DESIGNING DIGNITY

RESEARCH REPORT

Designing care facilities to enhance autonomy and quality of life for people with dementia

Dwelling Graduation Studio: Designing for Care in an Inclusive Environment
Marjolijn van der Veen
5881919

RESEARCH REPORT

Marjolijn van der Veen
5881919

Date:
05.05.2025

TU Delft University of Technology
Faculty of Architecture and the Built Environment

Course:
AR3AD110
Dwelling Graduation Studio: Designing for Care in an Inclusive Environment

Tutors:

Kobe Macco	Architecture mentor
Birgit Jürgenhake	Architecture mentor
Leo Oorschot	Research mentor

0 ABSTRACT

The aging population in the Netherlands is growing rapidly, with the number of people aged 80 and above expected to double from 800.000 in 2020 to 1.5 million by 2050. This development, known as "*double aging*", will significantly increase the number of people living with dementia, rising from 300.000 in 2020 to 620.000 by 2050. This demographic shift poses significant challenges for care and housing.

This research aims to explore how to design a care facility for people with dementia that enhances quality of life and autonomy. Additionally, the facility should align with the multicultural context of Tarwewijk. The main research question is:

"*How can a care facility for people with dementia be designed to foster a humane and inclusive environment, with a focus on promoting autonomy and quality of life, for example in a neighborhood like Tarwewijk?*".

The findings of this research show the importance of addressing three scales in the design: the environment, the building and the personal room.

At the environmental scale, the facility should integrate with the neighborhood to avoid isolating residents and encourage social interaction, enhancing their sense of autonomy. At the building scale, clear and simple layouts with recognizable landmarks help residents navigate independently. Small scale care settings, accommodating groups of 8 – 10 residents, provide a higher quality of life compared to larger groups. On the room scale, personalization and familiarity through personal items are crucial for creating a sense of comfort and belonging.

Given the multicultural context of Tarwewijk, the design must consider cultural preferences. Some cultures, such as Turkish and Moroccan, often prefer not to place their parents in care facilities, believing this reduces their quality of life. To address this, the design should include intergenerational homes alongside small-scale scale care facilities. In these homes, older adults can live with their children in one house, with separate entrances for privacy. This arrangement allows children to care for their parents while maintaining their own independence, this enhances the quality of life and autonomy of the older adults who can still live partially independently.

This research provides valuable insights into designing care facilities that promote autonomy and quality of life for individuals with dementia. It highlights the challenge of balancing safety, autonomy, and quality of life. It is important to note that this study focuses on general strategies to improves these challenges, individual needs and preferences can vary significantly. A set of design guidelines has been developed from this research, which will assist with the further design of care facilities in Tarwewijk for elderly people with dementia.

Further research could expand fieldwork to include more care facilities and architectural firms specializing in dementia care, offering a broader range of insights into diverse design approaches and philosophies.

Key words: *Aging population, autonomy, care facilities, dementia architecture, dementia care, multicultural neighborhoods, quality of life.*

TABLE OF CONTENTS

01

INTRODUCTION

1.1 PROBLEM STATEMENT

The Netherlands is aging rapidly, with the percentage of people aged 65 and older expected to rise from 19 percent in 2020 to 25 percent by 2050. This increase is largely driven by the growth of the oldest age groups, particularly those over 80 years old. As a result, The Netherlands is experiencing 'double aging', with the number of people over 80 set to double from 800.000 in 2020 to 1.5 million in 2050 (Nidi & CBS, 2020).

As life expectancy continues to rise, the number of people living with dementia is also increasing at an alarming rate. Currently, an estimated 300.000 people are living with dementia in the Netherlands, and this number is predicted to reach 620.000 by 2050 (Alzheimer Nederland, 2021). This development presents major challenges for society, particularly in terms of care and housing. As of October 1, 2023, 22.218 people are on a waiting list for a place in a nursing home, with an additional 11.835 waiting as a precaution. Securing a spot in a preferred nursing home has become increasingly difficult, largely due to the severe staff shortages in the healthcare sector, which cannot meet the current demand (ActiZ, 2023). In 2024, the shortage of staff in nursing home care is projected to reach 14,200, and this gap is expected to widen significantly to 51.000 by 2033, putting even more pressure on an already struggling system (Zuil, 2023).

This growing shortage of healthcare staff highlights the need for alternative approaches to care that can support the well-being of residents. Familiy or neighborhood participation could play a more significant role in addressing the social needs of people with dementia (Scholten, 2013).

A well-designed care environment can not only enhance residents' physical well-being but also significantly improve their mental and emotional health (Golembiewski, 2022). Many care facilities for people with dementia in the Netherlands often face challenges in creating an environment that prioritizes humane and inclusive care, partly due to the lack of staff. In fact, many facilities are characterized by rigid routines, sterile environment and limited attention to residents' individual needs. As a result, residents often follow strict schedules, with little regard for personal preferences or habits. These challenges faced by care facilities can result in feelings of isolation, loss of autonomy, disconnection from society, and a reduced quality of life among people with dementia. In addition, the physical environment in these institutions often emphasizes safety and functionality at the expense of comfort, freedom and meaningful interactions (Toebes, VerpleegThuis, 2021). A thoughtful design can significantly enhance the quality of life of people with dementia by creating feelings of autonomy, safety, security and connection.

Given these challenges, the traditional nursing home model is unlikely to be sustainable in the future. The healthcare system will not be able to keep up with the increasing demand for dementia care. To address this, alternative solutions must be found, particularly within residential neighborhoods. Integrating new care facility concepts into existing urban environments could foster greater community engagement and a better quality of life for people with dementia, offering a more sustainable and inclusive approach to care.

In summary, several key issues highlight the urgent need for innovative architectural solutions for care homes to improve the quality of life for people with dementia by balancing autonomy, safety, comfort and social interaction:

1. The increasing number of elderly people with dementia;
2. The growing shortage of healthcare staff;
3. Challenges in creating humane and inclusive environments;
4. Sterile and rigid environments within care facilities;
5. Insufficient focus on well-being and social integration in care complexes.

1.1 PROBLEM STATEMENT

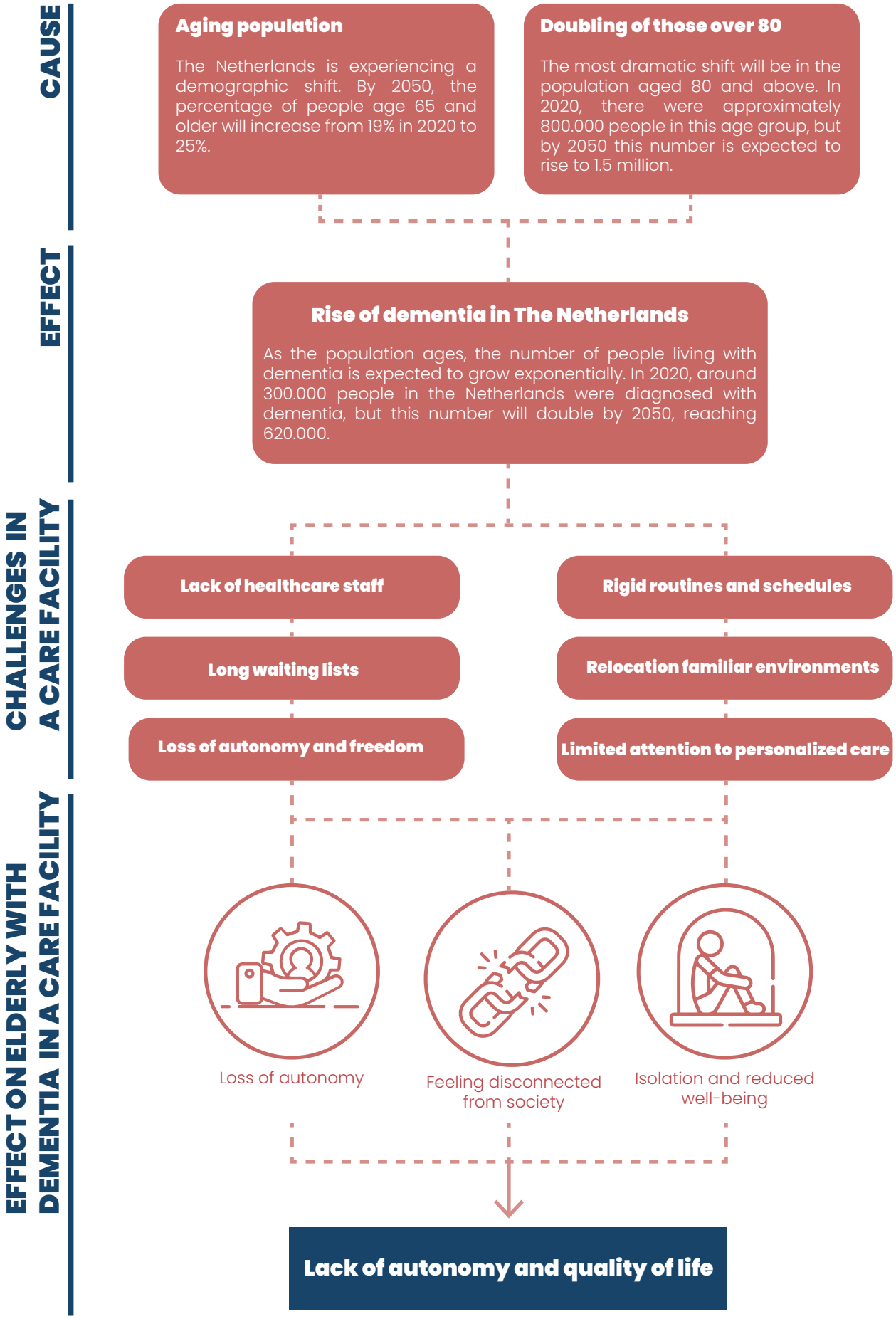


Figure 1. Problem statement diagram. Made by author.

1.2 RELEVANCE

The aging population in the Netherlands is rising, including in Rotterdam-South's Tarwewijk. Rotterdam-South has about 207.000 residents, making up one-third of the city's population (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2024). The Charlois district, which includes Tarwewijk, is also experiencing an aging population. Charlois has 70.489 residents, 12,4 percent of whom are over 65, totaling 8.741 seniors (Gemeente Rotterdam, 2024). Given that 1 in 5 people will develop dementia, around 1.750 seniors In Charlois are likely to need care, a number that is expected to increase (Alzheimer Nederland, 2021).

Tarwewijk has 12.322 residents, with 8 percent over 65, representing 986 seniors (Gemeente Rotterdam, 2024). This number is likely to grow in line with national trends. Given that 1 in 5 people will develop dementia this means that around 200 seniors in Tarwewijk are likely to develop, or already have dementia (Alzheimer Nederland, 2021). It is crucial for these elderly residents with dementia to stay in familiar environments. Moving to unfamiliar settings worsens their condition (Toebes, Een wereld te winnen, 2023). However, there are no dementia care facilities in Tarwewijk. Nearby districts Charlois and Zuidplein have two large scale nursing homes, but there are no small-scale options. Tarwewijks senior apartment complex only offers independent living, forcing residents with dementia to leave the neighborhood. This contradicts the principle of continuity of care in one's own living environment.

Figure 2. Locations in Rotterdam-South. Made by author.

Additionally, A new pedestrian and bicycle bridge will soon connect Tarwewijk to Katendrecht (Mecanoo, 2021). This connection will enhance the relationship between these two neighborhoods. In Katendrecht there are 7.094 seniors, of which 12,2 percent are aged 65 and older, resulting in approximately 860 seniors (Gemeente Rotterdam, 2024). Around 175 of them may develop dementia in the future. Like Tarwewijk, Katendrecht also lacks dementia care facilities, underscoring the need for integrated solution for both neighborhoods.

It is important to note that a significant portion of Tarwewijk's population has a migration background: 24% are of Western origin, 57% are of non-Western origin, and 19% have no migration background (Kadastrale kaart, 2023). These diverse cultural backgrounds influence how elderly individuals with dementia are approached and cared for, making it crucial to consider this diversity during the research and design process.

Furthermore, Tarwewijks infrastructure is poorly suited to elderly residents, with many homes featuring high entrance steps, which pose a significant challenge for elderly with mobility issues. These infrastructural barriers create a substantial obstacle for elderly residents who wish to continue living in the Tarwewijk.

A dementia friendly care complex in Tarwewijk would not only fill a gap in the housing market but also allows elderly residents to remain in their familiar surroundings. By offering care while keeping seniors integrated with their community, Tarwewijk could evolve into a more inclusive and supportive neighborhood for its elderly residents. Given the area's cultural diversity, it is essential for the design to accommodate varying cultural approaches to dementia care, fostering a truly inclusive environment.

Figure 3. Entrance steps in Tarwewijk. Made by author.

1.3 THEORETICAL FRAMEWORK

The living environment of people with dementia has a significant impact on their well-being, behavior, and the progression of their illness (Golembiewski, 2022). Dutch nurse and author Teun Toebes, in his books *'VerpleegThuis'* and *'Een wereld te winnen'*, advocates for a radical change in the design of nursing homes, urging that they focus not only on control and safety, but primarily on promoting social interaction autonomy, and personal dignity (Toebes, 2021, p. 183).

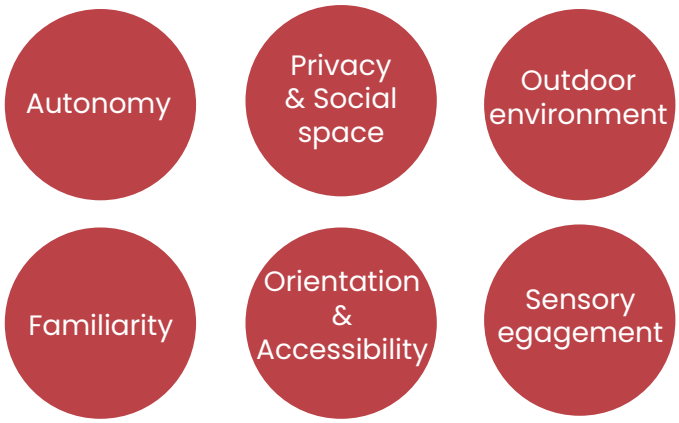
Autonomy is frequently restricted in the environments where elderly with dementia live. Architect Eckhard Feddersen, in his article, *'Learning, Remembering and Feeling Space',* emphasizes that nursing homes should not be controlling but should offer space for personal choice. For people with dementia, the ability to choose where they are and what spaces to use is essential to maintaining a sense of autonomy. Restricting these freedoms can lead to feelings of confinement and frustration, making it crucial for architecture to support freedom of movement and choice (Feddersen, 2014, p. 20).

In *'Autonomy-Supportive Environments for People with Dementia'*, professor Jianji Li highlights the importance of autonomy in dementia care. She notes that regardless of their condition, people always expect privacy and the ability to make decisions about their lives. According to the World Alzheimer Report, 85 percent of people with dementia feel their preferences are ignored (Alzheimer's Disease International, 2019). This aligns with Toebes' observations in '*VerpleegThuis*', where residents often feel they are not taken seriously, underscoring the need to respect autonomy and personal preferences.

Dementia expert Michael Schmieder, in his article *'Dementia – An Illness with Many Different Repercussions'*, explains how architecture can contribute to a more humane environment by focusing on autonomy, quality of life, and social integration. Both indoor and outdoor environments are crucial for creating such spaces. Annette Pollock, in '*Meaningful Outdoor Spaces for People with Dementia',* also emphasizes the importance of outdoor areas that are safe, meaningful, and promote social interaction, beyond just sensory stimulation.

The *'Toolkit dementievriendelijk Woongebouw'* by Alzheimer Nederland outlines essential design principles for dementia-friendly spaces, including a balance between privacy and social areas, sensory engagement, safety, familiarity and clear orientation (Alzheimer Nederland, KAW & Woonzorg Nederland, 2024).

This theoretical framework emphasizes the critical role of a well-designed living environment in dementia care, with a focus on autonomy, social integration, and freedom of choice. Integrating these principles into the design of a care facility can significantly improve the quality of life for its residents. This study will adopt the principles from the *'Toolkit Dementievriendelijk Woongebouw'* to develop key design guidelines aimed at enhancing the autonomy and quality of life of residents in dementia care facilities. These principles include:



1.4 HYPOTHESIS

Given the increasing aging population and the rising number of people with dementia in the Netherlands, there is an urgent need for innovative care facilities that not only meet basic needs for safety and functionality but also address the needs for autonomy and quality of life. This study hypothesizes that care facilities designed with a focus on autonomy, social inclusion, and cultural awareness will improve the quality of life of residents. By prioritizing these elements, the design is expected to enhance independence, reduce feelings of isolation, and increase a sense of purpose and well-being, ultimately improving the resident's overall quality of life.

1.5 RESEARCH GOALS

The aim of this research is to explore how care facilities for people with dementia can be designed to create a humane and inclusive environment, with a focus on promoting autonomy and quality of life.

