Bridging Nature and Care

Nurturing Individuals with Dementia in a Residential Care Facility in Denmark

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Independent project in environmental psychology • 30 credits
Swedish University of Agricultural Sciences, SLU
Faculty of Landscape architecture, department of Individuals and society
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Abstract

The global demographic shift towards an aging population, with a projected 22% of the world over 60 by 2050, presents a significant challenge because of the soaring rates of dementia, carrying profound economic, political, and social consequences. Research emphasizes the potential of nature-based interventions in improving the well-being of individuals with dementia. However, practical implementation in residential care facilities remains limited.

This thesis investigates the integration of a nature-based care culture for residents with dementia in a real-world residential care facility context, focusing on the crucial role of healthcare professionals and environmental qualities. Using an intrinsic single case study design, the research centers on a residential care facility in Denmark that has successfully integrated nature into its care culture. It employs qualitative research methods, including interviews and place analysis, to address research questions.

Focus group and joint walk-along interview were conducted to explore healthcare professionals' roles in nature- based care cultures. Participants were purposefully selected, including four healthcare professionals of varying backgrounds in the focus group and a healthcare professional and a project manager from a previous nature and outdoor life project in the joint interview. Indoor and outdoor environments were assessed using the Quality Evaluation Tool and Principal Model in four zones of contact with the outdoors.

According to the research findings, integrating a nature-based care culture within a residential care facility depends on motivated healthcare professionals, employing nature-based interventions. Emphasizing the need for supportive environments, strong leadership, and volunteers. The identification of a 'prime mover,' a healthcare professional responsible for planning and executing nature-based interventions, emerges as a critical success factor.

Future research could explore the dynamics between the 'prime mover' and the interplay among management, volunteers, healthcare professionals, and the physical residential care facility environment, shedding light on broader implications for enhancing the well-being of residents with dementia.

Keywords: Quality Evaluation Tool, nature-based care culture, Principal Model of Four Zones of Contact with the Outdoors;nature-based dementia care, Key-players in nature-based care cultures, healthcare professionals; supporting environments in residential care facilities, nature-based interventions.

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Finally, I am grateful for my children, Gaia, and Lorenzo, whose unwavering support and belief in me has been a constant source of motivation.

Preface

During my horticultural design studies, I participated in a design-project regarding supportive outdoor environments in a residential care facility. The project led me to a residential care facility with a somewhat bleak outdoor space, dominated by asphalt and a few scattered shrubs. Seeing how limited outdoor experiences were for the residents in the residential care facility was a revelation. Equally, healthcare professionals' admissions of insufficient time and knowledge to engage residents in outdoor activities struck me.

In response to this experience, I became interested in the connection between nature, well-being, and older adults, especially those with dementia. Extensive research in environmental psychology has shown that nature-based activities and contact with the natural world can significantly enhance the physical and emotional health of older individuals, a notion particularly promising for those with dementia.

Upon deeper investigation, I discovered numerous barriers to nature-based care in residential care facilities. These obstacles include a lack of collaboration among essential stakeholders in the planning of residential care facilities, such as architects and landscape architects, as well as a general shortage of knowledge concerning the design of supportive environments within these facilities. Adding to the complexity was the lack of knowledge and motivation of healthcare professionals to engage in nature-based interventions.

My growing awareness of the imperative to prepare society for an aging population and the surge in age-related conditions, especially dementia, underscored the urgency of addressing these barriers.

This thesis explores the role of healthcare professionals in facilitating a nature-based care culture and how the inherent qualities of the outdoors can be harnessed as a resource for residents with dementia in a residential care facility. The exploration will delve into the strategies and barriers involved in the practical implementation of a nature-based care culture. I hope that this research will contribute to bridging the gap between theory and practice, ultimately enhancing the well-being of those who call a residential care facility their home.

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Abbreviations

ADC	Adult Daycare Center
FZCO	Four Zones of contact with the Outdoors
NBCC	Nature Based Care Culture
NBI	Nature Based Interventions
RCF	Residential Care Facility
RWD	Residents With Dementia
SLU	Swedish University of Agricultural Sciences
TSE	Triangle of Supporting Environments
QET	Quality Evaluation Tool

1. Introduction

This introduction sets the stage for a research paper exploring the intersection of an aging population, dementia, and the potential benefits of nature-based care cultures (NBCC) in residential care facilities (RCF). It delves into the global context of increasing dementia cases and the World Health Organization's (WHO) response to this challenge (World Health Organization, 2017). The symptoms of dementia, emphasizing the absence of a cure and the beneficial effects of nature on overall well-being, are discussed. Barriers to implementing nature-based care are identified, and potential solutions involving evidence-based design approaches and healthcare professional engagement are introduced.

