SAFE WANDERING BEHAVIOUR

Design approaches for stimulating safe wandering
of people with Alzheimer's in Dutch elderly homes

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Based on statements of residents with Alzheimer's (McQuilkin, J. C., 2016)

Abstract

The implementation of the Coercion and Care Act or "Wet Zorg en Dwang" (WZD) in the Netherlands in 2020 has sparked a discussion about the free movement of people with Alzheimer's. Although the law prohibits enclosed living spaces for these people, wandering behaviour remains a challenge in care environments. This causes disruptions and burdens for nursing staff ensuring resident safety. To address this issue, a study was conducted to answer the research question: *"To what extent can architectural interventions stimulate safe wandering behaviour for people with Alzheimer's in Dutch elderly homes?."*

The research question explores the extent to which architectural interventions can encourage safe wandering behaviour. A literature review consisting of four chapters examines the historical evolution of elderly care in the Netherlands, the symptoms of Alzheimer's disease, the phenomenon of wandering behaviour, and the relationship between architecture and Alzheimer's.

This literature study emphasizes that a comprehensive understanding of Alzheimer's symptoms, particularly spatial challenges, highlights the importance of creating tailored environments for individuals with Alzheimer's. Wandering behaviour has health benefits, providing a sense of purpose and exercise, and should be viewed as a valuable opportunity for meaningful activity rather than simply a problem.

Architectural interventions are essential in meeting the unique needs of individuals with Alzheimer's, with a focus on navigability, comprehensibility, and support for meaningful activities, such as wandering. When designing healthcare facilities for residents with Alzheimer's, careful consideration should be given to the building layout, circulation, wayfinding, visibility, stimulus management, personalisation, supervision, social stimulation, activation concepts and storage. By incorporating these principles, environments can be created that prioritize the well-being, safety, and comfort of individuals with Alzheimer's.

While the literature review provides valuable insights, opportunities for further research exist, including incorporating field research methods such as observations and interviews to enrich understanding and gather real-life perspectives.

Active research into Alzheimer's, including causes, diagnosis, prevention, treatment, and care, underscores the importance of ongoing investigation to inform architectural design and optimize care for individuals with Alzheimer's in Dutch elderly homes. The interdisciplinary approach integrating healthcare, legislation, and architecture holds promise for enhancing the quality of life and well-being of individuals with Alzheimer's in the Netherlands.

Keywords: Wandering behaviour, Alzheimer's, Architectural interventions, Dutch Elderly homes
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Introduction

A new healthcare legislation called the Coercion and Care Act or "Wet Zorg en Dwang" (WZD) was enforced in the Netherlands on January 1st, 2020. This law has sparked a discussion about suitable methods to ensure free movement in healthcare (*Vilans, n.d.*). According to this law, individuals with Alzheimer's or similar conditions cannot live in enclosed spaces unless there is no other available option (*Ministerie van Volksgezondheid, Welzijn en Sport, n.d.*). One of the main challenges of this law is that people with Alzheimer's often exhibit wandering behaviour. When wondering, people with Alzheimer's tend to be more vulnerable, frail, and likely to fall. Safety is one of the primary concerns for their caretakers, and wandering behaviour is associated with these safety matters, including fatigue, injury from falls getting lost, or even death (*McQuilkin, 2016*).

Various measures are being taken to address this issue, but they often restrict the patient's freedom of movement (*Delaunay & Gurin, 2017*). There have been recent innovative solutions, such as designing special bus stops for people with Alzheimer's to wander to. This allows nurses to know the location of the residents and guide them back, reducing their workload (*Atlant, 2023*). This is an example of a design intervention that can stimulate free movement for people with Alzheimer's while reducing the workload of the nurses. So, people with Alzheimer's can still thrive in a supportive elderly home (*Cipriani, Lucetti, Nuti & Danti, 2014*).

Wandering behaviour is associated with Alzheimer's, but it is not well understood, making it difficult to determine architectural design choices that stimulate safe wandering for people with this condition. This study aims to investigate the relationship between architecture and the wandering behaviour of people with Alzheimer's. The research question of this study is:" To *what extent can architectural interventions stimulate safe wandering behaviour for people with Alzheimer's in Dutch elderly homes?*."

This research question aims to be answered through literature research, which will be divided into four chapters. The first chapter covers the topic of elderly care in the Netherlands. It starts by exploring its historical evolution and ends with the latest law called "Zorg en Dwang". This chapter also discusses how this law affects the care of people with Alzheimer's in elderly homes. In the second chapter, the different symptoms of Alzheimer's are discussed and categorized into three groups: general, age-related, and spatially relevant symptoms. The third chapter focuses on the wandering behaviour of people with Alzheimer's. It explains what causes this behaviour and why it is important to study it. Finally, the fourth chapter is devoted to examining the relationship between architecture and Alzheimer's. This chapter discusses how they influence each other and how architecture can be used to stimulate people with Alzheimer's.

