

# Architectural Approaches to Nursing Home Design for People with Dementia

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## ABSTRACT

This paper examines the architectural design of housing for individuals with dementia, identifying key challenges and proposing potential improvements for creating more inclusive environments. As the aging population grows, many older adults aim to age in place, necessitating adaptations in their homes to promote independence, accessibility, and social connectivity. For individuals with dementia, however, the complexity of these challenges intensifies due to risks such as self-harm, disorientation, and getting lost. Traditional care homes often fail to address these specific needs, making the transition to new living environments a distressing experience that can lead to emotional withdrawal, confusion, and agitation. This paper emphasizes the urgent need for innovative and supportive housing models tailored to the needs of people with dementia. Through a review of architectural practices, the study highlights the importance of combining a high level of care with thoughtful design, fostering environments that are not only functional but also emotionally supportive. This paper contributes to the ongoing discourse on creating dementia-friendly architectural solutions, advocating for long-term housing strategies that prioritize safety, dignity, and well-being.

*Keywords: Dementia, Older adults, inclusive environments, accessibility, emotional support, safety.*

## 1. INTRODUCTION

Senses are our primary interface with the environment, but biological aging leads to significant sensory changes due to the natural decline in sensory organs and their connections to the nervous system. This degradation reduces the quality of environmental perception, a challenge that becomes more pronounced for individuals with dementia, who experience cognitive decline severe enough to affect social and occupational functioning [4]. While Alzheimer's disease (AD) is the most common form, dementia encompasses a range of conditions that include not only memory loss but also impaired daily functioning and abnormal behaviours. Many individuals with dementia develop heightened sensitivity to environmental stimuli, leading to behavioural issues that often burden caregivers and contribute to the need for institutional care [4].

Due to the cognitive decline associated with dementia, a well-designed physical environment is crucial in addressing behavioural issues, promoting independence, and providing comfort. For individuals with dementia, the perception of their environment becomes more sensory than intellectual. Research shows that poorly designed spaces can exacerbate their challenges, while thoughtful design can enhance well-being and functionality [5]. Increasingly, designers and facility managers recognize the critical role that the built environment plays in supporting the needs of people with dementia.

Moving to a nursing home is often a distressing experience for people with dementia, as it involves leaving familiar surroundings and social networks, leading to loss of independence and fear of the unknown. This transition can result in negative behaviours such as social withdrawal and increased time spent in isolation. Studies have shown higher rates of depression and mortality following relocation, although moving dementia patients together can mitigate these effects. Nonetheless, the transition to institutional care often triggers shock, withdrawal, and anger [2]. This paper explores essential architectural strategies for both indoor and outdoor environments to ease the transition and improve the quality of life for people with dementia.

## 2. DESIGN CHALLENGES IN DEMENTIA NURSING HOMES

Many existing facilities often fail to provide environments that foster safety, comfort, and social engagement, resulting in feelings of confusion and isolation among residents. Addressing these issues and challenges is crucial for gaining a comprehensive understanding of the underlying problems, which, in turn, can facilitate the identification of effective solutions for better-designed nursing homes.

1. **Poor Wayfinding and Navigation:** many dementia nursing homes feature confusing layouts with long corridors and insufficient visual cues, which can lead to disorientation among residents [2]. Inadequate signage that lacks clarity or uses complex language complicates navigation, making it difficult for residents to locate essential areas such as restrooms, dining halls, or activity rooms [5].

2. **Inadequate Lighting:** harsh or insufficient lighting can create glare or deep shadows, contributing to confusion and anxiety [1]. Additionally, poorly lit common areas pose safety risks, particularly during evening hours when visibility is reduced [5].

3. **Lack of Sensory Stimulation:** environments that are monotonous and lack diverse textures, colours, and sensory elements can lead to boredom and disengagement among residents [3].

4. **Unwelcoming Environments:** institutional aesthetics often dominate nursing home designs, evoking feelings of anxiety and isolation rather than familiarity [2]. A lack of personalization options within living spaces exacerbates this detachment, depriving residents of a sense of ownership [4].

5. **Safety Concerns:** poorly designed bathrooms, with unclear layouts and inadequate facilities, can increase the risk of accidents, particularly during nighttime visits [3]. Furthermore, insufficient fall prevention measures, such as non-slip flooring and grab bars, contribute to the likelihood of injuries.