The introduction establishes the central topic for this thesis: the lack of nature-based interventions (NBI) and NBCC implementation in actual RCFs, despite comprehensive research. It outlines the study's aims, objectives, research questions, and limitations. In summary, the introduction provides a concise overview of the research's context and significance, laying the groundwork for the subsequent investigation.

1.1 Growing Global Threat of Dementia

A significant global health concern has arisen because of the increasing prevalence of dementia, primarily associated with the global rise in life expectancy. In this section, the implications of this escalating global challenge will be explored, offering insights into the associated public health issues (World Health Organization, 2017).

The rise in dementia prevalence is attributed to increasing life expectancy, creating a growing public health concern. With socio-economic development, life expectancy has increased, resulting in a demographic shift (World Health Organization, 2017). By 2050, the world's population aged 60 is predicted to reach 22%, with Europe surpassing this at 34%. This projection reveals a stark reality– there will be more individuals above 60 than those under 14 (Nichols et al., 2022; World Health Organization, 2017).

Dementia is recognized as a pressing global issue (Lawrence J. Whalley & Kathleen A. Smyth, 2013; World Health Organization, 2017), and proactive measures have been taken by the WHO (2017). A comprehensive plan has been developed as part of a global initiative aiming to enhance the lives of those who have dementia, their caregivers, and healthcare professionals, while also mitigating the broader societal impact of this condition (ibid.).

The scale of the dementia challenge is immense; in the next section, it will be explored as the symptoms and variations of dementia are delved into, providing deeper insight into the challenges posed to those directly affected.

1.2 Understanding Dementia: Symptoms and Variants

Dementia is the common term for a collection of symptoms encompassing memory loss, cognitive decline, and impaired social abilities. Alongside these cognitive symptoms, dementia is associated with a range of psychological and behavioral manifestations (Alzheimer's Society, 2022; Müller-Spahn, 2003). These manifestations include depression, anxiety, psychosis, agitation, aggression, disinhibition, and sleep disturbances. Research suggests that 30% to 90% of dementia patients experience these behavioral challenges (ibid.)

Approximately 200 diseases can cause dementia or cognitive disorders, with Alzheimer's disease being the most prevalent among them (Alzheimer's Society, 2022). Other noteworthy forms include vascular dementia, Lewy body dementia, and conditions contributing to frontotemporal dementia. It's worth noting that dementia can develop because of excessive alcohol consumption, after a stroke, repetitive physical brain trauma, certain infections, or nutritional deficiencies (Alzheimer's Society, 2022).

Despite substantial research efforts aimed at uncovering dementia causes and developing pharmacological treatment options, there is currently no cure for this complex condition (Alzheimer's Society, 2022). As a result, the focus remains on providing opportunities for the affected by this condition to maintain functionality and support their overall well-being (Centers for disease control and prevention [CDC], 2022; World Health Organization, 2017).

With a comprehensive understanding of dementia's diverse manifestations and challenges from the previous section, the significance of environmental factors in the well-being of individuals with dementia is explored in the following section, where the positive impact of NBI will be discussed.

1.3 The Impact of Nature on Individuals with Dementia

In recent years, scientific evidence has underscored the crucial significance of outdoor environments in healthcare settings, with substantial implications for patient outcomes (R. Ulrich, 1984; R. S. Ulrich, 1999). Positive influences have been observed across physical and psychological domains, including enhancements in sleep patterns for individuals living in RCFs. This exploration into the therapeutic connection between outdoor environments and health outcomes will subsequently delve into specific facets, such as reduced autonomic arousal, improved affective state, and enhanced competence.

Reduced Autonomic Arousal and Improved Affective State
Various studies have consistently connected exposure to green environments with decreased autonomic arousal, leading to stress recovery and improved affective states (Ottosson & Grahn, 2006). Tang and Brown's study (2006) further supports these findings, indicating that viewing natural landscapes resulted in lower blood pressure and heart rate among older adult women compared to built environments.

Enhanced Competence and Stress Reduction for Individuals with Dementia
For individuals with dementia, the benefits of outdoor exposure seem pronounced. Ottosson and Grahn (2006) suggest that RCF residents experiencing psycho-physiological imbalances may reap the greatest advantages of encounters with natural elements. Outdoor experiences have been linked to improved behavior and mood for those affected by stress, anxiety (C. Mansfield, 2007; R. S. Ulrich, 1999; Whear et al., 2014) and crises (Ottosson & Grahn, 2008).