Elderly care in the Netherlands

This chapter delves into the history of elderly care in the Netherlands, starting from the fourteenth century to the present day. It concludes with an examination of the latest care law, known as "Zorg en Dwang", and how this law impacts the care for individuals with Alzheimer's in elderly homes. Understanding the history of elderly care is important to gain insight into the origin and progression of the healthcare system in the Netherlands as it stands today.

1.1 The evolution of elderly care

This chapter provides an overview of the history of elderly care in the Netherlands. Table 1 presents an overview of different periods in history that are associated with specific types of institutions, admission criteria, and the characteristics of the resident group.

Period	Type of institution	Admission criteria	Characteristics of a resident group
1300	Almshouse	Poor and homeless	Pilgrims and homeless poor
1400-1800	Old men's and old women's houses	Age, income	Poor old men and women
1400-1800	Beguinages and proveniers' houses	Age, income	Richer old men and women
1900	Nursing home	Health, income	Long-term hospital patients
1960	Retirement home	Age	Retirees
1970	Sheltered housing and nursing home	Age, need for care	Elderly people with health problems
2015	Nursing home	Need for care	Elderly people with serious health problems

Tabel 1, Timeline of elderly care in institutions, admission criteria and characterization of resident group (Sociaal en Cultureel planbureau, 2017).

1.1.1 1300-1800

Nursing homes have been around since the fourteenth century. At that time, these homes were shelters for pilgrims and poor and homeless people, not just for the elderly. These shelters were funded by charities and relied on donations. As time passed, there was a distinction between homes for the poor and rich elderly. There were houses for old men and old women that provided care for the poorest, as well as beguinages (for women) and proveniers' houses (for men) that offered care to the elderly who could afford it (*Sociaal en Cultureel planbureau, 2017*).

1.1.2 1800-1950

In the 19th century, the number of elderly people living in old people's homes increased significantly. At the beginning of the 20th century, the Poor Law was passed in the Netherlands, also known as "de armenwet". This law made families fully responsible for the care and support of their elderly relatives, which reduced the financial burden on the government. Only those elderly individuals who had limited financial resources and no family support were sent to live in care homes. Even in these care homes,

men, women, and sometimes even couples, were separated (Figure 1) (*Sociaal en Cultureel planbureau, 2017*).

Figure 1, Almshouse Amsterdam, 1920 (Sociaal en Cultureel planbureau, 2017).

1.1.3   1950-1970

Willem Drees, prime minister of the Netherlands from 1948 to 1958, sparked a movement in the 1950s to improve care for the elderly. This led to the Emergency Provision for the Elderly, or "Noordvoorziening voor ouden van dagen," which helped to get care for the elderly on track. The Retirement Homes Act of 1963, or "Wet op bejaardenoorden", made it possible to build retirement homes. Two years later, the first modern retirement home opened, and many more followed. These retirement villages were primarily aimed at retirees and intended to provide a pleasant place to spend the last years of life. The tight housing market after the war also played a role in developing retirement homes. When elderly people moved to retirement homes, they left behind empty homes for young families (*Sociaal en Cultureel planbureau, 2017*).

In the past, it was common for children to take care of their elderly parents. However, over time, this became less common, and the government began to take on more responsibility for elderly care. In the Netherlands, every resident could receive care based on their needs, and everyone contributed according to their ability to pay. This shift was a move away from favours and towards a system of rights. The welfare state continued to expand with the creation of the General Act on Special Medical Expenses, also known as the "Algemene Wet Bijzondere Ziektekosten" in Dutch. This act was established in 1968 to provide a safety net for uninsured risks and long-term care, such as nursing for the chronically ill and disabled (*Sociaal en Cultureel planbureau, 2017*).

1.1.4   1970-2000

From the mid-1970s onward, policies regarding care for the elderly underwent a significant change. It was no longer deemed reasonable to admit so many elderly individuals to nursing homes or other care facilities. Instead, the focus shifted towards enabling elderly individuals to continue living at home for as long as possible, with the support of loved ones and professionals. To facilitate this, the government established various care facilities, including community nursing, family care, and sheltered housing.

In 1994, the Dutch government introduced a new care law called BOPZ, which stands for "Wet Bijzondere Opnemingen in Psychiatrische Ziekenhuizen" in Dutch, or "Special Admissions Act for Psychiatric Hospitals" in English. The law regulates the involuntary placement and treatment of

individuals with mental health disorders in the Netherlands. Before the introduction of the BOPZ, there was no specific legislation governing the rights and procedures for the involuntary admission and treatment of people with mental disorders. The BOPZ provided a legal framework to ensure the protection of the rights of individuals with mental illness while also allowing for their necessary treatment and care, including involuntary admission to psychiatric hospitals under certain circumstances (*Sociaal en Cultureel planbureau, 2017*).