6. ***Isolation and Lack of Social Spaces***: the absence of inviting communal areas and green spaces for social interaction can lead to feelings of isolation among residents [5].

7. ***Limited Family Interaction Areas***: the lack of comfortable spaces for family visits can reduce the frequency of these interactions, which are crucial for the emotional well-being of residents [4].

### 3. ARCHITECTURAL AND INTERIOR DESIGN FOR DEMENTIA

#### 3.1. *Open and accessible floor plans*

Nursing homes designed for individuals with dementia should emphasize visibility and spatial connectivity. An open floor plan, achieved by reducing the number of walls [5], facilitates unobstructed sightlines, allowing residents and staff to maintain visual contact. A common challenge for residents is the difficulty in locating essential facilities, such as restrooms. To alleviate this issue, restrooms should be prominently marked or easily visible from key areas, such as the living room, to aid wayfinding [5].

Additionally, architectural designs should incorporate direct shortcuts to minimize the distance between bedrooms and bathrooms, thereby facilitating easier and safer night-time visits. Since older adults with dementia face a heightened risk of falls—especially at night when visibility is diminished and disorientation may occur—reducing walking distances and establishing clear well lighted, direct routes can significantly mitigate the risk of night-time falls and enhance overall safety [1]. The open character of nursing homes is significantly enhanced by the incorporation of large windows that facilitate outdoor views, allowing residents to connect with the outside environment. These windows serve not only as a means of natural light but also provide reality reassurance, helping residents orient themselves to the seasons and the time of day. In addition to visual connectivity, the thoughtful design of interactive spaces, such as workshops and gardens, plays a crucial role in enhancing the overall health and comfort of residents. Interactive gardens, in particular, offer numerous benefits. They create opportunities for residents to engage in therapeutic activities like planting, tending to flowers, and cultivating vegetables, which can stimulate cognitive function and improve mood [1]. Moreover, the integration of communal outdoor spaces encourages social interaction among residents, promoting a sense of community and reducing feelings of isolation.

#### 3.2. *Interior design*

It is essential that the environment encompasses features such as furniture that reflects familiarity from their early adulthood. This recognition of the past can provide comfort [2]. Additionally, maintaining clear and uncluttered walkways is crucial to minimizing the risk of falls, and any furniture that residents may use for support must be stable and securely positioned. Among the various indoor environmental factors, lighting is the most critical one. Adequate lighting is vital not only for vision but also for regulating important biochemical processes that can influence overall health in older adults [1]. Thoughtful lighting design should incorporate adjustable lighting levels, with bright, well-lit areas during the day to enhance visibility and dimmer settings in the evening to create a calming atmosphere conducive to relaxation [1]. In bathrooms, facilitating independent or assisted use of sanitary fittings is

paramount. The inclusion of grab bars and handles enhances safety, while adjustable elements such as kitchen appliances, toilet seats, and washbasins cater to residents who may require wheelchair access [5]. Bathrooms should feature roll-in showers alongside bathtubs to maximize freedom of movement for caregivers assisting residents. The physical indoor environment is instrumental in creating a suitable domestic atmosphere for individuals with dementia, as this group tends to lose mental and physical capabilities more rapidly than their sensory functions [5]. Engaging the olfactory sense by allowing the aroma of cooking from an adjacent kitchen to permeate the living space can stimulate appetite and encourage food intake [3], thereby promoting overall health. Moreover, attention to thermal comfort is crucial, as individuals with dementia often perceive temperature differently due to atrophy in brain regions responsible for thermal sensation [5]. Consequently, the design and implementation of heating, ventilation, and air-conditioning systems should ensure that temperature variations within the home are minimal, creating a comfortable and consistent thermal environment.

### 4. CONCLUSION

In conclusion, key design issues impacting the suitability of housing for individuals with dementia encompass wayfinding, housing layouts, spatial considerations, and the effective use of lighting and other elements. This study has highlighted the critical design challenges in existing nursing homes that influence the well-being of residents with dementia, which led to define solutions to enhance their experience and stay in these facilities. The physical environment plays a pivotal role in enhancing behavioural, cognitive, and comfort-related aspects for individuals with dementia. By prioritizing these design considerations, we can create supportive and enriching spaces that significantly improve the quality of life for individuals living with dementia.

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*The work was carried out under the supervision of candidate of arch., associate professor T.O. Kashchenko, art. off Zdetovetska N.O.*