Therapeutic Effects on Sleep and Behavior
Expanding on the specific benefits for RWD in RCFs, Rappe et al. (2006) emphasized the potential for outdoor activity programs. According to their study, an outdoor activity program was found to have positive effects on sleep and behavior. This highlights the potential of NBIs for addressing sleep and behavior-related issues in individuals with dementia (Rappe et al., 2006).

Nature-Based Interventions for Dementia Care
Expanding on what has been previously discussed, the potential therapeutic advantages can be observed within the wider framework of NBI.

NBI encompasses diverse activities and strategies designed to immerse individuals in nature-based experiences, fostering overall health and well-being (Stigsdotter et al., 2011; Shanahan et al., 2019). These interventions, ranging from horticulture to outdoor physiotherapy, recreational games, and walks in green environments, have consistently underscored positive changes, offering a comprehensive approach to integrating the outdoors into dementia care (Barrett et al., 2019).

In a literature review on green dementia care, Barrett et al. (2019) classified nature-based interventions into two broad categories: organized activities such as gardening clubs and tea parties, and spontaneous activities like strolling in the garden. They identified two types of engagement with nature: passive, such as sitting in the garden, and active, such as gardening (Barrett et al., 2019).

Social Integration and Sense of Community

Kweon et al. (1998) emphasized the role of outdoor common spaces in promoting social integration among older adults. For individuals in RCFs, exposure to outdoor common spaces positively correlated with the strength of neighborhood social ties and the sense of community. These findings suggest that the design of outdoor environments can play a crucial role in fostering social connections among older adults.

Design Recommendations for Enriching Outdoor Environments in Dementia Care

The positive impact of the outdoor environments on social integration, as stated by Kweon et al. (1998), underscores the crucial role of outdoor environments in fostering social connections among individuals with dementia. In line with these findings, research on outdoor environments for individuals with dementia has provided valuable insights, emphasizing the need for inspiring and comfortable outdoor designs, promoting activities that cater to their cognitive, physical, and emotional well-being (Bengtsson & Grahn, 2014).

Research on this topic has yielded design recommendations for supportive outdoor environments within RCFs. Such environments should feature inspiring designs that facilitate enjoyable activities, including horticulture, birdwatching, and social gatherings, catering to the cognitive, physical, and emotional limitations of the users (Bengtsson & Grahn 2014; Zeisel & Tyson, 1999). Furthermore, safety and security aspects, such as orientation descriptors, pathway quality, seating options, and protection from adverse weather, must be carefully considered (Barrett et al., 2019; Bengtsson & Grahn, 2014; Chalfont, 2007; Chalfont & Rodiek, 2005; Evans et al., 2019; Zeisel & Tyson, 1999).

The understanding of the positive impact of the outdoors (Barrett et al., 2019; Kweon et al., 1998; Ottosson & Grahn, 2006; Rappe et al., 2006; Tang & Brown, 2006; Whear et al., 2014) and the potential benefits of NBI on dementia care (Barrett et al., 2019; Shanahan et al., 2019; Stigsdotter et al., 2011), provides a foundational backdrop for exploring the barriers to implementing nature-based care in RCFs. The insights gained from these studies, coupled with the design recommendations for outdoor environments (Barrett et al., 2019; Bengtsson & Grahn, 2014; Chalfont, 2007; Chalfont & Rodiek, 2005; Evans et al., 2019; Zeisel & Tyson, 1999), lay the groundwork for a comprehensive examination of the challenges associated with integrating nature-based approaches into dementia care settings.

1.4 Barriers to Implementing Nature-Based Care in RCF

Despite the existence of a substantial research body on the development of outdoor environments for individuals with dementia and NBI, these findings are seldom applied in real-world RCFs.

A notable knowledge gap persists, especially within architecture and landscape architecture. The persistent separation between indoor and outdoor spaces, compounded by the differentiation between architecture and landscape architecture, remains a central factor contributing to the underutilization of outdoor spaces (Chalfont, 2007; Oher, 2016). Furthermore, the design process often overlooks the inclusion of future users, such as residents, families, and healthcare professionals (Barrett et al., 2019; Brawley, 2007; Cardoso et al., 2015).

Even in RCFs that have established supportive outdoor environments, a meaningful connection with nature for RWD is not always assured. Healthcare professionals frequently encounter difficulties when attempting to incorporate nature-based activities into their demanding daily schedules, expressing apprehensions regarding potential workload increments (Barrett et al., 2019; Chapman et al., 2007; Dahl et al., 2015; Leer Jørgensen, 2011). A lack of intrinsic interest and knowledge about NBIs among healthcare professionals acts as a barrier to realizing an NBCC (Leer Jørgensen, 2011).