1.1.5   2000-2024

Long-term care spending has increased significantly over time. The number of elderly people has also grown, increasing the number of individuals in need of care. To ensure healthcare, reforms were enacted in 2015 to revamp long-term care. The Long-term Care Act, in the Netherlands: "Wet langdurige zorg" (Wlz), lays out the provision of care within the walls of institutions. An individual is entitled to Wlz care if they suffer from a somatic or psychogeriatric condition or disability, or an intellectual, physical or sensory disability that requires 24-hour permanent supervision. Not everyone with a Wlz indication requires the same type and amount of care. That is why care profiles, previously called care intensity packages, in the Netherlands: zorgzwaartepakketten (ZZPs), exist to indicate what care someone needs. People with minor care needs are no longer eligible for a Wlz indication; however, they can seek care at home from the municipality. Today's institutions mainly provide care to individuals with serious health problems who require intensive, 24-hour support and are no longer able to live independently (*Sociaal en Cultureel planbureau, 2017*).

1.1.6   Conclusion

The history of elderly care in the Netherlands teaches us that elderly care started as small-scale private initiatives and charity work and has now become an institutionalized system of care facilities, governed by policies and laws. The most recent regulation is the Coercion and Care Act or "Wet zorg en Dwang" (WZD) in the Netherlands.

1.2   New Healthcare law "Zorg en Dwang"

All healthcare institutions in the Netherlands are obligated to provide care that meets specific quality standards, established by the government through various laws (*Rijksoverheid, n.d.).* Starting from January 1st, 2020, a new healthcare legislation, the Coercion and Care Act or "Wet zorg en Dwang" (WZD) in the Netherlands, has been implemented (*Vilans, n.d.*). This law deals with the rights of individuals in cases of involuntary care or involuntary admission for those with a mental disability or a psychogeriatric condition such as people with Alzheimer's (*Ministerie van Volksgezondheid, Welzijn en Sport, n.d.*).

1.2.1   From BOPZ to WZD

Before the introduction of the WZD, the Special Admissions to Psychiatric Hospitals Act (BOPZ) was in effect, in the Netherlands: "Wet Bijzondere Opnemingen Psychiatrische Ziekenhuizen." The main difference between the two laws is that the WZD places more emphasis on the client's needs and preferences. This means that the client and/or their representatives are always involved in the decision-making process regarding the use of involuntary care. Furthermore, the WZD encourages the exploration of alternative options before resorting to involuntary care. Unlike the BOPZ, the WZD does not differentiate between clients who voluntarily or involuntarily stay in a care institution or live at home. The WZD is aligned with the current social development, which emphasizes the importance of allowing clients to live independently for as long as possible. Finally, the WZD replaces the BOPZ and provides

care and support to clients regardless of whether they live at home or in a healthcare institution (*Zorgplan, n.d.*).

1.2.2   Content WZD

The WZD is based on the principle of "No, unless" and "Free where necessary, care where possible." Elderly individuals with Alzheimer's and individuals with intellectual disabilities should receive voluntary care as much as possible. Sometimes, these individuals may not be able to make decisions for themselves, and in such cases, care providers assist them in making choices. The fundamental principle of the WZD is that involuntary care is only used when no other options are available (*Ministerie van Volksgezondheid, Welzijn en Sport, n.d.*).

1.2.3   Challenges WZD

The implementation of the WZD poses several challenges. This law is intricate and requires an understanding to ensure its proper application. Striking a balance between respecting the autonomy of the clients and ensuring their protection is highly crucial but often proves to be a challenging task. Healthcare institutions must implement the law accurately, which demands time, training, and adjustment of their procedures. Involving clients in decisions is important, but it can be challenging, particularly if they cannot communicate effectively. Recording and accounting for involuntary care can increase the work burden for healthcare professionals (*Adapcare, 2019*).

1.2.4   Conclusion

One of the main characteristics of individuals with Alzheimer's is their tendency to wander. This behaviour, combined with the Coercion and Care Act or "Wet zorg en Dwang" (WZD) in the Netherlands, presents a significant challenge in elderly homes in terms of safety for residents with Alzheimer's. The following chapter discusses the general symptoms of Alzheimer's, age-related symptoms, and spatially relevant Alzheimer's symptoms. This information highlights the importance of understanding the nature of Alzheimer's before designing an environment for Alzheimer's patients.

Alzheimer's symptoms

2.1   Introduction

Dementia affects one in five people, with women being at a higher risk. One in three women will develop dementia during their lifetime. As people grow older, their risk of dementia also increases. By the age of ninety, up to 40 percent of people may have some form of dementia. Currently, there are over 290,000 people with dementia in the Netherlands, but due to the ageing population, this number is expected to rise to over half a million by 2040 (Stichting Alzheimer Nederland, n.d.).

Alzheimer's is one of the most common forms of dementia. It is characterized by the breakdown of nerve cells and connections between them in the brain, leading to a decline in brain function. Memory loss, thinking problems, and changes in behaviour are the main symptoms of Alzheimer's. Patients may describe their experience as "forgetting things quickly" (Alzheimer's Association, n.d.). This chapter will discuss the general symptoms of Alzheimer's, age-related symptoms, and spatially relevant Alzheimer's symptoms.