Additionally, the research aims to develop a list of design guidelines that can be applied to design a care facility that addresses these challenges. This list of design principles will be based on the, earlier mentioned, six key principles: autonomy, privacy & social space, outdoor environment, familiarity, orientation & accessibility and sensory engagement, see *'Figure 5. The six principles that will lead this research'.*

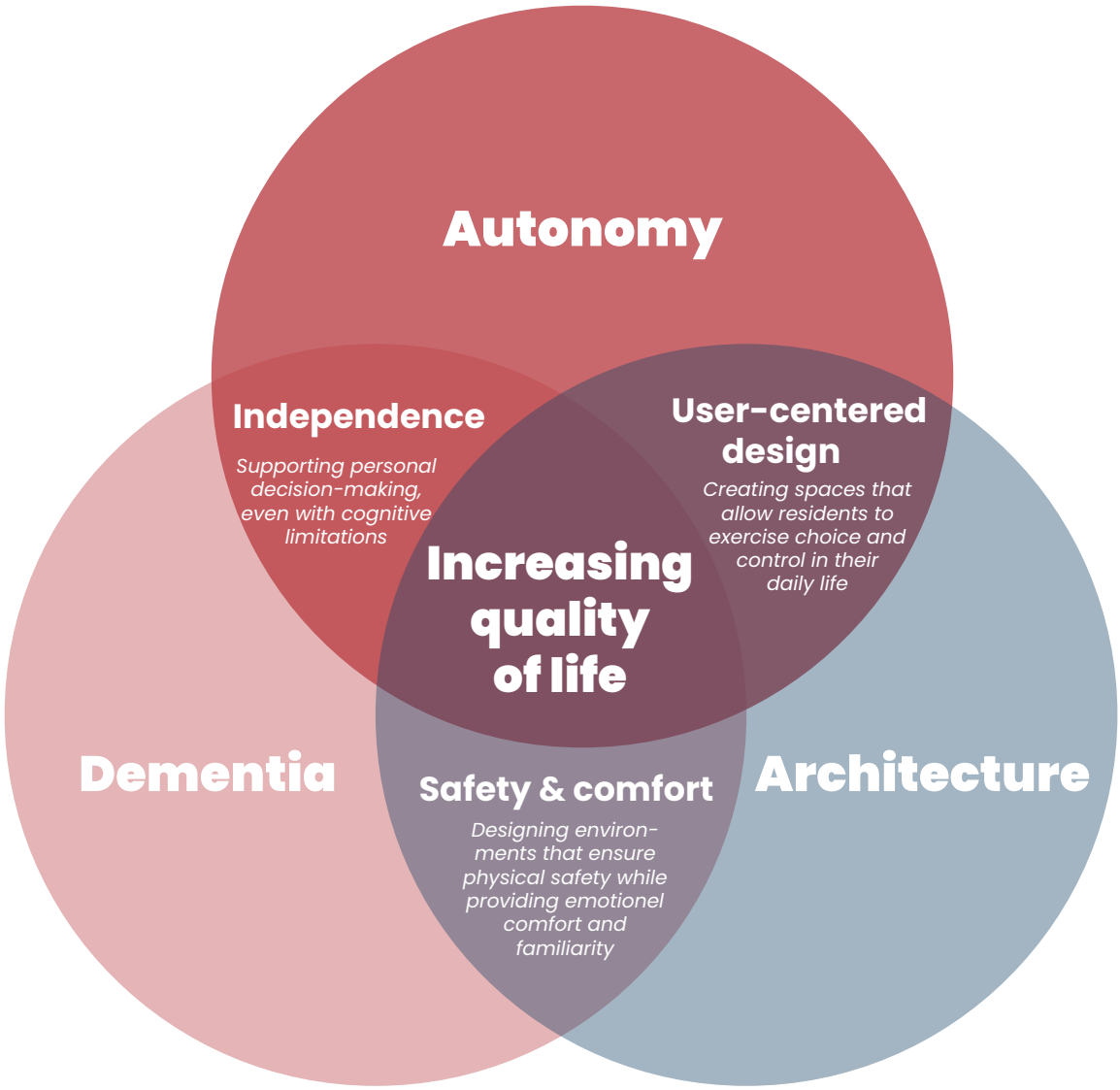


Figure 4. The relationship between Dementia, Autonomy, and Architecture. Made by author.

1.5 RESEARCH GOALS

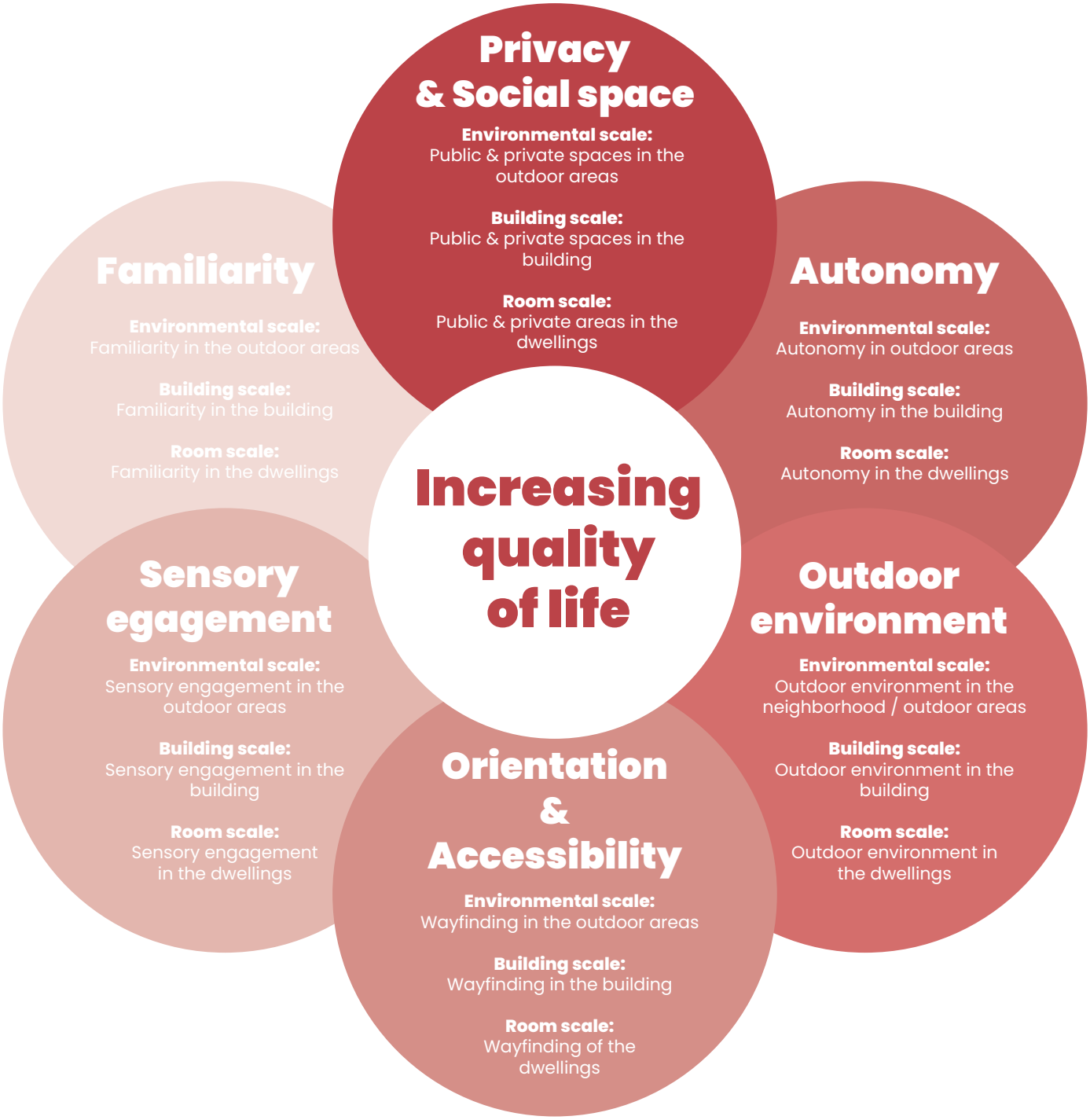


Figure 5. The six principles that will lead this research. Made by author.

1.6 SCOPE

This research has several limitations that may impact the scope and applicability of the findings. Firstly, it focuses exclusively on dementia care in the Netherlands, with insights that may not apply to other countries or cultural context. Secondly, it primarily examines the four most common types of dementia: Alzheimer's disease, vascular dementia, Lewy body dementia, and frontotemporal dementia, leaving rarer forms unaddressed. Additionally, the study targets elderly individuals with dementia that need 24/7 care from Rotterdam Zuid, specifically the neighborhoods of Tarwewijk and Katendrecht, ensuring that residents are familiar with their surroundings. Lastly, time constraints may limit the number of interviews and perspectives gathered.

Recognizing these limitations helps to understand the context of the findings and provides opportunities for future research.

1.7 RESEARCH QUESTIONS

The main research question of this thesis is:

''How can a care facility for people with dementia be designed to foster a humane and inclusive environment, with a focus on promoting autonomy and quality of life, for example in a neighborhood like Tarwewijk?''

To answer this main research question, the following sub-questions will be answered:

*1. How can the **surroundings** of a care facility contribute to fostering a humane and inclusive environment, with a focus on promoting autonomy and quality of life?*

*2. How can the **layout of a care facility building** contribute to fostering a humane and inclusive environment, with a focus on promoting autonomy and quality of life?*

*3. How can a **residents room** in a care facility contribute to fostering a humane and inclusive environment, with a focus on promoting autonomy and quality of life?*

4. What specific needs does the Tarwewijk neighborhood have concerning care and housing for people with dementia, and how can these needs guide the design and integration of such facilities?

1.7 RESEARCH QUESTIONS

Sub-questions 1, 2 and 3 focus on three different scales: the environmental, building and room scale. At each scale, the same six principles outlined in *'Figure 5. The six principles that will guide this research'* will be analyzed. This allows key principles such as autonomy, to be examined across different scales. *'Figure 6. The different scales of the research'* illustrates these scales, along with the principles to be analyzed at each level.

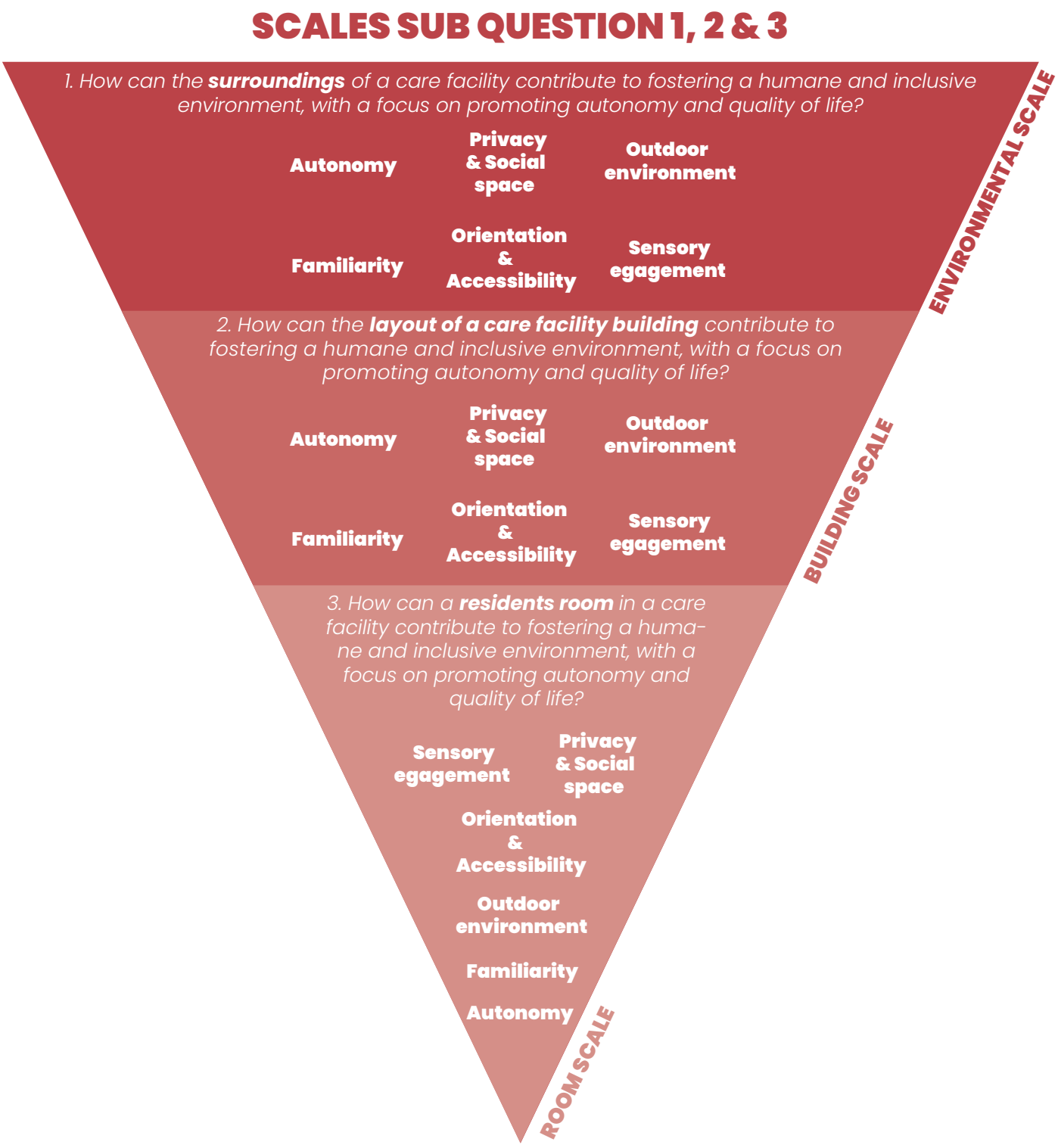


Figure 6. The different scales of the research. Made by author.

1.8 DEFINITIONS

AGING POPULATION (VERGRIJZING)
The aging population in the Netherlands is growing rapidly, with individuals aged 65 and older constituting approximately 20 percent of the population as of 2023 (VZinfo, 2023). By 2050, this is expected to rise to 25 percent, with the over-80s group doubling from 800.000 in 2020 to 1.5 million (Nidi & CBS, 2020). This shift presents challenges, especially as a smaller workforce will need to support the increasing demand for pensions and healthcare. Consequently, the pressure on the healthcare system is expected to escalate, with a rising demand for care related to age-associated conditions.

DEMENTIA
Dementia refers to a large group of brain disorders that impair cognitive functions, such as memory, language, and decision making. It results from the progressive deterioration of nerve cells in the brain, leading to memory loss, confusion, and difficulty performing daily tasks (Alzheimer Nederland, 2021).

The four most common types of dementia are:

1. *Alzheimer's Disease*: The most common form. Affecting around 70 percent of dementia patients, where brain cells progressively deteriorate. Memory loss is often the first noticeable symptom, and the condition develops gradually.
2. *Vascular Dementia*: caused by reduced blood flow to the brain, often after strokes. It can develop suddenly, with physical symptoms like paralysis. Life expectancy for those with vascular dementia is typically around five years.
3. *Frontotemporal Dementia (FTD)*: a less common type that typically affects younger people around the ages 40 to 60. FTD leads to changes in behavior and language difficulties due to damage to the frontal and temporal lopes.
4. *Lewy Body dementia*: This type shares similarities with Alzheimer's disease but includes additional physical symptoms, such as tremors, muscle stiffness, and a unusual manner of walking (Lentis, 2023).

Currently, there are no cures for dementia. The aging population is a key factor in the rising occurrence of dementia.

AUTONOMY
Autonomy refers to an individual's capacity to make their own choices without being restricted or influenced by others. Philosopher John Stuart Mill defines autonomy as acting according to one's own desires (Filosofie Magazine, 2023).

QUALITY OF LIFE
The Worl Health Organization defines quality of life as follows: '*An individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standard, and concerns*' (World Health Organisation, 2012).

INCLUSIVITY
The fact of including all types of people, things or ideas and treating them all fairly and equally (Cambridge dictionary, 2024).

FAMILIARITY
A good knowledge of something, or the fact that you know it so well. The quality or state of being familiar (Cambridge dictionary, 2024).

SENSORY ENGAGEMENT
Sensory engagement is the use of everyday objects to stimulate the senses. This involves sounds, sights, smells, tastes, and touch of textures to create experiences. These senses help evoke pleasant memories, facilitate non-verbal communication, and foster a sense of meaning and connection. This experience can offer great benefits to people with memory changes or dementia (Connectedhorse, 2023).

1.9 RESEARCH METHODS

This research will employ a combination of literature study, fieldwork, interviews, workshops, case studies, and mapping to explore how care facilities for people with dementia can be designed to promote autonomy and quality of life.

LITERATURE STUDY

A literature study will provide valuable insights into dementia, care facilities, and their architectural designs. Specific search terms such as *'design for dementia'* are used to search for relevant studies, articles, and books via Google Scholar. The search will be limited to sources published from 2000 onward to ensure that the information is current and relevant to the rapidly evolving care concepts in the Netherlands. The selected literature will be analyzed based on the six key principles: autonomy, privacy & social space, outdoor environment, familiarity, orientation & accessibility, and sensory engagement. Additionally, books will be sought in online bookstores using the same search terms. The search terms used can be found in *'Figure 7. Search terms'.*

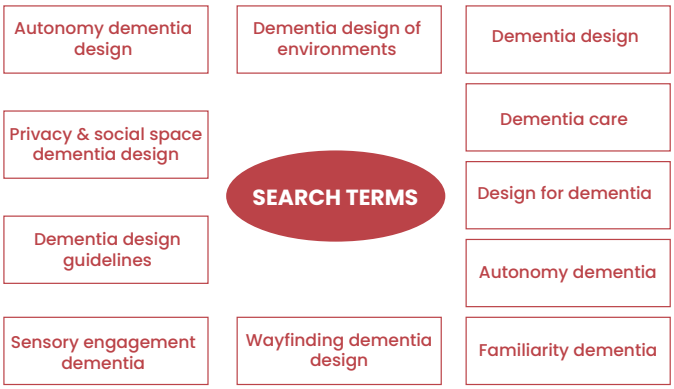


Figure 7. Search terms. Made by author.

FIELD WORK

Fieldwork will be conducted over eight days at three dementia care facilities. These facilities are: Randerode in Apeldoorn, Boswijk in Vught and Reigershoeve in Heemskerk. Observations and interviews with residents, nurses, and family member will provide insight into the care environment.

Observations will be structured across several levels:

General

Focus on the facility's layout, resident's daily movement, autonomy in daily choices, and participation in offered activities.

Environmental level

Examining outdoor space accessibility, residents movement and layout.

Building level

Analyzing common areas, circulation spaces and usage frequency of spaces.

Room level

Observing residents movement within personal rooms and their control over the space.

These observations will be documented through drawings and sketches, offering a comprehensive view of the care environment and its impact on daily life. These observations are compiled in the fieldwork booklet, titled *''The Reality''.*

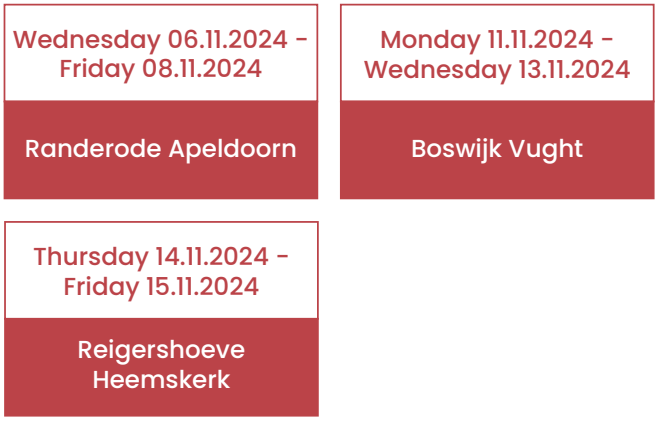


Figure 8. Planning fieldwork. Made by author.

