure psychologically accepted and physically secured.</p>

(Source: The Author/Researcher Ideas)

IV. CONCLUSION

Elderly people with Alzheimer's are characterized by losing the ability to carry out routine activities such as dressing or eating. People with Alzheimer's often feel confused in unfamiliar environments, even if they are only slightly different from what they are used to. They can also feel anxious in rooms that are too bright, too noisy, or full of confusing visual information. For this reason, the building design, from outdoor design to interior design, along with the furniture prepared as outlined in Table 4 above, must be able to reduce the deficiencies of Alzheimer's sufferers, and should even be able to help improve the condition or treat and not worsen existing conditions. By improving the conditions of the elderly with Alzheimer's, apart from creating a good environment and supporting the physical and psychological health of the elderly, it not only provides shelter, but it is also very important to maintain their dignity, sense of security and quality of life. Special.

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