2.2   General Alzheimer's symptoms

Alzheimer's' symptoms can be divided into the following three categories:
- Cognitive
  Mental capabilities
- Ability to perform activities of daily life
  Capacity to carry out everyday tasks
- Behavioural
  Attendant psychiatric and physical symptoms

The symptoms of Alzheimer's affect cognitive abilities, although a decline in overall functioning can be observed as the condition progresses. The severity and manifestation of these symptoms can differ per person with Alzheimer's (Büther & Marquardt, 2021, p. 16).

2.2.1   Cognitive symptoms

Memory loss is the primary symptom of Alzheimer's in the cognitive category. The ability to make new memories is affected. This makes it difficult for individuals to recall new experiences, conversations, or plans such as appointments, even with detailed clues. While memories from the recent past are affected first, memories from childhood and youth tend to be persistent. However, as Alzheimer's progresses, people in the middle and late stages of Alzheimer's increasingly forget about their living environment and personal history. This can lead to a perceived loss of personality and identity, as they may no longer recognize elements of their present-day life, such as their home, spouse, or children. This can result in feelings of estrangement, fear, or agitation (*Alzheimer's Association, n.d.*).

2.2.2   Ability to perform activities of daily life

As Alzheimer's progresses, individuals may face difficulties in performing daily activities. Problems may arise with instrumental activities such as managing correspondence or using new devices. Gradually, even fundamental functions like getting dressed, washing, or brushing teeth may become challenging, requiring assistance or instructions. In the middle stage of Alzheimer's, there is often a contrast between good physical condition and cognitive impairments. Physical symptoms such as an unsteady gait, incontinence, muscular stiffness, and a hunched posture may not become apparent until later (*Alzheimer's Association, n.d.*).

2.2.3 Behavioural Symptoms

As Alzheimer's progresses, changes in behaviour and personality can be observed in individuals affected by it. The inability to remember past experiences, combined with difficulty in retaining new information, can lead to delusions and misplacement of objects. Those affected may also exhibit anxiety, unease, and aggression in response to the effects of the condition, such as disorientation and discontinuity of experiences. As a result, coping with Alzheimer's symptoms is a significant challenge not just for the individual, but also for their loved ones (*Alzheimer's Association, n.d.*).

2.3 Age-related symptoms

As people age, vision, hearing, and physical abilities can impact how individuals with Alzheimer's interact with their surroundings, in addition to the symptoms of Alzheimer's.

2.3.1 Eyesight

The eyes are a vital sensory organ that enables us to navigate our surroundings and gather information on shapes, colours, distances, and movements. As we age, the quality of our eyesight decreases, and our ability to focus and see decreases, starting from the age of around fifty. While minor visual impairments affect 80% of those aged between 70 to 79, moderate impairments affect almost half of those aged between 80 to 89, and over 50% of those over 90 are affected. This is due to age-related changes to the central nervous system, resulting in various visual impairments such as loss of contrast sensitivity, visual acuity, colour recognition, and spatial vision, among others. Several pathological changes to the eye, such as cataracts, can further reduce the quality of life for older people. Unfortunately, cognitive deterioration can prevent individuals with Alzheimer's from recognizing their vision problems, leading to difficulties in perceiving their surroundings and communicating (*Büther & Marquardt, 2021, p. 22*).

2.3.2 Hearing

Symmetrical hearing loss of high frequencies affecting both ears typically begins in early adulthood, at around 20 years of age. The rate of deterioration varies from one individual to another, resulting in a typical pattern of auditory decline, where the higher the sound frequency, the greater the hearing loss. Additionally, the auditory threshold for language frequencies also increases with age. Research suggests that approximately 50% of individuals aged 70 to 79 experience slight hearing loss, while two-thirds of those aged 80 to 89 suffer from moderate to severe hearing loss. Among those over 90 years old, two-thirds have severe hearing impairments. Age-related hearing loss not only limits social interaction opportunities but also leads to confusion and disorientation, especially in loud environments (*Büther & Marquardt, 2021, p. 22*).

2.3.3 Musculoskeletal system and balance

As we age, our ability to move around becomes limited, making some movements harder or impossible. Additionally, our sense of balance, which relies on processing a variety of sensory information, often declines. Studies have shown that tasks that require good balance, such as spatial orientation, become progressively more challenging as we get older (*Büther & Marquardt, 2021, p. 22*).

2.4 Spatially relevant Alzheimer's symptoms

The built environment has a significant impact on our behaviour and well-being, and it can even have therapeutic effects. However, unsuitable architecture and design can also have negative consequences on individuals and worsen physical impairments. This is especially true for those living with Alzheimer's.

People and their environment are in constant interaction. Individuals living with Alzheimer's face limitations due to physical, sensory, or cognitive restrictions, which make it difficult for them to adapt. Therefore, they need an environment that considers their needs optimally. This helps them to maintain their independence and autonomy, promoting overall life satisfaction (*Büther & Marquardt, 2021, p. 20*).