INTERVIEWS

Interviews will be conducted with residents, family members and staff during the fieldwork to gain deeper insights into their experiences. For the questions, see *'Appendix A. Interview questions fieldwork'.*

Interviews are also conducted with the residents of Tarwewijk to understand how they would like to age in their own neighborhood and how they would integrate a care home for people with dementia into the district. For the questions, see *'Appendix B. Interview questions Tarwewijk'.*

Finally, interviews will be conducted with architectural firms specializing in designing for elderly with dementia. For the questions, see

1.9 RESEARCH METHODS

'Appendix C. Interview questions architects'

The outcomes of these interviews are compiled in the fieldwork booklet, titled *''The Reality''.*

WORKSHOPS

During the fieldwork, workshops will be organized with residents. In these workshops, participants will view various images and talk about their 'ideal' living environment based on their preferences for design. *'Appendix D. Workshop images'* shows the selection of images available for residents during the workshop.

The outcomes of these workshops are compiled in the fieldwork booklet, titled *''The Reality''.*

CASE STUDIES

The three visited care facilities will serve as case studies for this research. By examining the six key principles in each facility, it will be possible to compare and contrast various aspects of their environments and approaches to care. This comparison will highlight both the differences and similarities between the facilities, showing how each one addresses the needs of residents with dementia.

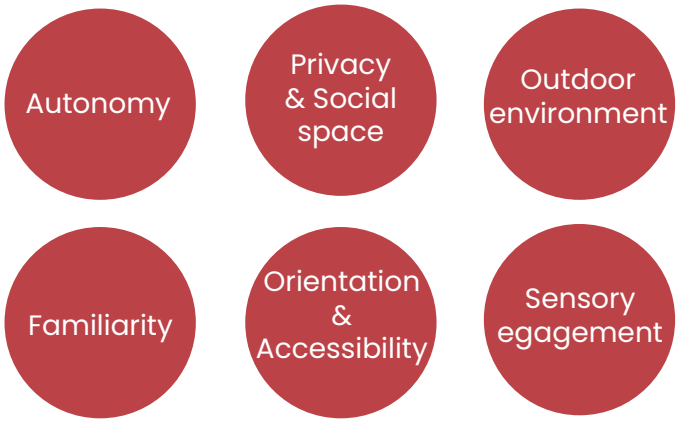
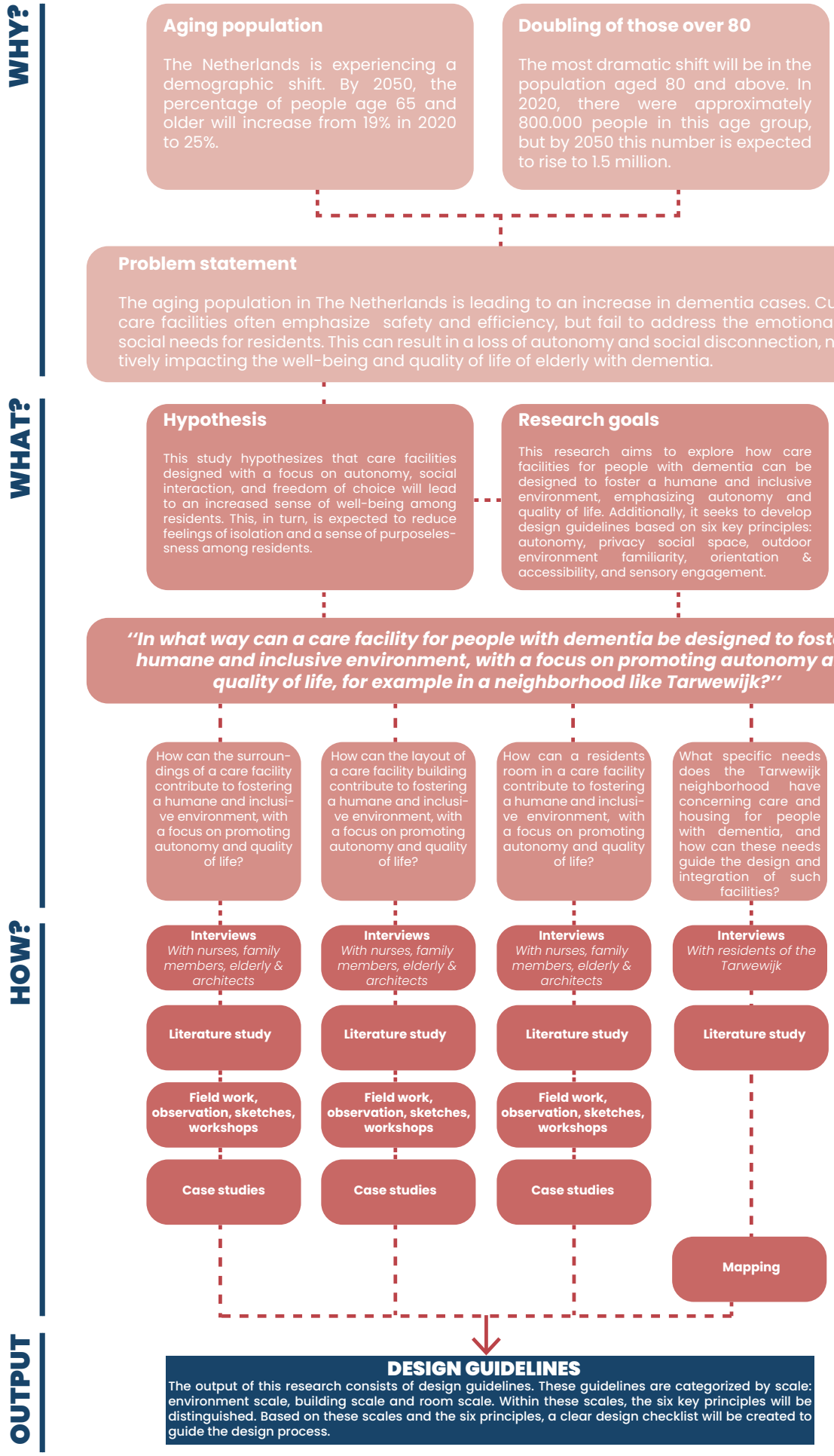


Figure 9. The six key principles. Made by author.

MAPPING

As part of this research, mapping will be used to identify and visualize key points related to dementia care within the Tarwewijk. For this method, the group analysis conducted during the first 10 weeks for the area will be utilized. Additionally, certain topics will need to be mapped independently, such as wayfinding and resting spots in the neighborhood.

1.10 RESEARCH PLAN DIAGRAM



02

ENVIRONMENTAL SCALE

*How can the **surroundings** of a care facility contribute to fostering a humane and inclusive environment, with a focus on promoting autonomy and quality of life?*

2 ENVIRONMENTAL SCALE

The environment in which elderly people with dementia are situated plays a crucial role in their quality of life. Challenges such as difficulties with wayfinding, physical barriers in the surroundings, and limited opportunities for social engagement often prevent them from exploring their environment and connecting with the community. These barriers can lead to isolation and disconnection from the broader neighborhood (Marshall, 1988; Chalont, 2008). This chapter begins at the largest scale, the environmental scale, and will explore how the surroundings of a care facility can contribute to a better quality of life.

2.1 ORIENTATION & ACCESSIBILITY

Being able to go outside and walk through a neighborhood is a fundamental part of life, and arguably a basic human right. For people with dementia, however, this can be challenging due to the balance between safety and autonomy. Ensuring safe, accessible paths and surfaces, especially for those using mobility aids like walkers, is essential (Chalont, 2008, p. 96). Walking paths should be constructed from consistent materials like concrete or paving blocks that remain stable and even over time (Bennet, 2006).

Walking paths should also offer a sense of purpose or reward, such as providing flower beds or small animal enclosures along those paths, to spark interest and encourage interaction (Gibson, 2006). Landmarks along routes can provide orientation and assist in wayfinding. For example, people with dementia might remember to turn at a distinctive object, like a yellow flowerbox (Passini, Pigot, Rainville, & Tetreault, 2000).

A well-connected neighborhood improves quality of life, especially with nearby destinations that feature seating, shelter, and smooth paving along the way there (Mitchell, Burton, & Raman, 2004). During fieldwork at Randerode in Apeldoorn, the care staff discussed plans for a walking path with resting spots and orientation points leading to the village of Ugchelen. This ensures residents stay connected to their community, fostering a sense of belonging. For details, see, "*Fieldwork booklet: chapter 1.7*".

Figure 10. Recognition points. Made by author.

2.2 PRIVACY & SOCIAL SPACES

Engaging with the environment by walking through it or sitting on a bench supports the well-being of older adults with dementia and can stimulate interaction (Rappe & Topo, 2007). Implementing various functions and objects in the environment can also create opportunities for either privacy or social interaction (Gibson, 2006). A good example of this is the small chapel near the Boswijk care facility in Vught, visited during the fieldwork. This small chapel is located within walking distance of the building, making it easily accessible to residents. across from the chapel is a bench where elderly people with demenia can rest before heading back to the facility. This creates a space in this environment where social interaction can naturally occur or where individuals can sit quietly near the chapel.

Interaction and connection with the neighborhood are essential for maintaining a sense of belonging and community for people with dementia (Chalont, 2008, p. 107). A central location within a neighborhood can enhance the integration of social spaces into the community (van Audenhove, et al., 2003). For instance, social zones can be designed in the surroundings, as seen at Reigershoeve in Heemskerk, see "*Fieldwork booklet: chapter 3.2*". At the edge of their property, directly connected to the neighborhood, they create a social zone featuring a small shop selling second-hand clothing and coffee and tea. This space is accessible to both the residents of the Reigershoeve and passersby walking or cycling through the neighborhood. This social space provides an opportunity for neighborhood residents and Reigershoeve residents to meet and interact.

2 ENVIRONMENTAL SCALE

Figure 11. Create social spaces for interaction. Made by author.

Figure 12. Reigershoeve in Heemskerk: protective fencing around water. Made by author.

2.3 OUTDOOR ENVIRONMENT

Rural locations of care facilities for people with dementia offer more green and blue spaces due to their surroundings, which contrasts with urban environments where this can be a challenge. Having a high availability of local green and blue spaces in the outdoor environment is linked to a better quality of life for people with dementia, especially in urban environments (Wu, et al., 2021). In urban areas, it is essential to create so-called "*wildlife corridors*" by identifying interruptions in the green networks of a city and addressing them with additional green spaces, such as parks. This will also attract animals, enhancing biodiversity and creating a more engaging environment (Chalont, 2008, p. 80).

Incorporating water features in the environment can also positively impact people with dementia, as they attract wildlife such as ducks and frogs, which can encourage interaction among residents. It also have been shown to reduce agitation and provide a calming effect (Motealleh, Moyle, Jones, & Dupre, 2019). However, care must be taken to place protective fencing around water to prevent accidents.

These green and blue spaces in the outdoor environment will provide valuable fresh air, opportunities for exercise, and social interaction for residents, which will positively impact their quality of life and mental health. However, it is crucial to prioritize safety and accessibility when designing these spaces to ensure they are suitable for all (Finlay, Franke, Mckay, & Sims-Gould, 2015).

2.4 AUTONOMY

Access to the outdoor environment positively impacts people with dementia, benefiting their mental and physical well-being (Mapes, 2010; Rappe & Topo, 2007). Free movement through outdoor spaces encourages social interaction, fostering inclusion and providing a sense of freedom and autonomy. It helps maintain a normal routine (Argyle, Dening, & Bartlett, 2016). However, living in a care environment removes the need to take care of oneself, reducing a person's daily routines and the purposeful walking associated with them. This can restrict opportunities for social interaction with community members, such as postal workers or shopkeepers, despite the fact that such encounters can foster a greater sense of community and autonomy (Chalont, 2008, p. 110).

There are many benefits to being able to move freely through an environment, but there are also challenges that may arise. Spatial disorientation is one of the earliest symptoms of Alzheimer's disease, which significantly limits the ability to navigate the outdoor environment safely (Bayat, et al., 2021). That is why the design of a neighborhood plays a crucial role in the accessibility of the outdoor environment. Design solutions are needed within the neighborhood to support orientation and wayfinding, enabling people with dementia to navigate the outdoor environment independently. For example, varying the design of lamppost, benches, or street furniture can create landmarks that serve as orientation points. Additionally, using color-coded pathways or routes throughout the neighborhood can guide individuals along a safe set route. These de-

sign principles can help people with dementia maintain control over their environment, fostering a sense of autonomy (Li, 2023).

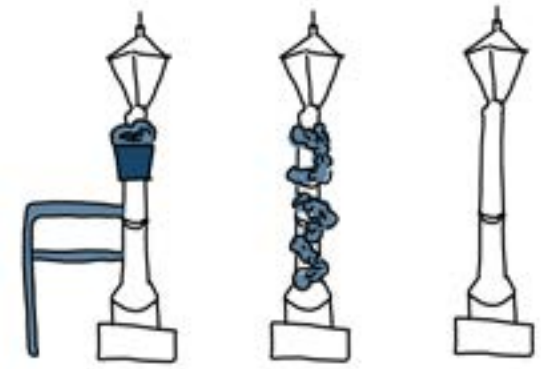


Figure 13. Orientation points: varying lamp posts. Made by author.

Dementia-friendly communities are increasingly focusing on creating supportive environments that enhance outdoor access and autonomy (Chaudhury, et al., 2023). Technological advancements also support this goals. For example, GPS trackers enable caregivers to monitor individuals locations, ensuring safety while promoting independence. During fieldwork in Vught, a woman used a GPS bracelet to freely walk around the outdoors of the care facility. This allowed her to maintain autonomy, take daily walks, and enjoy a better quality of life. See, ''*Fieldwork booklet*: *chapter 2.5*''. to read about a day in the life of this specific woman.

2.5 FAMILIARITY

For people with dementia, it is crucial to remain in a familiar environment and not be placed too far away from their home in a care facility. Moving to an unfamiliar location can lead to confusion and disorientation, worsening their emotional and cognitive state. While people with dementia often struggle with consciously recalling information, their long-term memory remains intact. A familiar environment can help with this long-term memory, helping to maintain or even maximize functional abilities (Son, Therrien, & Whall, 2002).

An, earlier mentioned, example of this is the walking route planned in the new development at Randerode in Apeldoorn, which connects to the nearby village of Ugchelen. This route allows residents who previously lived in Ugchelen to continue visiting the area where they spent much of their lives, providing a sense of familiarity and comfort.

Figure 14. Walking routes to familiar environments.. Made by author.

2.6 SENSORY ENGAGEMENT

Human beings have a natural need for contact with nature (Zeisel, 2009). However, many people with dementia in care facilities spend very little time outdoors. Research shows that 50 percent of people living with dementia in care facilities never go outside (Gilliard & Marshall, 2012). Despite this, there are many benefits to spending time outdoors for people with dementia, as it offers a rich sensory experience, engaging the senses. Integrating natural landscapes into the environment can create a sensory-rich outside spaces. For example, a variety of plants, water features, fragrant flowers, textures like rough stones, and sounds of flowing water or birds can stimulate the senses of sight, smell, touch, and hearing, all of which can contribute to the well-being of residents (Rodiek & Schwarz, 2007).

During fieldwork at Randerode, much thought had been given to sensory engagement in the surrounding environment. For instance, an animal enclosure had been established in the nearby park, allowing people with dementia to watch and interact with the animals. Additionally, a playground for children was built nearby, providing another opportunity for resi-

dents to engage in sensory experiences. Another feature of the environment was the variety of plants planted in many different colors. This thoughtful approach to sensory engagement in the outside environment at Randerode demonstrates how such elements can positively impact the well-being of people with dementia. For more details on these observations, see "*Fieldwork booklet: chapter 1.2*".

Figure 15. Animal enclosure at Randerode. Made by author.

Figure 16. Playground at Randerode. Made by author.

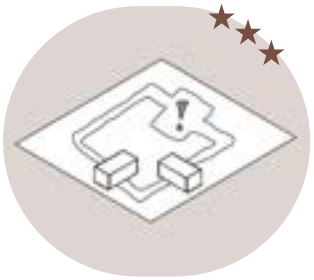
Image 17. Resting spot at Randerode. Made by author.

2.7 CONCLUSION

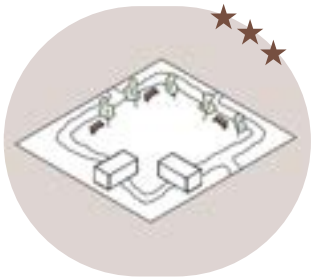
In conclusion, the environment of care facilities plays a crucial role in creating a humane and inclusive setting for people with dementia. An outdoor environment designed with a focus on accessibility, safety, and sensory stimulation can enhance the quality of life and autonomy of residents. For example, features like resting spots along walking paths, having destinations to walk to, and routes that lead to meaningful places, like a village someone used to live in, are important. Integrating natural elements into the environment contributes to a rich sensory experience for residents, which can support their physical, mental, and emotional well-being. Furthermore, it is essential to provide opportunities for social interaction with the neighborhood, fostering a sense of familiarity and connection with the surrounding community, which promotes social inclusion and improves quality of life. This chapter demonstrates that these environmental factors are vital in supporting the well-being of people with dementia.

2.8 DESIGN GUIDELINES

ORIENTATION & ACCESSIBILITY



Providing a sense of purpose or reward for using the walking paths by adding destinations



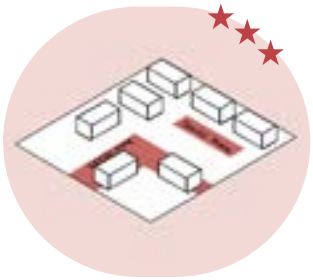
Place resting benches at regular intervals along walking paths, ensuring they are wheelchair accessible and provide shade

Incorporate recognizable landmarks such as flowerbeds, small animal enclosures, or sculptures to help residents orient themselves and have experiences and activities while walking

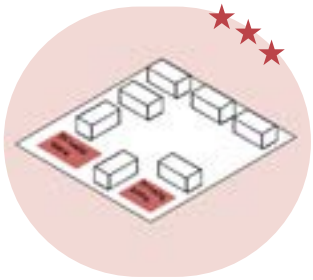
Ensure pathways link the care facility to the local community, allowing residents to walk to local destinations like parks or shops

Design clear paths with consistent materials and colors to ensure safety and accessilibity for residents using mobility aids

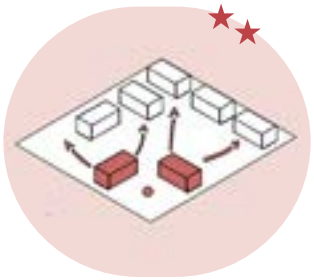
PRIVACY & SOCIAL SPACES



Create social zones in the environment to stimulate interaction and connection with the neighborhood by incorporating spaces that are accessible to both residents and the community. For example, a small café, shop, or community garden



Create small seculded areas within the landscape where residents can enjoy some privacy. These zones can include quiet seating areas tucked away from busy paths. Make sure these spaces are easily accessible



Position the care facility in a central or easily accessible neighborhood location to ensure better integration of the facility into the surrounding community

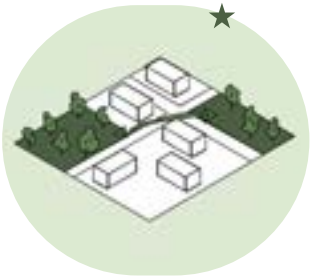
** To determine the importance of the design guidelines, see 'Appendix E. Design Guidelines Weight"*

2.8 DESIGN GUIDELINES

OUTDOOR ENVIRONMENT

Ensure that water features are safely fenced to prevent accidents while still providing a calming atmosphere

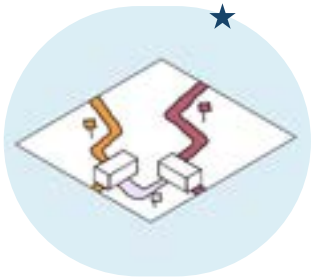
Provide enough green and blue spaces, as this is linked to a better quality of life



Connect green spaces in urban areas to enhance biodiversity, attract wildlife, and provide engaging environments for residents

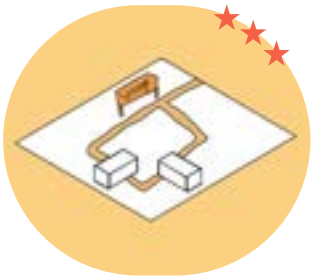
AUTONOMY

Varying lampposts, benches, and street furniture can act as landmarks, helping orientation and supporting autonomy by allowing independent movement through the environment

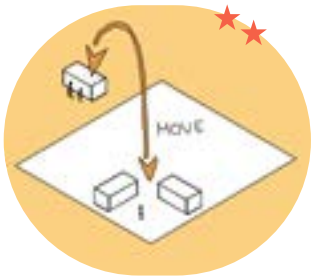


Provide safe color-coded routes throughout the neighborhood to offer clear guidance, helping residents navigate spaces independently

FAMILIARITY



Create paths that connect to familiar local areas, such as the village center, to help residents maintain routines and feel at home



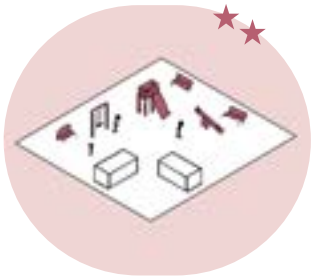
Ensure the facility is located near a neighborhood so people with dementia don't have to move far, allowing them to remain in a familiar environment

** To determine the importance of the design guidelines, see 'Appendix E. Design Guidelines Weight"*

2.8 DESIGN GUIDELINES

SENSORY ENGAGEMENT

Ensure a varied environment with different sounds, textures and scents



Ensure views of a nearby playground or an animal enclosure, creating lively and dynamic visuals

Provide soothing sounds in the environment, such as flowing water or birds

Incorporate fragent flowers in the environment, like lavender, to stimulate the senses

Provide different textures in the outdoor environment like rough stones, smooth grass or textured bark

** To determine the importance of the design guidelines, see 'Appendix E. Design Guidelines Weight"*

03

BUILDING SCALE

*How can the **layout of a care facility building** contribute to fostering a humane and inclusive environment, with a focus on promoting autonomy and quality of life?*

3 BUILDING SCALE

The layout of a care facility plays an important role in shaping the experience of its residents. Traditional care facilities often prioritize safety, but this can come at the cost of autonomy and social interaction (Toebes, VerpleegThuis, 2021). Complex floor plans, long corridors, and unclear signage can disorient residents, limiting their independence and increase frustration (Ontwerpen voor ouderen met dementia, 2022). Thoughtful design solutions that enhance wayfinding, personal spatial choices, and a sense of comfort are essential for fostering a humane and inclusive environment. This chapter will explore how specific design elements in the layout of a care facility can support autonomy and enhance quality of life for people with dementia.

3.1 ORIENTATION & ACCESSIBILITY

There are several elements that contribute to orientation within a building for people with dementia, including the design of corridors, walls, spaces with unique characteristics, junctions, and landmarks such as paintings. The clearer these elements are, the more clear the building becomes (Stroobants & Verhaest, 2012). Additionally, smaller living groups of 8 to 10 residents also enhance orientation (Marquardt & Schmieg, 2008).

The simplicity of the floor plan significantly affects orientation. Short, straight corridors and L- or H-shaped layouts provide clear overviews and reduce confusion. In contrast, circular or U-shaped floor plans are less effective (Li, 2023). Spatial clarity is crucial, it is important to maintain direct visual contact from key areas, such as small communal areas, to the main shared living space. Connecting bedrooms doors directly to communal areas rather than through corridors also helps with better orientation (Marquardt G. , 2011).

If direct visual contact is not feasible, it can be encouraged through design. For example, when a corridor requires a turn, it is important to avoid sharp angles and instead use open views, such as atriums (Stroobants & Verhaest, 2012). Dead-end corridors should be avoided. Placing seating areas or other landmarks at the end of the corridor helps with orientation (Marquardt & Schmieg, 2008). These landmarks can also be positioned at various points along a corridor, helping people tell apart different areas of the building and making it easier to find their way (Nillesen & Opitz, 2013).

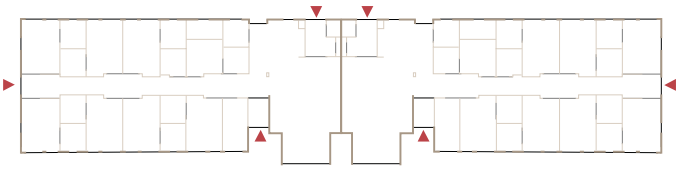


Figure 18. Simple floor plan at the Reigershoeve, visited during fielwork. Made by Author

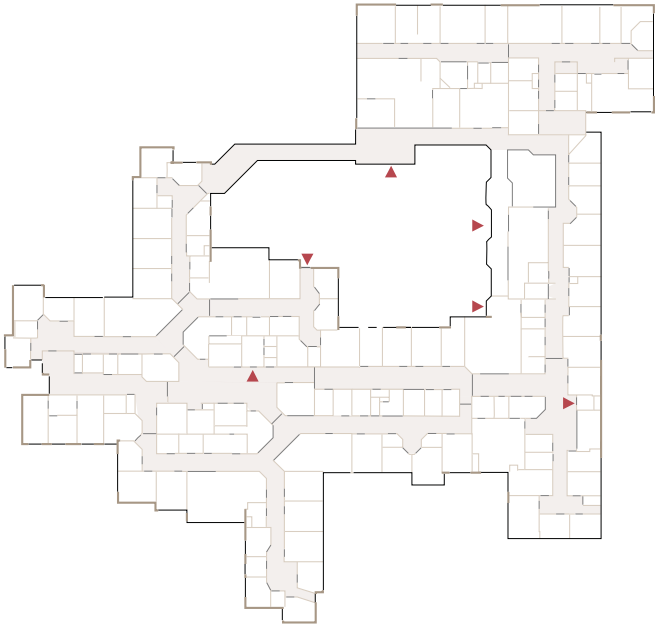


Figure 19. Complex floor plan at Randerode, visited during fieldwork. Made by author.

Small loops within the building layout allow for safe wandering. These loops, organized around central functions like toilets or storage, can be compact to remain easily navigable (Kroner Architecten, 2024).

The effective use of signage within the building can further assist with navigation and orientation. Placing simple and recognizable symbols accompanied by written text helps locate specific functions. For example, people with dementia often look down, so they may not notice signs placed above doors. The best orientation outcomes are achieved when signage is placed both on the floor and at eye level for the individual with dementia (K.D., Carreon, & Stump, 2000).

3 BUILDING SCALE

3.2 PRIVACY & SOCIAL SPACES

Living in a communal housing environment allows people with dementia to avoid constant isolation, as they can also seek companionship. This is often done, indicating the need for social spaces for people with dementia. However, it is also true that where there are many social spaces, there will also be a need for private spaces, as individuals must and want to retreat when they feel the need. This retreat happens in personal rooms, but can also happen within the shared spaces themselves. Paying attention to privacy does not reduce social interaction; on the contrary, a lack of opportunities for retreat leads to less social contact (Stroobants & Verhaest, 2012).

In shared spaces, it is important for people with dementia to be able to choose the level of social interaction they desire. This can be achieved through sightlines and views through atriums or open spaces, allowing individuals to consciously avoid or seek out encounters (D.J.M, 1993). For example, seating areas can be strategically placed with a view of the common living space but still offer some privacy. These seating areas tend to be used more than those that are fully separated from the shared space (Marquardt & Schmieg, 2008).

Variability between spaces is also important. When a living unit includes multiple spaces with distinct characteristics, residents are less likely to retreat to their personal rooms (Zeisel, et al., 2003). This involves considering sociopetal and sociofugal spaces, where sociopetal spaces encourage interaction through the arrangement and design of the room, such as chairs facing one another. In contrast, sociofugal spaces are designed to orient people away from each other, such as with chairs arranged in a row. Rooms near windows tend to have a sociopetal character, where much social interaction occurs (Chalfont, 2008).

3.3 OUTDOOR ENVIRONMENT

Having sufficient views from inside to an inner garden is important, as it can encourage the independent use of the garden. Ideally, living rooms should have windows offering outdoor views from two sides (Stroobants & Verhaest, 2012). Furthermore, an accessible inner garden helps reduce feelings of confinement, and using unobtrusive fences, like hedges, preserves residents dignity (Li, 2023).

The garden should feature a variety of plants and elements that promote activity and exploration, such as pet-friendly animals, raised plant beds, and low-growing fruit trees (Chalont, 2008). The plants should be non-toxic, and the risk of falls or injuries in the garden should be minimized. Pathways in the garden must be safe and equipped with enough resting spots. Ideally, the paths should form a loop around the inner courtyard, allowing residents to return to their starting point (Stroobants & Verhaest, 2012). During fieldwork in Vught, it was observed that there was only one path in the inner garden that lead to a closed gate, which prevented residents from wandering freely through the garden, as they always ended up at a gate they could not pass through, see "*Fieldwork booklet: chapter 2.3*". In contrast, the garden in Heemskerk was spacious, with many walking paths forming loops around the area, which encouraged residents to spend time outside.

Figure 20. Walking path with a dead end at Boswijk, visited during fieldwork. Made by author.

Resting areas in the garden are essential, including sun and shaded spots for comfort (Department of Health, 2015). In colder weather, winter gardens or verandas can allow residents to spend time outdoors year-round (Marshall M. , 2006).

Adding landmarks in the garden can help residents navigate the space or give them a destination to walk towards. During fieldwork in Heemskerk, it was noted that a statue of the Virgin Mary was placed along a path in the in-

ner garden, and this has become a popular landmark for residents to walk towards and rest, see "*Fieldwork booklet: chapter 3.3*".

Image 21. Resting spot in the inner courtyard next to a statue of Mary the Virgin. Made by author.

3.4 AUTONOMY

For people with dementia, being able to freely move around and decide where to go in a building is crucial to maintaining their autonomy. This should be considered when designing such facilities. A key element in preserving autonomy is ensuring a clear and intuitive layout, which has been discussed earlier this chapter. An easy-to-navigate design helps reduce confusion, allowing residents to move independently and feel more confident in exploring the building (Stroobants & Verhaest, 2012).

Another factor that supports autonomy is smaller living units, ideally for 8 to 10 residents. These smaller units can enhance feelings of comfort and familiarity, which can strengthen the feeling of autonomy (Marquardt & Schmieg, 2008).

It is also important to provide residents with the ability to independently access (outdoor) spaces, such as an inner garden. Allowing them to open doors to safe spaces themselves helps reduce feelings of confinement and the aggression that can result from it (Li, 2023). In contrast, doors that cannot be opened, such as those leading to staircases or elevators, can be designed to be as inconspicuous as possible, ideally outside the residents' sightlines. Additionally, these doors can be painted in a color that matches the wall around it, making them less noticeable by reducing contrast (Ontwerpen voor ouderen met dementie, 2022).

Finally, as previously mentioned, designing inviting and homelike social and private spaces with various seating areas helps create a sense of control and choice for residents. This allows them to decide which space best suits their needs at any given moment, further enhancing their autonomy (van Steenwinkel, Verstraeten, & Heylighen, 2016).

3.5 FAMILIARITY

Designing a care facility for people with dementia to feel like home is crucial. Furniture, lighting, and accessories contribute significantly to creating a warm, domestic atmosphere (Charras, 2008). While individuals with dementia often experience difficulties with short-term memory, their long-term memory typically remains intact. That is why it is important to incorporate recognizable designs in furniture and accessories throughout the building. These items do not need to be old but should be designed to look familiar to this group, avoiding an institutional or public feel (Stroobants & Verhaest, 2012).

Additionally, Communal spaces should be divided into smaller zones, resembling familiar settings like kitchens or living rooms rather than large dining halls. The scale of these spaces is essential in creating a sense of familiarity and comfort (Halsall & Macdonald, 2015).

At Randerode, a care facility visited during fieldwork in Apeldoorn, a "*museum corridor*" was integrated into the buildings design. This corridor features objects, such as chairs and school desks, familiar to most of the residents. These items not only spark recognition but also encourage social interaction by talking about the past. For further details on the museum corridor, see "*Fieldwork booklet: chapter 1.3*".

Image 22. Museum corridor at Randerode, visited during the fieldwork. Made by author.

3 BUILDING SCALE

3.6 SENSORY ENGAGEMENT

The senses play a crucial role in how people interact with their environment. As people age, their senses change. Older individuals may, for example, no longer hear high-pitched sounds. Dementia can also affect vision, particularly depth perception and contrast sensitivity (Jones & van der Eerden, 2008). Therefore, it is essential to design spaces with clear sensory cues.

Contrast is an important tool in creating a clear sensory environment. People with dementia often find cool colors like blue or violet harder to distinguish but can recognize warmer colors like yellow or red more easily. Brightness also matters, light and dark shades of blue are easier to differentiate than pastels (Jones & van der Eerden, 2008). To help with orientation, doors to accessible spaces should be highlighted with contrasting colors, while doors to private spaces should blend into the wall (Ontwerpen voor ouderen met dementie, 2022).

Image 23. High vs low contrast door. Made by author.

Contrasting colors between walls and floor can help define room boundaries. If both are the same color, or if a window covers a whole wall, it can be difficult to see where the room ends. Additionally, strong contrasts in flooring, such as dark tiles on a light surface, should be avoided, as they may appear as holes. Shiny flooring can also be problematic, as it may seem wet or slippery (Stroobants & Verhaest, 2012). Natural daylight is essential for visual perception and maintaining a regular sleep-wake cycle. A winter garden can provide a transitional space for sufficient daylight exposure (van Someren, Riemersma, & Swaab, 2005).

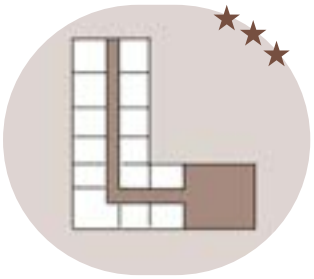
Lastly, it is important to introduce sensory stimuli in moderation, which can be achieved by using elements such as music, scented flowers, edible berries, or materials that feel pleasant to touch (Calkins, 2005).

3.7 CONCLUSION

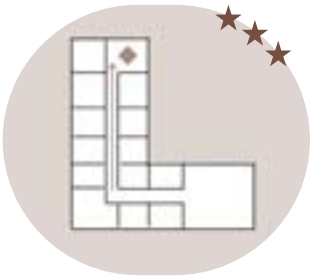
The layout of a care facility plays a crucial role in creating a humane and inclusive environment for people with dementia. A clear and intuitive design, including elements such as simple floor plans, effective orientation markers, and accessible outdoor spaces, enhances autonomy and quality of life. Smaller living units promote comfort and familiarity, while privacy and social spaces allow individuals to choose their level of interaction. Sensory engagement, through the use of contrasting colors and natural light, further supports orientation and well-being. Ultimately, a well-designed layout promotes both independence and a sense of home.