2.4.1 Spatial Orientation

Difficulties with spatial orientation are one of the primary symptoms of Alzheimer's. Initially, they occur in unfamiliar environments, but as the condition worsens, they can even arise in familiar surroundings. Orientation problems affect the ability to create and maintain a cognitive map or an inner image of buildings. These cognitive maps are developed based on information obtained from our movements in space, and they allow us to take shortcuts and return to our starting point. Individuals living with Alzheimer's find it hard or become entirely unable to imagine spatial situations outside their immediate field of vision. This difficulty arises due to condition-specific changes in their brains, making it challenging for them to mentally plan a way to get there. Their restricted short-term memory makes the orientation process even more challenging, as they may not be able to recall the memories of the route travelled so far or their planned destination (*Büther & Marquardt, 2021, p. 20*).

2.4.2 Situational Orientation

Individuals living with Alzheimer's often have difficulty with situational orientation. This means that they may not know where they are, such as whether they are in a hospital, hotel, or medical practice, and may be unaware of the roles of others around them. They can also misinterpret situations, which may lead to delusions, such as believing they have been robbed or kidnapped. Some individuals with the condition experience anxiety, especially at night, due to the lack of people to talk to or the darkness. This can become more common during the advanced stages of the condition (*Büther & Marquardt, 2021, p. 20*).

2.4.3 Environmental Stimuli

People with Alzheimer's often experience a reduced ability to process and filter environmental stimuli, making it difficult for them to filter relevant and irrelevant information. This affects their concentration and makes them more susceptible to distractions. Age-related limitations in hearing and vision can further impact their spatial perception and communication abilities. As a result, people with Alzheimer's may find it challenging to identify and classify ambient noise or follow a conversation in a loud environment, leading to feelings of stress. If the level of stimuli in their surroundings exceeds their reduced capacity to process information, it can confuse, and lead to wandering behaviour. High noise levels can worsen disorientation and lead to delirium. To prevent these negative effects, environments designed for people with Alzheimer's should be low in stimuli. However, this does not mean a complete absence of stimuli, as full sensory deprivation can lead to boredom, apathy, and social withdrawal (*Büther & Marquardt, 2021, p. 20*).

2.5 Conclusion

The actions of individuals with Alzheimer's can be significantly influenced by their physical environment and the quality of care they receive. It is important to consider the notion that all behaviour is some form of communication, and to reflect on what messages individuals may be expressing through their actions. Understanding the underlying messages behind these behaviours is crucial for providing appropriate support and care for people living with Alzheimer's. For this reason, the upcoming chapter will delve into wandering behaviour in greater detail.

Wandering behaviour

3.1   Introduction

Wandering is a common behaviour associated with Alzheimer's. According to the Alzheimer's Association (n.d.), six out of ten people with Alzheimer's will wander. This occurs more frequently in the moderate to later stages of the disease progression (*McQuilkin, 2016*).

3.2   Definition of wandering

The definition of wandering behaviour caused by Alzheimer's is inconsistent in the literature. Scientifically, wandering is defined as a "need-based behaviour" that arises from a goal or a need caused by individual backgrounds or environmental factors. However, the clinical definition explains wandering behaviour as "meandering, aimless, or repetitive locomotion that exposes a person to harm and is incongruent with boundaries, limits, or obstacles." Because the motivation for the wandering behaviour is typically unknown, the behaviour may often appear aimless to others (*Cipriani, Lucetti, Nuti & Danti, 2014*). In more recent literature, the term "wandering" has been replaced with "walking about." "Wanderers" have also been referred to as "people who like to walk" (*Alzheimer's Society, n.d.*). The Alzheimer's Society (*n.d.*) believes that the term "wandering" is "unhelpful because it suggests aimlessness, whereas walking often does have a purpose. Rather than dismissing it, it is important to think about how the person's independence, safety, and dignity can be preserved."

3.3   Causes of wandering behaviour

There are several reasons why people with Alzheimer's tend to wander. It could be due to a reaction to a crowd or noise, boredom, or disorientation. Sometimes, they are searching for something or someone (*Alzheimer's Society, 2015*). Some experts believe that wandering is a way for people with Alzheimer's to use familiar strategies to preserve their self-identity. For instance, they may be trying to go home or following a familiar routine, such as going to work. Wandering may also be a way to release excess energy. However, feelings of confinement can also contribute to wandering and exiting attempts. Most memory care facilities still have locked or secured premises, which restrict residents' freedom of movement. Although this is done for their safety, it can make the residents feel resentful or frustrated, particularly if they are used to being independent (*McQuilkin, 2016*).