3.8 DESIGN GUIDELINES

ORIENTATION & ACCESSIBILITY



Design simple floor plans. Use straight, L or H shaped corridors for clear sightlines



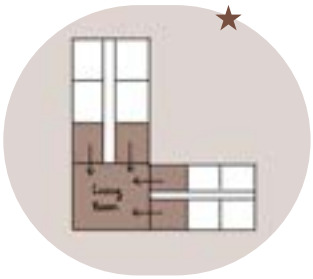
Avoid dead-ends. Place seating areas at the end of a corridor

Include seating areas along walking routes to provide rest points and serve as informal meeting spots and landmarks within the building

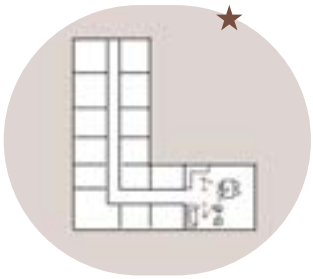
Ensure that residents can wander through the building in small, clear loops

Create gentle turns in corridors to avoid sharp angles. Open views should be incorporated when necessary

Design big, clear, recognizable symbols along with written text to assist with wayfinding

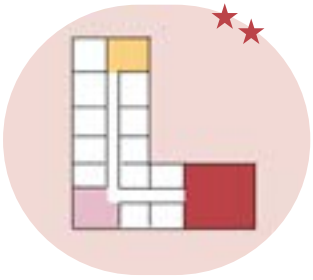


Position dwelling doors to open directly into shared living areas to avoid long corridors

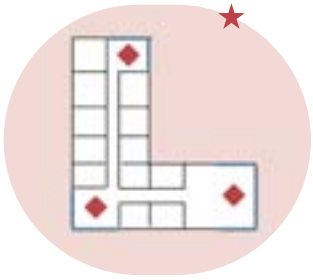


Ensure direct visual contact with key spaces like the dining room, kitchen and living area

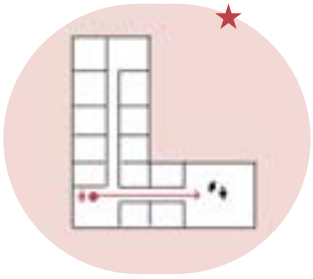
PRIVACY & SOCIAL SPACES



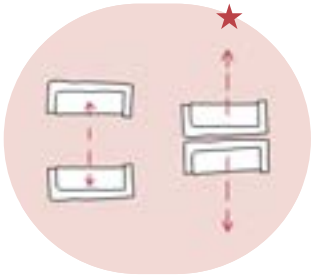
Include spaces with different characteristics to encourage social interaction



Create social spaces near windows



Design sightlines to allow individuals to observe social spaces without physically being there



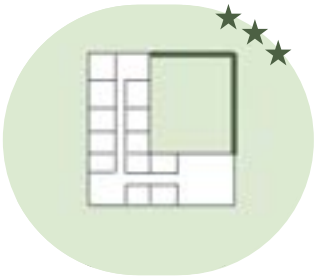
Use sociopetal and sociofugal layouts to promote privacy / social spaces

** To determine the importance of the design guidelines, see 'Appendix E. Design Guidelines Weight"*

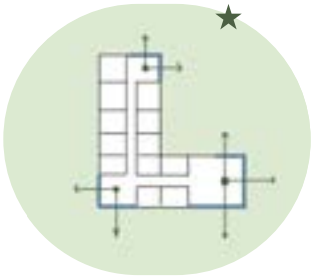
3.8 DESIGN GUIDELINES

OUTDOOR ENVIRONMENT

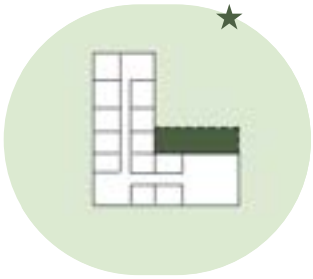
Use looped walking paths through the inner courtyard



Design inner gardens with unobtrusive barriers, like hedges, to reduce feelings of confinement



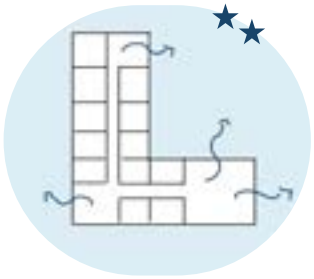
Provide communal areas with windows offering views of the garden from multiple directions



Design winter gardens or verandas for year-round outdoor experiences

AUTONOMY

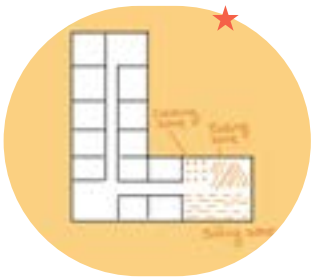
Create small living units for 8-10 residents to enhance comfort and autonomy



Ensure residents can independently access safe (outdoor) spaces like gardens

FAMILIARITY

Ensure there are objects added in the hallways / living rooms that evoke familiarity and encourage reminiscence

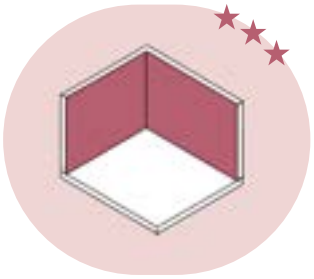


Divide large communal areas into smaller, familiar zones like a zone for a kitchen or living room

** To determine the importance of the design guidelines, see 'Appendix E. Design Guidelines Weight"*

3.8 DESIGN GUIDELINES

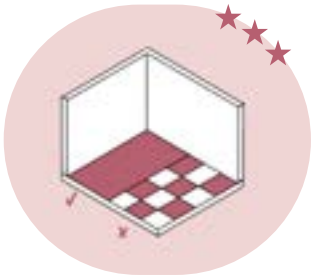
SENSORY ENGAGEMENT



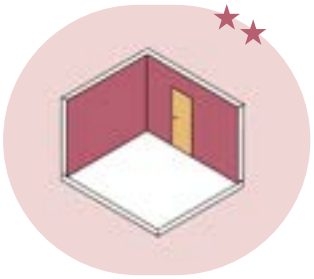
Ensure a contrast between walls and floors to define room boundaries

Prevent windows that go all the way down to the ground

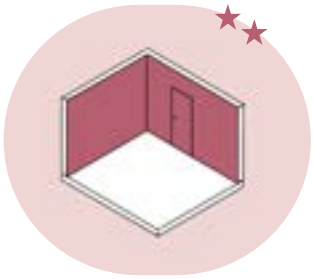
Avoid shiny materials for flooring, as they can create the illusion of wet surfaces



Avoid strong contrasts in flooring, like dark tiles on light floors

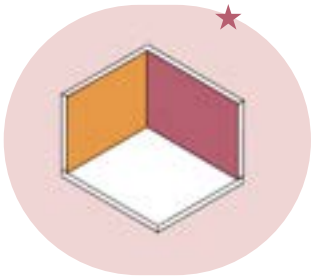


Highlight doors to accessible spaces with contrasting colors



Ensure doors to private spaces blend into the surrounding walls

Provide enough natural daylight to support a regular sleep-wake cycle



Use warm colors

** To determine the importance of the design guidelines, see 'Appendix E. Design Guidelines Weight"*

04

ROOM SCALE

*How can a **residents room** in a care facility contribute to fostering a humane and inclusive environment, with a focus on promoting autonomy and quality of life?*

4 ROOM SCALE

The design of a resident's private room is crucial in promoting autonomy and enhancing the quality of life. This chapter explores how features like orientation, personalization, privacy, and sensory engagement within the room can support residents' well-being. It examines how a well-designed space can foster independence and comfort, contributing to a more humane and inclusive environment.

4.1 ORIENTATION & ACCESSIBILITY

It is crucial that residents can independently find their own rooms. Simple solutions like nameplates, color schemes, or icons often prove insufficient, working only for individuals with mild dementia. A more effective approach is to personalize the entrance to each room, for example by using images that hold special significance for the resident. These are often photos from their young adulthood, as they remain more recognizable (Stroobants & Verhaest, 2012).

Additional strategies include placing a personal cabinet, a coat rack with their jacket, or a painting near the room entrance. If the entrance space includes a recess or alcove, these features can be effectively integrated (Nouws, 2001).

In England and Ireland, "*memory boxes*" are commonly used. These are display cases placed next to the door, showcasing personal memorabilia. Research indicates that they improve room recognition by 45% for individuals who previously struggle with finding their room, with the greatest impact seen in those with moderate dementia. However, for others, these "*memory boxes*" had little to no effect (Nolan, Mathews, Truesdell-Todd, & van Dorp, 2002). This underscores the importance of an individualized approach to helping resident navigate to their rooms.

4.2 PRIVACY & SOCIAL SPACES

For people with dementia, being able to locate and spend time in their personal room is associated with reduced aggression, restlessness, agitation, and improved sleep. Psychotic symptoms are also lessened (Zeisel, et al., 2003). Additionally, it is crucial that personal rooms provide sufficient space to receive family members and other visitors (Stroobants & Verhaest, 2012).

During the fieldwork at Randerode in Apeldoorn, a discussion took place regarding future plans for a new care facility. A key design priority was ensuring that each room includes a separate living and sleeping area. This separation would foster a sense of a private appartement, allowing residents to comfortably welcome visitors. For the discussion about this subject, see "*Fieldwork booklet: chapter 1.7*".

Workshops conducted at all three locations further emphasized that residents themselves value having distinct living and sleeping spaces. This preference was due to the fact that the rooms at all three locations were quite small, making it difficult to welcome family members and other visitors. For the details of the workshops, see "*Fieldwork booklet: chapter 1.6 , 2.6 & 3.6.*"

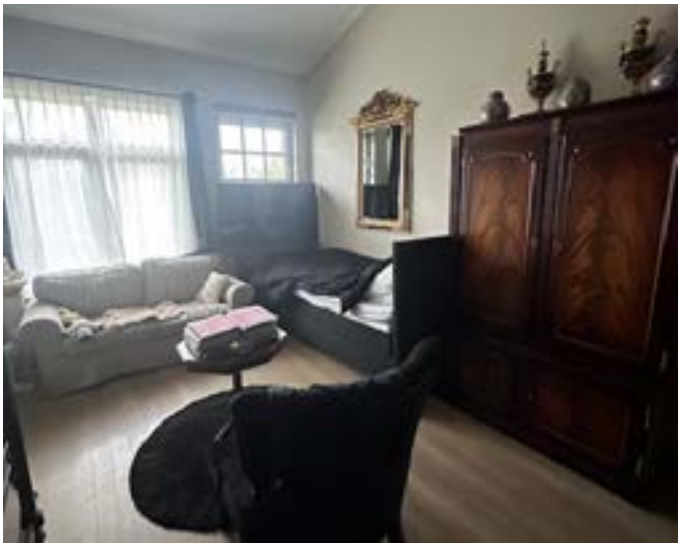


Image 24. Small room of someone at Reigershoeve, with a small area to invite vistors. Made by author.

4.3 OUTDOOR ENVIRONMENT

Having direct access to an inner courtyard from a resident's bedroom allows a person to independently use the outdoor space more easily (Chalfont, Creating enabling outdoor environments for residents., 2005). A good example of this was observed during the fielwork at Boswijk and Reigershoeve, where both designs included rooms with direct access to the garden. When residents stepped out of their rooms, they first encountered a small

terrace where they could place chairs and sit with family or other visitors during the summer months.

Image 25. Room with direct access to inner courtyard at Boswijk. Made by author.

If direct access to an inner garden is not possible due to the building's multiple floors, it is important that residents can look out onto greenery from their own room. This could include a green environment, as well as green roofs on surrounding buildings where birds and other animals can reside (Chalfont G. , 2008). It is also important for residents that live on higher floors to have their own outdoor space, such as a balcony. During the discussion about the new building design at Randerode, it was emphasized that people living on the upper floors should have enclosed balconies, so they can go outside privately without needing to go to the shared garden. For more details on this discussion, see "*Fieldwork booklet: chapter 1.7.*"

4.4 AUTONOMY

The ability to personalize one's room gives people with dementia a sense of control over their environment. Allowing residents to bring personal belongings to their new room fosters familiarity and comfort (Li, 2023). Additionally, private bathrooms can enhance autonomy by offering sufficient storage for personal items, encouraging residents to independently manage personal care tasks (van Haitsma, Curyto, & Saperstein, 2004). A direct line of sight from the bedroom to the bathroom further supports this independence (Li, 2023).

Fieldwork at Reigershoeve confirmed these benefits. Each resident had a private bathroom, making it easier for the care staff to assist with personal care because the bathrooms were personalized for each resident. Staff observed that this setup encouraged more frequent and independent bathroom use.

Image 26. Private bathroom of someone at Reigershoeve, visited during the fieldwork. Made by author.

The options to choose one's room is another important factor supporting autonomy. Studies suggest care facilities should offer at least two room types, allowing residents to select layouts and interior styles, such as wall colors and curtain designs, that they find comfortable (K.D., Carreon, & Stump, 2000; Calkins, 2001).

Finally, adding small kitchenettes in personal rooms can enhance independence. At Reigershoeve, it was observed that the residents used their kitchenettes with a mini fridge and sink to offer drinks to visitors, promoting autonomy and fostering social interaction. For further details on the private rooms at Reigerhoeve, see "*Fieldwork booklet: chapter 3.4*".

4.5 FAMILIARITY

Creating a familiar environment can significantly help reduce agitated behaviors. A familiar space provides a sense of safety and comfort, which are essential for the well-being of people with dementia. For example, a room furnished with personal belongings, such as furniture, photographs, or other items brought in by family members, creates a unique atmosphere tailored to that specific individual. This familiarity can help the person with dementia feel more comfortable, as the room feels like "home". Such recognition makes it easier for them to navigate and function within the space. Therefore, it is crucial to preserve as many personal items as possible and limit the

use of new furniture when someone moves into a care facility. Additionally, a room that is personalized with familiar items is often used more frequently for activities beyond sleeping, and residents tend to receive more visitors. It is essential, however, that the room is at least 15 m² to accommodate personal furnishings and create a comfortable environment. A windowsill is also an important feature, as it provides space for displaying personal belongings (Stroobants & Verhaest, 2012).

Image 27. The use of a windowsill at Randerode. Made by author

4.6 SENSORY ENGAGEMENT

Sensory engagement also plays an important role in the personal room. For instance, it is important to create a contrast between the toilet and the toilet seat in the bathroom. Additionally, a contrast should be applied between the toilet and the wall it is attached to, as well as between the wall and the floor (Nillesen & Opitz, 2013).

During fieldwork at Boswijk, it was observed that there was a contrast between the material of the corridor floor and the bathroom floor. Caregivers mentioned that this contrast was too large, and some residents tried to "step over" this contrast. A similar situation occurred at Reigershoeve, where there was a black strip between the floor in the private bedroom and the bathroom floor, which many residents also wanted to step over. For more details on these observations, see "*Fieldwork booklet: chapter 2.3*". & "*Fieldwork booklet: chapter 3.3*". These observations suggest that the contrast between the private room and the hallway / bathroom floor should be as minimal as possible.

Image 28.
L: Contrast between corridor and bathroom floor at Boswijk.. Made by author
R: Black strip between private room and bathroom floor at Reigershoeve.. Made by author

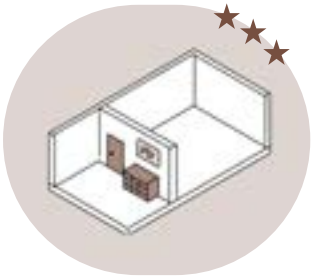
Furthermore, the acoustics in the private room are also crucial for the well-being of people with dementia. Unwanted noises can lead to overstimulation and discomfort, so it is important to consider good insulation and interior finishes that promote sound absorption, such as curtains, cushions, and ceiling panels. Plants can also help improve the acoustics of a room (Woonzorg Nederland, KAW, Alzheimer Nederland, 2024).

4.7 CONCLUSION

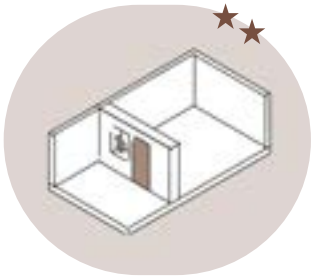
In conclusion, the design of a residents private room plays a critical role in fostering a humane and inclusive environment for people with dementia. By allowing residents to personalize their space with meaningful items, incorporating privacy through distinct living and sleeping areas, and providing sensory features like visual contrasts and comfortable acoustics, their private room becomes a safe and comforting space. Additionally, providing direct access to outdoor spaces and adding a small kitchenette and a private bathroom can further support their independence. Ultimately, a well-designed private room can contribute significantly to the well-being of people with dementia, offering them a sense of control and comfort.

4.8 DESIGN GUIDELINES

ORIENTATION & ACCESSIBILITY



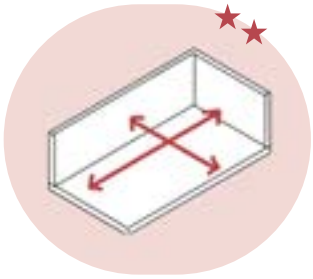
Incorporate familiar items near the room entrance like a cabinet or artwork



Design the entrance space with a recess to integrate personal items effectively

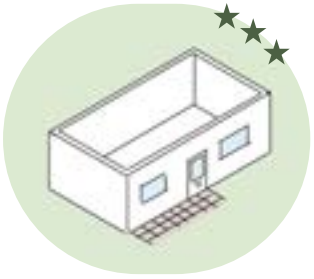
PRIVACY & SOCIAL SPACES

Design personal rooms with separate zones to create a home-like atmosphere

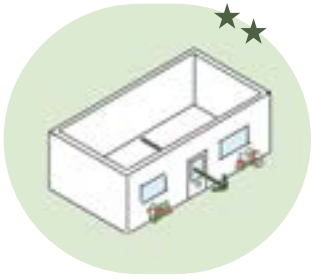


Create enough space in the room to accommodate family members and other visitors

OUTDOOR ENVIRONMENT

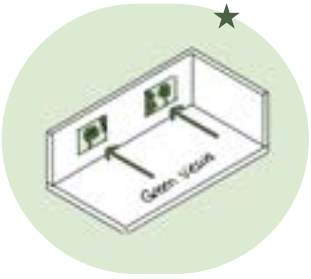


Include small terraces where residents can place chairs



Provide direct access to an inner courtyard from residents' room

Design enclosed balconies for residents on higher floors to enable private outdoor access

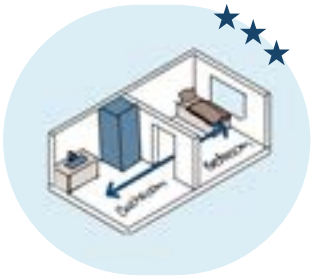


Ensure that rooms without direct outdoor access have views of greenery

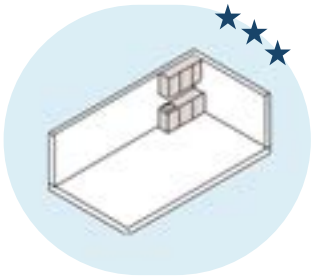
** To determine the importance of the design guidelines, see 'Appendix E. Design Guidelines Weight"*

4.8 DESIGN GUIDELINES

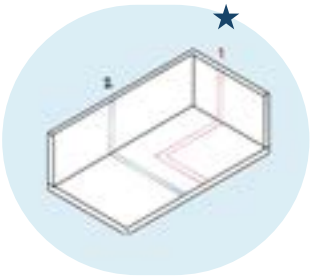
AUTONOMY



Design private bathrooms with sufficient storage space and a direct line of sight from the bedroom

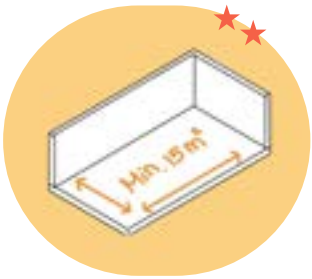


Include a small kitchenette with basic amenities

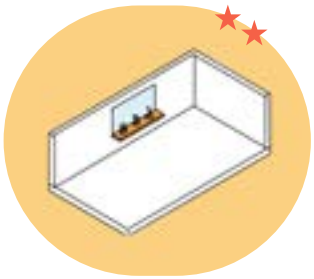


Offer at least two room layouts, allowing residents to choose their preferred option

FAMILIARITY

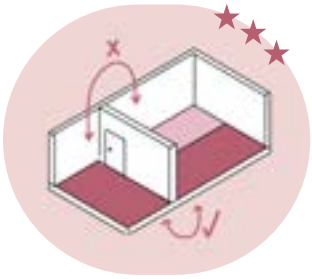


Design rooms that are at least 15m² to accomodate personal furnishings and activities

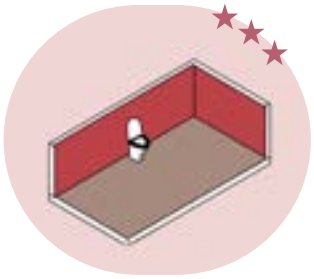


Provide a windowsill for displaying personal items

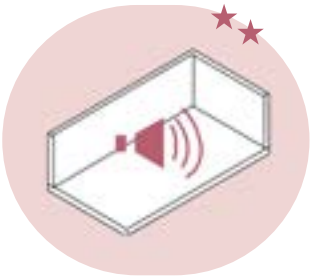
SENSORY ENGAGEMENT



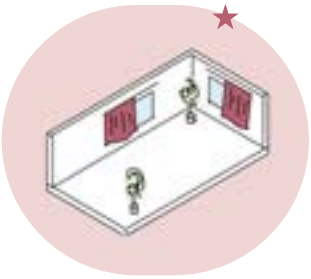
Ensure minimal contrast between floor materials of private rooms and corridors



Use contrasting colors between the toilet and toilet seat. As well as between the toilet and the wall, and the wall and the floor



Provide good noise insulation to ehance comfort



Incorporate sound-absorbing materials like curtains, ceiling panels, and plants to reduce noise

** To determine the importance of the design guidelines, see 'Appendix E. Design Guidelines Weight"*

05

TARWEWIJK

What specific needs does the Tarwewijk neighborhood have concerning care and housing for people with dementia, and how can these needs guide the design and integration of such facilities?