3.4   Implications of stimulating wandering behaviour

Wandering behaviour of people with Alzheimer's is beneficial for their health. Firstly, it provides them with a sense of purpose and meaning during their walk, leading to therapeutic outcomes. Secondly, walking is a low-impact form of exercise that can enhance mobility and decrease the risk of other health issues such as heart disease, diabetes, and high blood pressure. To encourage wandering behaviour, elderly homes can create wandering paths within their environment to make the journey more interesting and support the residents' sense of place. By promoting meaningful and helpful wandering, elderly homes can keep residents engaged while also enhancing their overall well-being (*McQuilkin, 2016*).

3.5   Conclusion

Wandering is a common behaviour associated with Alzheimer's disease. It's often viewed negatively in care settings, but there have been recent suggestions to replace the term "wandering" with "walking about" to preserve the dignity of those affected by the condition. There can be many causes for wandering, including reactions to stimuli, boredom, and disorientation. However, wandering behaviour

in individuals with Alzheimer's has health benefits, offering a sense of purpose and exercise. Elderly homes can support this by creating wandering paths, keeping residents engaged, and improving overall well-being. It is important to view wandering as an opportunity for meaningful activity rather than simply as a problem associated with Alzheimer's. In the next chapter, various architectural design features will be discussed that support the wandering behaviour of people with Alzheimer's in a meaningful way.

Design Approaches

4.1   Introduction

In healthcare, architecture plays a critical role in creating spaces that meet the specific needs of patients, especially those struggling with Alzheimer's. It has been shown that the care environment can be examined as a source of stress for individuals with Alzheimer's. Therefore, elderly homes should be designed in a way to support resident wellbeing (*McQuilkin, 2016*). The physical environment must provide comfort and control to the residents, reducing their stress (*Büther & Marquardt, 2021, p. 32-33*).

4.2   Design Concept

According to Büther and Marquardt (2021), these five key points must be integrated into an overall concept for Alzheimer-friendly architecture:

1. Foster patient independence and encourage mobility and activity to preserve their cognitive capabilities and physical functions
2. Provide emotional security, stability, and orientation to the patients
3. Help nursing staff work to the best of their ability and offer them a private workstation where they can work undisturbed
4. Make relatives feel welcome and involved
5. Combine functionality, hygiene, and aesthetics, offering all users an environment of respect

When designing an elderly home, it is crucial to consider all aspects of a care organization, including psychological and mental support. It is important to note that these key points, therefore, prioritize the comfort of everyone involved, not just the residents with Alzheimer's, but also the nurses and family members.

4.3   Design Guide

Different approaches can be used in designing architecture for people with Alzheimer's to stimulate wandering behaviour. These approaches are not mandatory guidelines that must be followed in every project, but they are essential recommendations and sources of inspiration. Most recommendations for elderly care facilities suggest that the environment should be easily comprehensible, and navigable, and provide opportunities for meaningful activities. The environment should be supportive, not cause frustration or confusion in individuals with Alzheimer's because these are the main causes of wandering.

4.3.1   Building Layout

When designing a building for people with Alzheimer's, the initial challenge is to create a layout that is simple and clear (*McQuilkin, 2016*). This is important because it affects how well people with Alzheimer's can understand their environment and this has a positive effect on the urge to wander. By designing smaller units, the interaction between residents and nurses is stimulated. This, in turn, has a positive impact on the safety of the residents and stimulates the interaction between patients and nursing staff (*Büther & Marquardt, 2021, p. 36-37*).

Design guidelines:
- ☐ Keep the layout simple for easy understanding
- ☐ Design smaller units to foster better interaction between patients and nursing staff

4.3.2 Circulation Indoors and Outdoors

To ensure safe wandering for individuals with Alzheimer's, it is crucial to prevent them from getting lost and disoriented. Designers can help achieve this by creating continuous pathways that guide residents back to their starting point. This helps prevent confusion and frustration caused by dead ends. Additionally, it is essential to create enough opportunities for the residents to take a break by designing seating areas for them to rest (*Büther & Marquardt, 2021, p. 40-41*). Access to the outdoors is vital for the well-being of residents with Alzheimer's as it provides a break from the monotonous indoor environment and instils a sense of independence. When planning outdoor spaces, it is important to consider year-round utility, availability of diverse seating options, and clear identification of entry doors. Providing access to outdoor spaces has a positive impact on resident well-being as it facilitates physical exercise, restoration, and social interaction. A designated area for residents to wander to, such as a bus stop, can be helpful for care nurses to locate and assist those with Alzheimer's who wander off (*McQuilkin, 2016*).

Design guidelines:

- Use continuous pathways to prevent residents from getting lost
- Place seatings to rest in the movement areas
- Minimize dead ends to avoid confusion
- Provide outdoor activities and well-designed garden access
- Design an attractive place to "wander to"

4.3.3 Wayfinding

Wayfinding is crucial to help individuals with Alzheimer's disease understand and navigate when they are wandering. Landmarks on decision points can be helpful in this regard. By using large print, clear signs, and personalized cues, individuals with Alzheimer's disease can navigate more easily (*Büther & Marquardt, 2021, p. 44-45*). Having a view of the outside and clocks can assist individuals with Alzheimer's disease in determining the time of day, which can help them adjust to their surroundings better (*McQuilkin, 2016*).