5 TARWEWIJK

The results of this research will be incorporated into the design phase. It is therefore important to also consider the needs of the neighborhood where the final design will be implemented, namely the Tarwewijk in Rotterdam. As mentioned earlier in '*Chapter 1.2. Relevance*', a significant portion of this neighborhoods population has a non-Western background. Specifically, 24% of residents are of Western origin, 57% are of non-Western origin, and 19% have no migration background (Kadastrale kaart, 2023). Understanding how different cultural groups approach dementia care is important, as perspectives can vary significantly across cultures.

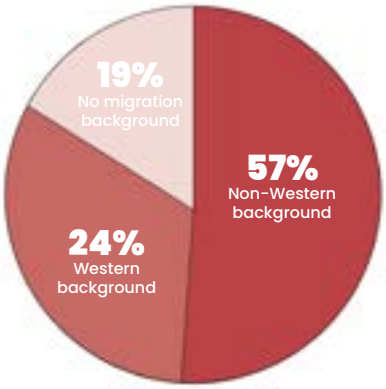


Image 29. Migration background distribution. Made by author

Individuals with a non-Western migration background are three to four times more likely to develop dementia than native Dutch individuals, partly due to lower socio-economic status and education levels (Francisca, et al., 2018). Dementia cases in Turkish and Moroccan Dutch communities have tripled in the past decade and are expected to triple again by 2040 (Alzheimer Nederland, 2023). This trend is likely to become noticeable in the Tarwewijk as well, where a significant portion of the population has a Turkish or Moroccan background.

In Turkish and Moroccan cultures, it is customary for children to care for their aging parents, a practice deeply rooted in Islamic religion. Children are taught to respect and take responsibility for their parents when they get older, fostering a strong sense of pride and moral obligation to provide care. This tradition reflects gratitude for the care received during childhood and is seen as a duty of honor. If children cannot fulfill this role for their aging parents, it may bring shame and dishonor to the family (Alzheimer Europe, 2023). These cultural values strongly influence perspectives on elderly and dementia care within these communities.

This cultural norm was also confirmed during a fieldwork conversation with a nurse of Moroccan background at Boswijk in Vught. She explained that it is common in her culture to take parents into one's home and care for them when living independently is no longer possible. This tradition is deeply rooted in Islamic teachings, with the Quran emphasizing respect and loving care for parents, mirroring the care they provided during childhood. For more details about this conversation, see "*Fieldwork booklet: chapter 2.7*".

In the Tarwewijk, similar perspectives were observed through conversations with residents of various cultural backgrounds. Many shared that sending their parents to a care facility is not an option they would consider. A Moroccan woman explained her mother's wish to remain at home until the end of her life, with her children providing daily care. A Turkish man shared that he traveled to Turkey to care for his parents during a difficult time, making sure they could stay at home.

These conversations highlighted that individuals from different cultural backgrounds generally prefer to take on the responsibility of caring for their parents themselves. They also expressed a desire to live close to their parents to provide this care and to ensure their parents can age in a familiar and comfortable environment without the need for placement in a care home. For details about the various conversations conducted during the fieldwork in the Tarwewijk, see "*Fieldwork booklet: chapter 6*".

These findings regarding the views of Tarwewijk residents must be taken into account in the final design for this neighborhood. Designing a single large care facility is not a realistic solution, as there is also a need for alternative forms of care tailored to elderly individuals with dementia from non-Western backgrounds. For this group, multigenerational living houses could offer a suitable solution.

5 TARWEWIJK

Multigenerational living houses allow two families to live under one roof while maintaining their own private entrances and separate living spaces. These multigenerational houses consists of two independent homes internally connected to facilitate easy access. This approach aligns well with non-Western cultures, as it enables children to take their parents into their homes and care for them while preserving their own private lives.

06

CONCLUSION

6 CONCLUSION

This research addresses the following question:

''*How can a care facility for people with dementia be designed to foster a humane and inclusive environment, with a focus on promoting autonomy and quality of life, for example in a neighborhood like Tarwewijk?*''

This main question has been explored through several sub-questions. The goal of this research is to develop design guidelines that can be incorporated into the final design process for the graduation project.

The first sub-question explores how the environment of a care facility can influence the quality of life for people with dementia. Access to a safe and accessible outdoor environment is essential, with clear routes, resting points, and meaningful destinations, such as a chapel or a familiar place, enhancing autonomy and well-being. Natural elements provide sensory stimulation, contributing to residents' mental and emotional health.
Strong connections with the neighborhood are very important for fostering social inclusion and maintaining a sense of community. A care facility located centrally within a familiar environment can promote interaction and integration, creating a sense of belonging for residents.

The second sub-question examines how the buildings' scale and layout can enhance the residents quality of life. A smaller, more intimate scale is often preferred, providing a familiar and manageable environment. Thoughtful layouts promote easy navigation, reducing disorientation through simple floor plans, clear signage and recognizable landmarks. Sensory engagement, such as contrasting colors and natural daylight further supports clear orientation. Providing spaces for both private and communal activities encourages social interaction and personal autonomy. Together, these design elements create an environment that prioritizes residents' comfort, preserves their dignity, and supports the independence of the residents.

The third sub-question explores how the design of a resident's room in a care facility can enhance autonomy and quality of life. A well-designed room fosters comfort and supports people with dementia. Personalization, through meaningful items and familiar furnishings, creates a sense of belonging, reduces agitation, and fosters a connection to the past. The layout should balance privacy and opportunities for social interaction, with separate living and sleeping areas to evoke a homely atmosphere. Accessibility features, such as private bathrooms and direct outdoor access, promote independence. Sensory elements, like visual contrast and good acoustics, further enhance resident's well-being.

The fourth sub-question examines the specific needs of the Tarwewijk in Rotterdam regarding dementia care and housing, and how these can inform the design. The Tarwewijks diverse population includes many residents of non-Western background, particularly Turkish and Moroccan, who face a higher risk of dementia. Cultural values often prioritize family caregiving over institutional care, as sending parents to care facilities is frequently seen as unacceptable. Therefore, a single large-scale care facility may not suit the neighborhood. Instead, adding multigenerational housing, which allows families to live together while maintaining privacy, aligns with cultural preferences and support family care while fostering proximity and connection.

In conclusion, it can be stated that this research has validated the hypothesis. Designing a care facility that prioritizes autonomy, social inclusion, and cultural awareness improves the quality of life for residents. This includes consideration such as access to safe outdoor spaces, intuitive building layouts, and personalized rooms to promote well-being. Additionally, autonomy and quality of life are enhanced when a design fits well within its surroundings, which is why the needs of the Tarwewijk residents plays a significant role. The cultural values of the Tarwewijk suggest that creating one big traditional care institute may not be suitable, as these communities place a high value on family-based caregiving. Therefore, different solutions must also be designed for the various cultural groups within the neighborhood to ensure the everyone with dementia can experience a good quality of life and have a feeling of autonomy.

07

DISCUSSION

7 DISCUSSION

This research highlights the complexity of addressing quality of life and autonomy for elderly individuals with dementia. Quality of life is highly subjective, as is the perception of autonomy. While this study explores general strategies to promote these aspects, it is important to recognize that each individual's needs and preferences can vary significantly.

Autonomy is a critical and widely debated topic in modern healthcare. The findings ephamsize the importance of freedom of movement within and around care facilities as a key factor in fostering autonomy. However, this remains a challenging issue in practice, especially regarding policies such as the ''*open door policy*''. This policy leads to much debate among healthcare staff about how to balance safety and freedom within a care facility.
While freedom of movement is crucial for autonomy, safety must also be considered. Setting certain boundaries and maintaining control can make it easier for healthcare staff to provide care, as they carry a significant responsibility for the well-being of residents with dementia.

This research has limitations that should be acknowlegded. First, fieldwork was conducted in only three facilities, which served as primary sources of information. Expanding the scope of fieldwork in future studies to include a wider range of facilities would provide more divers insights into varying approaches and philosophies.

Additionally, the time constraints of this project is also a limitation. The limited timeframe restricted the depth of data collection and analysis.

Despite these limitation, this research contributes valuable insights into designing care facilities that prioritize humane and inclusive environment for individuals with dementia.

08

BIBLIOGRAPHY

8 BIBLIOGRAPHY

ActiZ. (2023, 11 28). *Hoe staat het met: de wachtlijsten voor verpleeghuizen?* Opgehaald van www.actiz.nl: https://www.actiz.nl/hoe-staat-het-met-de-wachtlijsten-voor-verpleeghuizen

Alzheimer Europe. (2023, 05 11). Intercultural dementia care. NHS England.

Alzheimer Nederland. (2021, februari). *Feiten en cijfers over dementie.* Opgehaald van www.alzheimer-nederland.nl: https://www.alzheimer-nederland.nl/dementie/feiten-en-cijfers-over-dementie?gad_source=1&gclid=Cj0KCQjw8--2BhCHARIsAF_w1gylG-TqoXJ4l29WWErKbQSGMKPnFjpTtadYv7SvmGXi7q2hf-QmGp4YaAghjEALw_wcB

Alzheimer Nederland. (2023). *Dementie bij mensen met een migratieachtergrond.*

Alzheimer Nederland, KAW & Woonzorg Nederland. (2024). *Toolkit Dementievriendelijk woongebouw.* Woonzorg Nederland.

Alzheimer's Disease International. (2019). *World Alzheimer Report 2019.* London: Alzheimer's Disease International (ADI).

Argyle, E., Dening, T., & Bartlett, P. (2016, 10 19). Space, the final frontier: outdoor access for people living with dementia. Notthingham, United Kingdom: Routledge.

Bayat, S., Naglie, G., Rapoport, M., Stasiulis, E., Ye, B., & Mihailidis, A. (2021, 12 01). Evaluating predictability in outdoor mobility: A potential pathway to personalized assistance for people with dementia. Alzheimer's & Dementia.

Bennet, K. (2006). Designing for walking: creating rich environments. In M. Marshall, & K. Allan, *Dementia: walking not wandering.* Fresh approaches to understanding practice. London: Hawker Publications.

Buuse, S. v., & de Boer, A. (2021). *Nieuwe woonvormen dringend nodig voor mensen met dementie.*

Calkins, M. (2001). The physical and social environment of the person with Alzheimers disease. *Aging Mental Health*.

Calkins, M. (2005). Environments for late-stage dementia. In *Alzheimer's care quartly* (pp. 71-75).

Chalfont, G. (2005, 10). Creating enabling outdoor environments for residents. *Nursing & Residential Care*, pp. 454-457.

Chalfont, G. (2008, 01). The living edge: Connection to nature for people with dementia in residential care. *Understanding care homes: A research and development perspective.* London: Jessica Kingsley Publishers.

Chalont, G. (2008). *Design for Nature in Dementia Care*. London: Jessica Kingsley Publishers.

Cambridge dictionary. (2024). *Meaning of familiarity in English.* Opgehaald van www.Disctionary.cambridge.org: https://dictionary.cambridge.org/dictionary/english/familiarity

Cambridge dictionary. (2024). *Meaning of inclusivity in English*. Opgehaald van www.dictionary.cambridge.org: https://dictionary.cambridge.org/dictionary/english/inclusivity

Charras, K. (2008). *Environment et santé mentale: Des conceptions psycho-environmentales de la maladie d'Halzheimer a la definition de parametres environnementaux pour une prise en charge adaptee des personnes avec autisme.* Université Paris.

Chaudhury, H., Hung, L., Freeman, S., Groulx, M., Seetharaman, K., Wong, J., & Randa, C. (2023, 12 01). The role of the neighborhood-built environment on outdoor mobility of people living with dementia. *Innovation in Aging.*

Centraal Bureau voor de Statistiek. (2016, februari 12). Vergrijzing. Opgehaald van www.cbs.nl: https://www.cbs.nl/nl-nl/visualisatie/2016/6/vergrijzing

8 BIBLIOGRAPHY

D.J.M, v. (1993). De weg kwijt in het verpleeghuis: ruimtelijke oriëntatie in bouwkundig perspectief. *Tijdschrift voor Gerontologie en Geriatrie,* pp. 220-227.

Department of Health. (2015, 03 25). Health building note 08-02 Dementia-friendly health and social care environments. Crown.

Duggan, S., Blackman, T., Martyr, A., & van Schaik, P. (2008, 05 01). The impact of early dementia on outdoor life. SAGE Publications.

Feddersen, E. (2014). Learning, remembering and feeling space. Lost in space, pp. 15-20.

Filosofie Magazine. (2023). *Autonomie - betekenis*. Opgehaald van www.filosofie.nl: https://www.filosofie.nl/lexicon/autonomie/

Finlay, J., Franke, T., Mckay, H., & Sims-Gould, J. (2015, 07 01). Therapeutic landscapes and wellbeing later in life: impacts of blue and green spaces for older adults. Elsevier.

Francisca, S., Rodriguez, P., Maria, P., Aranda, P., Donald, A., Lloyd, P., . . . Vega, P. (2018, 09). Racial and ethnic disparities in dementia risk among individuals with low education. Elsevier.

Gemeente Rotterdam. (2024). Onderzoek010. Opgehaald van www.onderzoek010.nl: https://onderzoek010.nl/dashboard/onderzoek010/bevolking--gebied-buurt-

Gibson, F. (2006). Lifestyle factors influencing present behaviour. In M. Marshall, & K. Allan, *Dementia: walking not wandering. Fresh approaches to understanding practice* (p. 65). London: Hawker Publications.

Gilliard, J., & Marshall, M. (2012). Transforming the quality of life for people with dementia through contact with the natural word - fresh air on my face. Jessica Kingsley Publishers.

Golembiewski, J. (2022, 10 27). Architectural design gives hope for dementia. Sydney, Australia.

Grievink, E. (2020). Buurten in transitie: Charlois. Opgehaald van www.gebiedsontwikkeling.nu: https://www.gebiedsontwikkeling.nu/artikelen/buurten-transitie-hoe-charlois-vreewijk-en-middelland-veranderen/

Halsall, B., & Macdonald, R. (2015). Design for Dementia: A fuide with helpful guidance in the design of exterior and interior environment.

Jones, G., & van der Eerden, W. (2008). Designing care environment for persons with Alzheimer's disease: visuoperceptual considerations. In *Reviews in clinical gerontology* (pp. 13-37).

K.D., D., Carreon, D., & Stump, C. (2000). The therapeutic design of environments for people with dementia: a review of the empirical research. T*he Gerontologist*, pp. 397-416.

Klein, M. v., & Razenberg, I. (2019). *Diversiteit bij informele hulp bij dementie.* Utrecht: Verwey-Jonker Instituut.

KronerArchitecten. (2024, 11 28). Interview Kroner Architecten. (M. v. Veen, Interviewer)

Lentis. (2023). *Dementie.* Opgehaald van www.lentis.nl: https://www.lentis.nl/probleem/dementie/soorten/

Li, J. (2023). *Autonomy-supportive environments for people with dementia: an evidence-based review.* Beijing.

Mapes, N. (2010). It's a walk in the park: exploring the benefits of green exercise and open spaces for people living with dementia. In *Working with older people* (pp. 25-31).

Marquardt, G. (2011, 01 02). Wayfinding for people with dementia: a review of the role of architectural design. *HERD*, pp. 75-90.

Marquardt, G., & Schmieg, P. (2008, 01 21). Demenzfreundliche Architektur Möglichkeiten zur Unterstützung

8 BIBLIOGRAPHY

der. Springer-Verlag.

Marshall, M. (1998). Therapeutic buildings for people with dementia. *Design for dementia*, pp. 11-14.

Marshall, M. (2006). So let me lie, the grass below; above, the vaulted sky. Facing the Future. *Lecture at The DSDC's 3rd international Conference,* pp. 14-16.

Mecanoo. (2021). Manifest Rotterdam Zuid. Delft.

Ministerie van Volkshuisvesting en Ruimtelijke Ordening. (2024). Rotterdam Zuid . Opgehaald van www.elke-regiotelt.nl: https://www.elkeregiotelt.nl/alle-regio-deals/rotterdam-zuid

Mitchell, L., Burton, E., & Raman, S. (2004). *Neighborhoods for life: designing dementia-friendly outdoor neighborhoods (findings leaflet)*. Oxford: Oxford Brookes University.

Montealleh, P., Moyle, W., Jones, C., & Dupre, K. (2019, 05 28). Creating a dementia-friendly environment through the use of outdoor natural landscape design intervention in long term care facilities. Australia: Elsevier.

Motealleh, P., Moyle, W., Jones, C., & Dupre, K. (2019, 07 01). Creating a dementia-friendly environment through the use of outdoor natural landscape design intervention in long-term care facilities: a narrative review. Elsevier.

Nederlandse Encyclopedie. (2024). Inclusiviteit definities. Opgehaald van www.encyclo.nl: https://www.encyclo.nl/begrip/inclusiviteit

Nidi & CBS. (2020). *Bevolking 2050 in beeld.*

Nillesen, J., & Opitz, S. (2013). Dimensie voor dementie. Wiegerinck.

Nolan, B., Mathews, R., Truesdell-Todd, G., & van Dorp, A. (2002). Evaluation of the effect of orientation cues on wayfinding in persons wih dementia. *Alzheimers Care Quarterly,* pp. 46-49.

Nouws, H. (2001). Huiselijk en vertrouwd. *Handreiking voor de bouw en inrichting van woonvoorzienlingen voor dementerenden.* Utrecht: Nederlands Instituut voor Zorg en Welzijn.

Ontwerpen voor ouderen met dementie. (2022). *looplijnen.* Opgehaald van ontwerpenvoordementie.nl: https://www.ontwerpenvoordementie.nl/looplijnen/

Ontwerpen voor ouderen met dementie. (2022). *Ontwerpen voor dementie.* Opgehaald van www.ontwerpenvoordementie.nl: https://www.ontwerpenvoordementie.nl/

Passini, R., Pigot, H., Rainville, C., & Tetreault, M. (2000). Wayfinding in a nursing home for advanced dementia of the Alzheimer's type. In *Environment and behaviour* (pp. 32, 5, 684-710).

Pollock, A. (2014). Meaningful outdoor spaces for people with dementia. Birkhäuser.

Rappe, E., & Topo, P. (2007). Contact with outdoors greenery can support competence among people with dementia. In *Journal of Housing for the Elderly* (pp. 21, 3/4, 217-236). Toronto.

Rodiek, S., & Schwarz, B. (2007). *Outdoor environment for people with dementia.* Routlegde.

Schmieder, M. (2014). Dementia - an illness with many repercussions. Birkhäuser.

Scholten, C. (2013). *Toolkit familieparticipatie.* Utrecht: Vilans.

Son, G.-R., Therrien, B., & Whall, A. (2002). Implicit memory and familiarity among elders with dementia. *Journal of nursing scholarship.*

Stroobants, E., & Verhaest, P. (2012). *Architectonica. Een thuis voor mensen met dementie.* Berchem: EPO.

8 BIBLIOGRAPHY

Teng, C., Dimity Pond, C., Sellars, M., & Latt, M. (2019). Making Decisions About Long-Term Institutional Care Placement Among People With Dementia and Their Caregivers: Systematic Review of Qualitative Studies. *Alzheimer's & Dementia.* Sydney, Australia.

Toebes, T. (2021). *VerpleegThuis.* Amsterdam: Arbeiderspers.

Toebes, T. (2023). *Een wereld te winnen*. Amsterdam: Arbeiderspers.

Uysal-Bozkir, Ö. (2016). Health status of older migrants in the Netherlands: Cross-cultural validation of health scales. Amsterdam, Noord-Holland, Nederland: University of Amsterdam.

van Audenhove, C., Declercq, A., de Coster, I., Spruytte, N., Molenberghs, C., & van den Heuvel, B. (2003). *Kleinschalig genormaliseerd wonen voor personen met dementie.* Antwerpen / Apeldoorn: LUCAS & Garant Uitgevers n.v.

Van Dale. (2022). Groot woordenboek van de Nederlandse taal. Van Dale Uitgevers.

van Haitsma, K., Curyto, K., & Saperstein, A. (2004). The environemental design lexicon: project description and outcome.

van Someren, E., Riemersma, R., & Swaab, D. (2005). Licht op het slaap-waak ritme bij ouderen en op dementie. *Tijdschrift voor Psychiatrie*, pp. 29-38.

van Steenwinkel, I., Verstraeten, E., & Heylighen, A. (2016). Adjusting an older residential care facility to contemporary dementia care visions. In P. Langdon, J. Lazar, A. Heylighen, & H. Dong, *Designing around people* (pp. 219-228). Springer.

VZinfo. (2023, oktober 19). *Bevolking vergrijzing.* Opgehaald van www.vzinfo.nl: https://www.vzinfo.nl/bevolking/vergrijzing

VZinfo. (2023). *Migratie met Buiten-Europese afkomst 2023.* Opgehaald van www.VZinfo.nl: https://www.vzinfo.nl/bevolking/regionaal/migratieachtergrond#:~:text=Van%20de%2017%2C8%20miljoen,als%20migrant%20naar%20Nederland%20gekomen.

Woonzorg Nederland, KAW, Alzheimer Nederland. (2024). *Toolkit dementievriendelijk woongebouw.*

World Health Organisation. *(2012). Programme on mental health.*

Wu, Y.-T., Clare, L., Rees Jones, I., Nelis, S. M., Quinn, C., Martyr, A., . . . Matthews, F. E. (2021, 01 23). Perceived and objective availability of green and blue spaces and quality of life in people with dementia: results from the IDEAL programme.

Zeisel, J. (2009). *I'm still here. A breakthrough approach to understanding someone living with Alzheimer's.* Piatkus.

Zeisel, J., Silverstein, N., Hyde, J., Levkoff, S., Lawton, P., & Holmes, W. (2003). Environmental correlates to behavioural health outcomes in Alzheimer's special care units. *The Gerontologist*, pp. 697-711.

09

APPENDIX

APPENDIX A. Interview questions fieldwork

VRAGEN VOOR OUDEREN MET DEMENTIE

Algemeen
• Hoe vindt u het om hier te wonen?
• Voelt u zich hier thuis?
• Wat maakt u gelukkig?

Omgevingsniveau
• Bent u graag buiten? En wat doet u als u buiten bent? *(outdoor environment)*
• Heeft u een favoriete plek in de tuin/buitenruimte? *(privacy & social spaces)*
• Welke aspecten mist u momenteel in de omgeving? (Bijv. dieren, groentetuinen, een vijver of een jeu de boules baan) *(outdoor environment)*

Gebouwniveau
• Wat is uw favoriete plek in het gebouw? *(privacy & social spaces)*
• Wat is uw minst favoriete plek in het gebouw? *(privacy & social spaces)*
• Welke activiteiten vindt u het leukste om aan te deelnemen? *(privacy & social spaces)*
• Maakt u vaak gebruik van gemeenschappelijke ruimtes? *(privacy & social spaces)*
• Zou u de woonkamer zelf ook op deze manier inrichten? *(familiarity)*
• Wat vindt u van de kleuren in het gebouw? (sensory engagement)
• Vind u het makkelijk om de weg te vinden? *(orientation & accessibility)*

Kamerniveau
• Voelt deze kamer als thuis? *(familiarity)*
• Is er iets wat u zou willen toevoegen/veranderen aan uw kamer? (*familiarity)*
• Wilt u graag vanuit uw kamer naar buiten kunnen? *(outdoor environment)*
• Heeft u graag een eigen badkamer? *(privacy & social spaces)*

VRAGEN VOOR FAMILIELEDEN

Algemeen
• Waarom heeft u ervoor gekozen om uw familielid naar deze zorginstelling te laten verhuizen?
• Is er overleg geweest met uw familielid voor de keuze van dit verzorgingshuis?
• Wat vindt u van de zorg voor uw familielid?
• Zijn er voorzieningen om familie goed op te vangen tijdens bezoek?
• Vind u dat uw familielid voldoende vrijheid krijgt? *(autonomy)*
• Zijn er dingen die u heeft opgemerkt bij andere zorginstellingen die u graag hier zou willen zien?
• Hoe zou u graag oud willen worden?

Omgevingsniveau
• Hoe ervaart u de locatie van het verzorgingstehuis? *(outdoor environment)*
•Voelt uw familielid zich thuis in deze omgeving en wat maakt dat deze persoon zich thuis voelt? *(familiarity)*
• Hoe belangrijk vindt u het dat er buitenruimtes of binnentuinen aanwezig zijn voor uw familielid? Welke specifieke elementen zijn daarbij van belang? *(outdoor environment)*
• Vindt u dat er voldoende mogelijkheden zijn in de omgeving om wat te ondernemen met uw familielid? *(outdoor environment)*

APPENDIX A. Interview questions fieldwork

Gebouwniveau
• Wat vindt u van de inrichting en lay-out van het gebouw? *(privacy & social spaces)*
• Wat vindt u van de gemeenschappelijke ruimtes? *(privacy & social spaces)*
• Is het makkelijk voor uw familielid om de weg te vinden binnen het gebouw? *(orientation & accessibility)*

Kamerniveau
• Is er een keuze in welke kamer je krijgt? *(autonomy)*
• In hoeverre heb je inspraak over de inrichting van de kamer? *(autonomy)*
• Wat vindt u van de kamer en voelt als thuis? *(familiarity)*

Toekomstperspectief
• Wat zou u veranderen als u hier zelf zou wonen?

VRAGEN VOOR ZORGPERSONEEL

Algemeen
• Hoe zou u de sfeer beschrijven in deze zorginstelling?
• Hoe worden mensen ingedeeld in de verschillende woninggroepen? (Bijv. aan de hand van achtergrond of zwaarte van dementie)
• Is het mogelijk dat de partner van de bewoner meeverhuist?
• Vind u dat de bewoners van deze zorginstelling voldoende vrijheid van keuze hebben in hun dagelijks leven? *(autonomy)*

Omgevingsniveau
• Hoe intensief worden de buitenruimtes gebruikt? *(outdoor environment)*
• Zijn er elementen geïntegreerd die bewoners aanmoedigen om naar buiten te gaan en draagt dit bij aan hun welzijn? (Bijv. dieren, moestuin, Jeu de Boules, bloementuin) *(outdoor environment)*

Gebouwniveau
• Wat vindt u van de lay-out van het gebouw? Draagt dit bij aan de oriëntatie of is het juist verwarrend? *(orientation & accessibility)*
• Kunnen de bewoners zelf kiezen in welke ruimte ze willen zijn gedurende de dag? *(autonomy)*
• Zijn er elementen van de fysieke ruimte die de werklast verminderen of juist verhogen? *(privacy & social spaces)*
• Zijn er zintuigelijke prikkels verwerkt in dit verzorgingstehuis? *(sensory engagement)*
• Heeft u de voorkeur voor gedeeld sanitair of privé sanitair, en waarom? *(privacy & social spaces)*
• Tegen welke praktische problemen lopen jullie aan?

Kamerniveau
• Blijven bewoners die in een kamer wonen die meer als thuis aanvoelt, ook langer op hun kamer? *(familiarity)*
• Welke praktische aspecten moeten in overweging worden genomen?
• Welke onderdelen zorgen ervoor dat de kamer herkenbaar is voor de bewoners? *(orientation & accessibility)*

Toekomstperspectief
• Wat zou u veranderen als u hier zelf zou wonen?

APPENDIX B. Interview questions Tarwewijk

Introductie
• Ons onderzoek focust zich op mensen met dementie? Weet u wat dit is?
• Hoelang woont u al in de wijk? (Waar heeft u hiervoor gewoond?)

Algemeen
• Hoelang woont u al in deze wijk? (Waar heeft u hiervoor gewoond?)
• Zou u nog lang willen blijven wonen in deze wijk, en waarom?
• Welke activiteiten vindt u leuk of belangrijk om te doen?
• Welke tradities of gewoontes zijn belangrijk voor u in uw dagelijks leven?
• Welke rol speelt familie in uw cultuur als het gaat om zorg voor ouderen?
• Zorgt u momenteel voor uw ouders? (Waar wonen ze? Wonen ze nog thuis?)
• Stel uw ouder krijgt dementie, zou u hulp aannemen of zou u de zorg zelf willen doen?
• Wie vindt u verantwoordelijk voor de zorg voor mensen met dementie: de gemeenschap of professionele zorgverleners?

Context
• Vindt u contact met uw buren belangrijk?
• Wat vindt u de fijnste plek in de wijk?
• Hoe belangrijk zijn sociale activiteiten en bijeenkomsten voor u in de buurt?
• Wat kan er in de wijk beter worden gedaan voor oudere bewoners?

Gebouwniveau
• Vindt u het belangrijk om dichtbij uw ouders te wonen wanneer u ouder wordt?
• Wat vindt u belangrijk in uw woonomgeving om u echt thuis te voelen?
• Wat zou u belangrijk vinden in een gebouw of ruimte speciaal ontworpen voor mensen met dementie?

APPENDIX C. Interview questions architects

Algemeen
• Wat doet jullie bureau en waar staan jullie voor?
• Hoe zijn jullie begonnen met het ontwerpen voor de doelgroep, mensen met dementie?
• Hoe betrekken jullie, bewoners, familie, zorgmedewerkers in een project?
• Hoe denken jullie dat zorggebouwen er in de toekomst uitzien?
• Hoe kijken jullie tegen familieparticipatie en hoe kan dit worden geïntegreerd in een gebouw?

Context
• In hoeverre wordt de multiculturele samenleving meegenomen in het ontwerp?
• In hoeverre hebben jullie inspraak over de omgeving en eventuele veranderingen?
• Hoe kijken jullie tegen het opendeuren beleid en hoe kan hier architectonisch op gereageerd worden?

Gebouwniveau
• Hoe stimuleren jullie zelfstandigheid van de bewoners?
• Is er een ideale plattegrond/vorm voor het ontwerp voor mensen met dementie?
• Hoe zorg jullie ervoor dat bewoners de weg kunnen vinden in het gebouw?
• Op welke wijze wordt beweging gestimuleerd?
• Hoe worden sociale interacties bevorderd?
• Op welke wijze kan flexibiliteit worden geïntegreerd?

Kamerniveau
• Hoe voorkom je dat mensen moeten verhuizen indien een partner komt te overlijden, indien ze een echtpaarwoning hebben?
• Wat vinden jullie de ideale inrichting van een kamer? (Wonen/slapen, privé sanitair, eigen balkon etc.…)

APPENDIX D. Workshop images

Architectuur

Welk gebouw vind u het mooiste en waarom?

(EGM Architecten, 2011)

(M4 Architecten, 2020)

(Oostwest, 2024)

APPENDIX D. Workshop images

Binnentuin

Welke binnentuin vind u het mooiste en waarom?
Welke activiteiten lijken u leuk om toegang tot te hebben?

(M4 Architecten, 2017)

(Reigershoeve, n.d.)

(Google Maps, n.d.)

(Linum, n.d.)

APPENDIX D. Workshop images

Vorm gangen

Welke gang spreekt u het meeste aan en waarom?

(Architectuurwijzer, n.d.)

(Kunstboomkunst, n.d.)

(Bright Nature, n.d.)

APPENDIX D. Workshop images

Voordeur

Welke voordeur spreekt u het meeste aan en waarom?

(EGM Architecten, 2011)

(Bright Nature, n.d.)

(Architectonica, 2013)

APPENDIX D. Workshop images

Keuken

Welke woonkamer spreekt u het meeste aan en waarom?

(Vrije universiteit Brussel, n.d.)

(RTV Drenthe, 2021)

(Mertens Keukenambacht, n.d.)

APPENDIX D. Workshop images

Zitkamer

Welke zitkamer spreekt u het meeste aan en waarom?

(M4 Architecten, 2013)

(Martha Flora, n.d.)

(Gipsen, 2017)

(M4 Architecten, 2017)

APPENDIX D. Workshop images

Slaapkamer

Welke slaapkamer spreekt u het meeste aan en waarom?

(Zorgcentrum Sint-Lodewijk, n.d.)

(Zorgvilla Expert, n.d.)