Design guidelines:

- Place landmarks at decision points
- Use large print, clear signs, and personalized clues for navigation
- Provide visible aids like clocks and views on the outside through windows for time and direction

4.3.4 Visibility

Having clear visibility is important for understanding the situation, time, and place. For people with Alzheimer's, visual access between different areas can help them move around and understand their surroundings. To improve visibility, it is important to create enough contrast between important objects of use and their background, such as light switches. However, be careful not to create too much contrast on, for example, the floor, as it can be seen as an obstacle. Keep important elements clear and uncluttered to avoid confusion and camouflage for example doors that could be hazardous if entered. This increases the safety of the residents (*Büther & Marquardt, 2021, p. 42-43*).

Design guidelines:

- Ensure visual access between different areas
- Create direct lines of sight
- Use contrast for object visibility
- Avoid floor patterns that may be seen as obstacles

☐ Keep important elements clear and uncluttered

4.3.5 Stimulus Management

Alzheimer's affects the ability to filter environmental stimuli, process them accurately, interpret them appropriately, and respond accordingly. As a result, individuals with Alzheimer's may quickly become overwhelmed by sensory input. The appropriate level of stimulation varies from person to person, and it is important to provide a range of stimulus densities to meet the unique needs of each patient (*Büther & Marquardt, 2021, p. 54-55*).

Design guidelines:
☐ Limit signs and decoration for clarity
☐ Design for comfortable acoustics
☐ Avoid overcrowding and excessive noise
☐ Provide spaces with different qualities for privacy and social interaction

4.3.6 Personalization

Individuals with Alzheimer's often find comfort in personal items that are linked to memories. Such items can help them feel more secure and oriented. Therefore, it is important to encourage patients to bring items from their homes to their rooms. Sufficient space, such as shelves, pins, or magnetic boards, should be provided in their rooms for their personal belongings. It is also essential to include design elements that many residents can relate to, such as pictures with regional or historical references. These elements can encourage residents and serve as conversation starters (*Büther & Marquardt, 2021, p. 50-51*).

Design guidelines:
☐ Balance clinical functionality with a cosy personal atmosphere
☐ Allow space for personal items in patient rooms
☐ Incorporate familiar elements into the design

4.3.7 Supervision

Individuals with Alzheimer's are affected by their physical environment, which can impact their well-being and behaviour. The workflow of nurses who care for them is also affected by the environment they are in. Nurses feel more satisfied with their jobs when they can meet the needs of their patients. Therefore, it is essential to make it easy for nursing staff to provide care. It should be effortless for them to monitor the normal and wandering behaviour of residents with Alzheimer's from the nursing station (*Büther & Marquardt, 2021, p. 50-51*).

Design guidelines:
☐ Position nursing stations near entrances for monitoring
☐ Make nursing stations easily accessible
☐ Place common areas near nursing stations

4.3.8 Social stimulation

The presence of family members is extremely important if someone with Alzheimer's feels uncomfortable or uneasy in an unfamiliar environment. Relatives can help explain the unfamiliar routines and procedures that may appear threatening due to their unfamiliarity and be a source of comfort and support during stressful situations. Therefore, elderly homes should consider the presence of patients' families both in their organizational workflows and in their structural design. For instance, this can be

achieved by providing seating space or involving relatives in mealtimes. Families should feel welcome and included in the patient care process (*Büther & Marquardt, 2021, p. 50-51*).

Design guideline:

☐ Design spaces to stimulate social interaction between residents and relatives

4.3.9   Activation Concepts

Activation concepts are essential to prevent functional and cognitive decline in patients. They can also help prevent challenging behaviours that arise due to under-stimulation and boredom, such as wandering, which can place additional stress on nursing staff. Ideally, elderly homes should offer programs to encourage patients to stay active, and the spatial environment should be modified accordingly, considering the staff and organizational structures available (*Büther & Marquardt, 2021, p. 52-53*).

Design guidelines:

☐ Tailor programs to residents' abilities and interests
☐ Encourage active participation in communal activities
☐ Create inviting spaces outside of rooms
☐ Organize structured activities throughout the day

4.3.10   Storage

As people get older, their physical fitness and stamina often decrease. This means that many residents with Alzheimer's require mobility aids. To ensure the safety and comfort of these residents, movement areas and corridors must be spacious enough to allow those with walking frames or wheelchairs to move around easily. It is important to design storage spaces that are large enough and easily accessible for nurses. This prevents equipment from blocking handrails that residents use to move around independently and eliminates people tripping over equipment left in the corridor (*Büther & Marquardt, 2021, p. 38-39*).

Design guidelines:

☐ Provide accessible storage for walking aids and wheelchairs
☐ Design storage areas to prevent corridor blockage

4.4   Conclusion

When designing healthcare facilities for residents with Alzheimer's, it is important to carefully consider the building layout, circulation, wayfinding, visibility, stimulus management, personalisation, supervision, social stimulation, activation concepts and storage. These design guides have been visualised and can be found on the next pages. By incorporating these principles, environments can be created that prioritize the well-being, safety, and comfort of people with Alzheimer's.
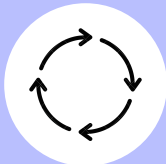
Design Guidelines
To stimulate safe wandering behaviour of people with Alzheimer's
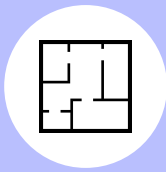
Building Layout
☐ Keep the layout simple for easy understanding
☐ Design smaller units to foster better interaction between patients and nursing staff

Circulation Indoors and Outdoors
☐ Use continuous pathways to prevent residents from getting lost
☐ Place seatings to rest in the movement areas.
☐ Minimize dead ends to avoid confusion
☐ Provide outdoor activities and well-designed garden access
☐ Design an attractive place to "wander to"

Wayfinding
☐ Place landmarks at decision points
☐ Use large print, clear signage, and personalized clues for navigation
☐ Provide visible aids like clocks and views on the outside through windows for time and direction

Visability
☐ Ensure visual access between different areas
☐ Create direct lines of sight
☐ Use contrast for object visibility
☐ Avoid floor patterns that may be seen as obstacles
☐ Keep important elements clear and uncluttered

Stimulus Managment
☐ Limit signage and decoration for clarity
☐ Design for comfortable acoustics
☐ Avoid overcrowding and excessive noise
☐ Provide spaces with different qualities for privacy and social interaction

Personalisation
☐ Balance clinical functionality with a cosy personal atmosphere
☐ Allow space for personal items in patient rooms
☐ Incorporate familiar elements into the design

Supervision

- [ ] Position nursing stations near entrances for monitoring
- [ ] Make nursing stations easily accessible
- [ ] Place common areas near nursing stations

Social Stimulation

- [ ] Design spaces to stimulate social interaction between residents and relatives

Activation Concepts

- [ ] Tailor programs to residents' abilities and interests
- [ ] Encourage active participation in communal activities
- [ ] Create inviting spaces outside of rooms
- [ ] Organize structured activities throughout the day

Storage

- [ ] Provide accessible storage for walking aids and wheelchairs
- [ ] Design storage areas to prevent corridor blockage

Conclusion

This research aimed to find an answer to the question: "*To what extent can architectural interventions stimulate safe wandering behaviour for people with Alzheimer's in Dutch elderly homes?*" For this purpose, a literature study was conducted.

This thesis explores the history of the Netherlands, from its early days of small-scale charity work to its current system of care facilities, governed by government policies and laws. The introduction of the new Coercion and Care Act or "Wet Zorg en Dwang" (WZD) on January 1, 2020, highlights the challenge of balancing the autonomy and protection of individuals with Alzheimer's, particularly in relation to wandering behaviour in elderly care homes.

A comprehensive understanding of Alzheimer's symptoms, particularly spatial challenges, highlights the importance of creating tailored environments for individuals with Alzheimer's. Wandering behaviour has health benefits, providing a sense of purpose and exercise, and should be viewed as a valuable opportunity for meaningful activity rather than simply a problem.

This literature study emphasizes that architectural interventions are essential in meeting the unique needs of individuals with Alzheimer's, with a focus on navigability, comprehensibility, and support for meaningful activities, such as wandering. When designing healthcare facilities for residents with Alzheimer's, careful consideration should be given to the building layout, circulation, wayfinding, visibility, stimulus management, personalisation, supervision, social stimulation, activation concepts and storage. By incorporating these principles, environments can be created that prioritize the well-being, safety, and comfort of individuals with Alzheimer's.

This literature review highlights the importance of an integrated approach that combines healthcare, legislation, and architecture to optimize care for individuals with Alzheimer's in the Netherlands.

Discussion

The focus of this thesis is the designing of architecture for people with Alzheimer's. The study is based on a literature review, which has several benefits, such as providing a comprehensive overview of existing knowledge and identifying relevant theoretical perspectives. However, it is important to consider the reliability of the sources used as some may be outdated, and the thesis was conducted within a limited timeframe of ten weeks.

Although the literature review provides valuable insights, there are still opportunities for further research to enhance understanding in this field. A suggestion is to incorporate additional methods, such as field research that involves observations and interviews. This approach could enrich the research by providing real-life perspectives on the theoretical framework established through literature review. Direct observations of individuals with Alzheimer's in their living environments, along with interviews with healthcare providers, residents themselves, and relatives, could yield invaluable insights into their experiences, needs, and challenges.

There is active research being conducted into Alzheimer's, including the causes, diagnosis, prevention, treatment, and better care for people with Alzheimer's and their wandering behaviour. Conducting more research on these topics will enhance knowledge and understanding of Alzheimer's. This will enable architects to design better living spaces for individuals with Alzheimer's, thereby improving their quality of life and well-being in Dutch elderly homes.

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Figures

Figure 1.1:

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