(Architectonica, 2013)

APPENDIX D. Images bibliography

Architectuurwijzer. (n.d.). *De villa van Huis Perrekes.* Architectuurwijzer. Retrieved October 24, 2024, from *https://architectuurwijzer.be/een-zo-gewoon-mogelijk-huis-in-een-gewone-straat/*

Bright Nature Interiors. (n.d.). *Dementie vriendelijke omgeving?.* Birghtnature. Retrieved October 24, 2024, from *https://brightnature.com/ouderenzorg-interieur/*

EGM Architecten. (2011). *Verpleeghuis Boswijk.* EGM. Retrieved October 24, 2024, from *https://www.egm.nl/architecten/projecten/verpleeghuis-boswijk/46*

Gispen. (2017). *Stichting woon- en zorgcentrum avondlicht.* Gipsen. Retrieved October 24, 2024, from *https://www.gispen.com/nl/projecten/alle-zorg-projecten/woon-en-zorgcentrum-avondlicht/*

Google Maps. Retrieved October 24, 2024, from *https://www.google.nl/maps*

Kunstboomkunst. (n.d.). *Zorgpark Boswijk, Vught.* Kunstboomkunst. Retrieved October 24, 2024, from *https://www.kunstboomkunst.nl/projecten/zorgpark-boswijk/*

Linum. (n.d.). *Tuin bij verzorgingstehuis.* Linum. Retrieved October 24, 2024, from *https://www.linum.nl/nl/projecten/1/tuin-bij-verzorgingstehuis*

M4 Architecten en ingenieurs. (2013). *Assistentiewoningen Zonnehove.* M4architecten. Retrieved October 24, 2024, from *https://m4architecten.be/portfolio/assistentiewoningen-zonnehove/*

M4 Architecten en ingenieurs. (2017). *WZC De Samaritaan.* M4architecten. Retrieved October 24, 2024, from *https://m4architecten.be/portfolio/wzc-de-samaritaan/*

M4 Architecten en ingenieurs. (2017). *WZC Sint Job.* M4architecten. Retrieved October 24, 2024, from *https://m4architecten.be/portfolio/wzc-sint-job/*

M4 Architecten en ingenieurs. (2020). *WZC De Bekelaar.* M4architecten. Retrieved October 24, 2024, from *https://m4architecten.be/portfolio/wzc-de-bekelaar/*

Martha Flora. (n.d.). *Aantrekkelijk en kleinschalig wonen met dementie.* Marthaflora. Retrieved October 24, 2024, from *https://www.marthaflora.nl/aantrekkelijk-wonen-met-dementie*

Mertens Keukenambacht (n.d.). *Nostalgische keukens.* Mertenskeukenambacht. Retrieved October 24, 2024, from *https://mertenskeukenambacht.nl/nostalgische-keukens*

Reigershoeve. (2017). *Wonen op de Reigershoeve: Een thuis voor je naaste met dementie.* Reigershoeve. Retrieved October 24, 2024, from *https://reigershoeve.nl/wonen*

RTV Drenthe (2021). *Nostalgische keuken voor ouderen in Dwingeloo.* RTV Drenthe. Retrieved October 24, 2024, from *https://www.rtvdrenthe.nl/nieuws/117313/nostalgische-keuken-voor-ouderen-in-dwingeloo*

Van Wijnen. (2024). *Nieuwbouw het Groene verpleeghuis Texel.* Van Wijnen. Retrieved October 24, 2024, from *https://www.vanwijnen.nl/projecten/nieuwbouw-het-groene-verpleeghuis-texel/*

Vrije universiteit Brussel. (n.d.). *Villa Zorgeloos.* Crosstalks. Retrieved October 24, 2024, from *https://crosstalks.vub.ac.be/taxonomy/term/18*

Zorgcentrum Sint-Lodewijk. (n.d.). *Rust- en verzorgingstehuis Woonzorgcentrum.* Rvtsinlodewijk. Retrieved October 24, 2024, from *https://www.rvtsintlodewijk.be/woonzorgcentrum/*

Zorgvilla expert. (n.d.). *Vivere Verzorgd Wonen.* Zorgvillaexpert. Retrieved October 24, 2024, from *https://zorgvillaexpert.nl/particulier-verzorgingshuis-verpleeghuis/moordrecht-vivere-sanare/*

APPENDIX E. Design guidelines weight

ORIENTATION & ACCESSIBILITY				
Guideline	*Research*	*Fieldwork*	*Interviews*	*Total weight*
 Design clear paths with consistent materials and colors to ensure safety and accessilibity for residents using mobility aids	yes	no	no	*
 Incorporate recognizable landmarks such as flowerbeds, small animal enclosures, or sculptures to help residents orient themselves and have experiences and activities while walking	yes	yes	no	**
 Place resting benches at regular intervals alog walking paths, ensuring they are wheelchair accessible and provide shade	yes	yes	yes	***
 Ensure pathways link the care facility to the local community, allowing residents to walk to local destinations like parks or shops	yes	no	yes	**
 Providing a sense of purpose or reward for using the walking paths by adding destinations such as a small chapel	yes	yes	yes	***
 Design simple floor plans. Use straight, L or H shaped corridors for clear sightlines	yes	yes	yes	***

APPENDIX E. Design guidelines weight

 Ensure direct visual contact with key spaces like the dining room, kitchen and living area	yes	no	no	*
 Position dwelling doors to open directly into shared living areas to avoid long corridors	yes	no	no	*
 Create gentle turns in corridors to avoid sharp angles. Open views should be incorporated when necessary	yes	no	yes	**
 Avoid dead-ends. Place seating areas at the end of a corridor	yes	yes	yes	***
 Include seating areas along walking routes to provide rest points and serve as informal meeting spots and landmarks within the building	yes	yes	yes	***
 Ensure that residents can wander through the building in small, clear loops	yes	yes	yes	***
 Design big, clear, recognizable symbols along with written text to assist with wayfinding	yes	yes	no	**

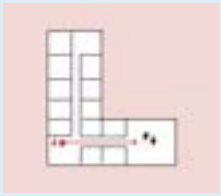
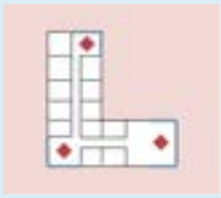
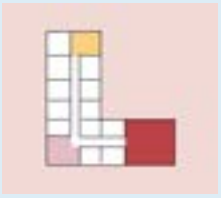
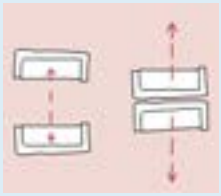
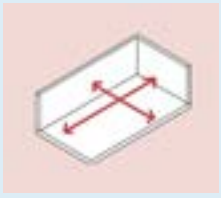
APPENDIX E. Design guidelines weight

 Incorporate familiar items near the room entrance like a cabinet or artwork	yes	yes	yes	***
 Design the entrance space with a recess to integrate personal items effectively	yes	no	yes	**

PRIVACY & SOCIAL SPACES

Guideline	*Research*	*Fieldwork*	*Interviews*	*Total weight*
 Create social zones in the environment to stimulate interaction and connection with the neighborhood by incorporating spaces that are accessible to both residents and the community. For example, a small café, shop, or community garden	yes	yes	no	**
 Create small seculded areas within the landscape where residents can enjoy some privacy. These zones can include quiet seating areas tucked away from busy paths. Make sure these spaces are easily accessible	yes	yes	no	**
 Position the care facility in a central or easily accessible neighborhood location to ensure better integration of the facility into the surrounding community	yes	no	yes	**

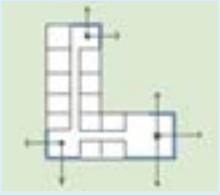
APPENDIX E. Design guidelines weight

 Design sightlines to allow individuals to observe social spaces without physically being there	yes	no	no	*
 Create social spaces near windows	yes	no	no	*
 Include spaces with different characteristics to encourage social interaction	yes	yes	no	**
 Use sociopetal and sociofugal layouts to promote privacy / social spaces	yes	no	no	*
 Design personal rooms with separate zones to create a home-like atmosphere	yes	yes	yes	***
 Create enough space in the room to accommodate family members and other visitors	yes	yes	yes	***

OUTDOOR ENVIRONMENT

Guideline	*Research*	*Fieldwork*	*Interviews*	*Total weight*
 Provide enough green and blue spaces, as this is linked to a better quality of life	yes	yes	no	**

APPENDIX E. Design guidelines weight

 Connect green spaces in urban areas to enhance bio-diversity, attract wildlife, and provide engaging environ-ments for residents	yes	no	no	*
 Ensure that water features are safely fenced to prevent accidents while still provi-ding a calming atmosphere	yes	yes	no	**
 Provide communal areas with windows offering views of the garden from multiple directions	yes	no	no	*
 Design inner gardens with unobtrusive barriers, like hedges, to reduce feelings of confinement	yes	yes	yes	***
 Use looped walking paths through the inner courtyard	yes	yes	yes	***
 Design winter gardens or verandas for your-round outdoor experiences	yes	no	no	*
 Provide direct access to an inner courtyard from residents' room	yes	yes	no	**

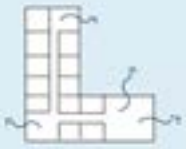
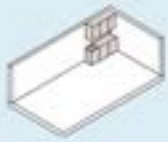
APPENDIX E. Design guidelines weight

 Include small terraces where residents can place chairs	yes	yes	yes	***
 Ensure that rooms without direct outdoor access have views of greenery	yes	no	no	*
 Design enclosed balconies for residents on higher floors to enable private outdoor access	yes	no	yes	**

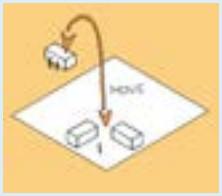
AUTONOMY

Guideline	*Research*	*Fieldwork*	*Interviews*	*Total weight*
 Varying lampposts, benches, and street furniture can act as landmarks, helping orientation and supporting autonomy by allowing independent movement through the environment	yes	yes	no	**
 Provide safe color-coded routes throughout the neighborhood to offer clear guidance, helping residents navigate spaces independently	yes	no	no	*
 Create small living units for 8-10 residents to enhance comfort and autonomy	yes	yes	yes	***

APPENDIX E. Design guidelines weight

 Ensure residents can independently access safe (outdoor) spaces like gardens	yes	yes	no	**
 Design private bathrooms with sufficient storage space and a direct line of sight from the bedroom	yes	yes	yes	***
 Include a small kitchenette with basic amenities	yes	yes	yes	***
 Offer at least two room layouts, allowing residents to choose their preferred option	yes	no	no	*

FAMILIARITY

Guideline	*Research*	*Fieldwork*	*Interviews*	*Total weight*
 Ensure the facility is located near a neighborhood so people with dementia don't have to move far, allowing them to remain in a familiar environment	yes	no	yes	**
 Create paths that connect to familiar local areas, such as the village center, to help residents maintain routines and feel at home	yes	yes	yes	***

APPENDIX E. Design guidelines weight

 Divide large communal areas into smaller, familiar zones like a zone for a kitchen or living room	yes	no	no	*
 Ensure there are objects added in the hallways / living rooms that evoke familiarity and encourage reminiscence	yes	yes	no	**
 Design rooms that are at least 15m² to accomodate personal furnishings and activities	yes	no	yes	**
 Provide a windowsill for displaying personal items	yes	yes	no	**

SENSORY ENGAGEMENT

Guideline	*Research*	*Fieldwork*	*Interviews*	*Total weight*
 Ensure a varied environment with different sounds, textures and scents	yes	yes	no	**
 Provide different textures in the outdoor environment like rough stones, smooth grass or textured bark	yes	no	no	*

APPENDIX E. Design guidelines weight

 Ensure views of a nearby playground or an animal enclosure, creating lively and dynamic visuals	yes	yes	no	**
 Provide soothing sounds in the environment, such as flowing water or birds	yes	no	no	*
 Incorporate fragent flowers in the environment, like lavender, to stimulate the senses	yes	no	no	*
 Ensure a contrast between walls and floors to define room boundaries	yes	yes	yes	***
 Prevent windows that go all the way down to the ground	yes	yes	yes	***
 Highlight doors to accessible spaces with contrasting colors	yes	no	yes	**
 Ensure doors to private spaces blend into the surrounding walls	yes	no	yes	**

APPENDIX E. Design guidelines weight

 Avoid strong contrasts in flooring, like dark tiles on light floors	yes	yes	yes	***
 Avoid shiny materials for flooring, as they can create the illusion of wet surfaces	yes	yes	yes	***
 Provide enough natural daylight to support a regular sleep-wake cycle	yes	no	no	*
 Use warm colors	yes	no	no	*
 Provide good noise insulation to ehance comfort	yes	yes	no	**
 Incorporate sound-absorbing materials like curtains, ceiling panels, and plants to reduce noise	yes	no	no	*
 Use contrasting colors between the toilet and toilet seat. As well as between the toilet and the wall, and the wall and the toilet	yes	yes	yes	***

APPENDIX E. Design guidelines weight

 Ensure minimal contrast between floor materials of private rooms and corridors	yes	yes	yes	***

APPENDIX F. Reflection graduation year

1. Relation Between the Graduation Project, Master Track and Programme

The theme of my graduation project focuses on designing for elderly people with dementia. Many existing care facilities and their surrounding environments are not designed in ways that support the autonomy or quality of life of their residents. With this project, I want to create an environment and buildings that do just this.
Another key aspect of my project is its location: the Tarwewijk in Rotterdam. This is a highly multicultural neighborhood, which makes it essential to consider cultural diversity in the design. In some cultures placing parents in a traditional care facility can be considered taboo, with families preferring to provide care themselves. Therefore, the design must accommodate different cultural views on care and ageing within the same neighborhood.

This subject aligns closely with the studio *'Designing for Health and Care in an Inclusive Environment'*, as it focuses on the specific care needs of a vulnerable group (elderly with dementia) and explores how design can contribute positively to their well-being. At the same time, it strongly connects with the broader master track in Architecture by investigating how architectural strategies and spatial interventions can enhance the quality of life and autonomy of its users. Furthermore, this projects fits within the overarching goals of the MSc Architecture, Urbanism and Building Sciences programme by addressing societal challenges (such as ageing, dementia, and cultural diversity) through spatial design. It contributes to the understanding of how architecture and its surrounding landscape can play an active role in improving human health and well-being.

2. Influence of Research on Design and Vice Versa

The research formed the foundation of my design process. I conducted literature research on three scales: environmental, building, and room level. For each scale, I analyzed the same siX themes to understand how they differ across the scales: (1) orientation & accessibility, (2) privacy & social spaces, (3) outdoor environment, (4) autonomy, (5) familiarity, and (6) sensory engagement. Exploring these three scales and six themes led to concrete design guidelines that I could then apply to my design.

During the design phase, however, research continues to be an ongoing process. All the insight gathered from my research were very valuable: from the form of the buildings, their placement within the neighborhood, to how the rooms were designed, were all all informed by my research. However, new questions arose during the design phase that were not specifically addressed in the research. One example in my case was how elderly couples, where one partner requires care due to mild dementia, could continue living together for as long as possible. This issue was not explicitly covered in my research, but I explored it during the dsign phase and found a solution that worked within the context of my project.

This continuous exchange between research and design allowed me to refine both the theoretical framework and the practical application of the project, ensuring that each informed and strengthened the other.

3. Assessment of the Approach, Methods, and Methodology

The combination of fieldwork, literature review, interviews and case studies proved to be highly effective. In addition to fieldwork in care institutions, I also spoke with residents of the Tarwewijk to better understand how people in this multicultural neighborhood prefer to care for their parents. These conversations revealed cultural differences in attitudes toward institutional care and emphasized the importance of offering alternatives that align with diverse family structures and values. This helped shape my project and create different types of dwellings.

As I mentioned before, I structured my literature study into three spatial scales and six themes. Analyzing these themes across different scales proved to be very effective. It allowed me to gain a clear understanding of what should be implemented at each level to create an inclusive living environment for older adults with dementia.

The fieldwork week, during which I stayed in three different dementia care facilities, also provided me with valuable insights. Conver

stations with care staff, residents, and family members gave me a human and realistic understanding of what works in practice. Structuring the literature in combination with these experiences ensured that my design principles were both well-founded and applicable across multiple levels.

4. Assessment of the Academic and Societal Value of the Project

This graduation project explores how architecture can address the challenges of ageing and dementia in a multicultural context. By focusing on the Tarwewijk, it shows how cultural perceptions shape care preferences and proposes inclusive solutions such as intergenerational housing. Academically, the project contributes to research on how design can enhance autonomy and quality of life for this vulnerable group. It is grounded in literature, fieldwork, and interviews. Profesionally, it aligns with current trends in healthcare architecture, offering a model for community oriented dementia care in urban environments.

5. Effectiveness of the approach

Overall, my approach proved effective and the research significantly supported my decision-making during the design phase. However, the large number of design guidelines resulting from the analysis of different scales and themes made it impossible to apply everything. Initially, I struggled with leaving out parts of my research, but eventually I focused on selecting the most relevant principles. Many of the guidelines were quite general and not all directly suited to the specific context of the Tarwewijk. Therefore, I carefully filtered and adapted those that best matched the urban and cultural environment of Rotterdam South.

6. Understanding the ''how and why''

Through this project, I gained a deeper understanding of how and why the built environment should be designed to help people with dementia retain autonomy and quality of life. One key insight was the importance of maintaining connections with the local community. Initially, I considered separating the care environment from the neighborhood, but I later realized that people with dementia benefit greatly from being able to move independently and safely through their surroundings. This freedom fosters autonomy and enables spontaneous encounters with neighbors, which strengthens their sense of belonging. As a result, the integration of social zones, both indoors and outdoors, became a central element in my design.

7. Reflection on Feedback and its integration into the project

An important piece of feedback I received focused on future adaptability. What if a cure for dementia is found? What will happen with all these buildings then? In that case, specialized care environment might no longer be needed. In response, I made flexibility a central design principle. I adapted the floor plans so that apartments could be resized or repurposed in the future.

Flexibility was implemented not only in the layouts and structural system, but also in the technical installations. I carefully considered the positioning of air supply and exhaust points to prevent the need for changes in future conversions. Additionally, underfloor heating zones were designed to be easily coupled or separated to accommodate layout changes.

Thanks to this feedback, flexibility became a key part of the project. Without it, my design would have been far less adaptable. And for a target group like this, long-term flexibility is essential, especially in the current fast changing care landscape.

8. Learning from my own work

One key lesson was that I initially tried to develop every building in too much detail, which proved unrealistic within the available time. I have learned that focus is essential: one well-developed design can be more powerful that several that are only partially resolved. I also realized how important it is to continuously refer back to the research throughout the design process, something my mentors rightly reminded me off. This helped me stay grounded and ensured that my design choices remained aligned with the projects core values and findings.

9. Looking ahead

As the design process nears its completion, the focus shifts to finalizing all products and elements for P4. Between P4 and P5, I will concentrate on visualizing the buildings atmosphere and creating a physical model.

10. Transferability of project results

The design principles I developed are applicable beyond the Tarwewijk. The three spatial scales and six core themes can serve as an analytical model for other dementia care projects aiming for inclusivity. Additionally, the concept of combining multiple housing types offers a flexible framework that can be adapted to other neighborhoods or cities.

11. Self developed reflection questions

1. When is a design considered 'inclusive enough', and how did I address this in my project?

A design can be considered 'inclusive enough' when it actively removes barriers and enables meaningful use for a group of intended users, especially those who are often excluded. In my project, I assessed inclusivity by examining how well the design supports people with dementia from different cultural background and with varying care preferences. I explored how care is perceived in diverse communities and translated those insight into flexible housing types, shared spaces, and spatial strategies that support autonomy and informal care. Inclusivity was not just a goal, but a design tool throughout the process.

2. To what extent can my project encourage informal care or community involvement?

This project fosters informal care and community involvement by integrating shared spaces and outdoor areas that are easily accessible to both residents and neighbors. By not isolating the care facilities but embedding it within the existing fabric of the Tarwewijk, the project encourages spontaneous interactions and supports neighbors in taking an active role in care. Mixed housing typologies and intergenerational elements also promote a sense of ownership and mutual support.

By critically reflecting on my process, design, decisions, and the feedback I received, I have developed a clearer understanding of how architecture can meaningfully contribute to inclusive dementia care, and I feel equipped to apply this knowlegde in both my graduation project and future professional practice.