The lack of cooperation and knowledge amongst the stakeholders in a design process of a RCF (Barrett et al., 2019; Chalfont, 2007; Oher, 2016), and lack of knowledge and motivation to implement NBI amongst the healthcare professionals (Barrett et al., 2019; Leer Jørgensen, 2011), aligns with this author's observations, derived from previous studies, interviews, and workshops involving healthcare professionals, architects, landscape architects, and relatives. As an example, during the involvement of the development of a value program for a dementia town in Denmark, with discussions occurring with the stakeholders mentioned earlier (Pluskontoret, 2016), and a project, related to previous studies, in Gothenborg (Dahl et al., 2015).

The acknowledgment of the current gaps and challenges in implementing nature-based care in RCFs provides a foundation for a comprehensive examination of the obstacles and remedies in the subsequent section.

1.5 Addressing Barriers to Nature-Based Care

In the preceding section, a discussion was initiated on the challenges encountered when implementing a NBCC within Residential RCFs. The challenges predominantly center on deficiencies in knowledge and motivation among healthcare professionals, frequently leading to an inadequate integration of NBI (Barrett et al., 2019; Leer Jørgensen, 2011). Additionally, the absence of supportive environments and other barriers further compounds these challenges, hindering the seamless incorporation of nature-based approaches into the healthcare practices within RCFs.

The subsequent sub-sections will delve into a detailed analysis of these issues, placing a specific emphasis on examining strategies to empower healthcare professionals in engaging with NBI. Following this, discussions will revolve around evidence-based guidelines available during the design phase for the creation of more supportive environments within RCFs.

1.5.1 The Vital Role of Healthcare Professionals

Healthcare Professionals as Integral to NBI Implementation

Research underscores the crucial role of healthcare professionals in successfully integrating NBI for RWD in RCFs. Involving healthcare professionals in the planning process from its inception is essential (Barrett et al., 2019; Brawley, 2007). Early involvement not only fosters engagement in NBI, but also instills feelings of inclusion and ownership among healthcare staff. This collaboration benefits the entire project by providing valuable insights into designing for the specific needs of the users, thus ensuring that it aligns with their preferences and requirements (ibid).

In a study regarding staff perspectives on the role of the physical environment in long-term care facilities on dementia care in Canada and Sweden, healthcare professionals discussed how a courtyard garden facilitates relationships among healthcare professionals and RWD, associated with creating a sense of community and promoting a sense of normalcy and social integration for the RWD (Lee et al., 2021). Thus, emphasizing the importance, regarding both the buildings and the outdoors when designing RCFs (ibid.).

Brawley (2007) notes that a well-planned activity program should serve as the cornerstone of the design process. This approach ensures that the outdoor environment encourages frequent use and integration into the lives of RWD. By prioritizing activities that are engaging, stimulating, and enjoyable, the outdoor spaces become an essential part of the daily routines and well-being of the RWD (ibid.).

Addressing the Healthcare Professionals' Knowledge Gaps

The healthcare professionals' lack of knowledge of the natural environment and the health-promoting benefits has further been addressed in research (Barrett et al., 2019; Chapman et al., 2007).

Involving healthcare professionals in courses learning about plants, gardening, and nature-based activities has been proven beneficial for enabling healthcare professionals in NBI. Participants in these courses have reported increased knowledge, enthusiasm, and confidence for working with plants and nature-based activities. The enthusiasm it ignited resonated with residents, families, and other healthcare professionals (Chapman et al. 2007).

In a study proposing the theoretical framework, *The Garden-Use Model* staff attitudes were coined as one of five essential factors in supporting RWD to go outdoors (Grant & Wineman, 2007). When healthcare professionals in RCFs recognized the positive impact of nature on RWD, they encouraged them to explore the outdoors independently. As a result, RWD could take risks and experience increased independence. However, in RCFs where healthcare professionals were concerned, the doors were kept locked, and RWD could not go outside by themselves (ibid.).

1.5.2 Supporting Design of Health-Promoting Outdoor Environments

Introducing the Quality Evaluation Tool

The Quality Evaluation Tool (QET), introduced by Bengtsson and Grahn (2014) is as a response to the existing knowledge gap in landscape architecture. In the design of outdoor environments for healthcare settings, this tool aids landscape architects in three key steps (ibid.). The first step entails exploring the designated environment to identify its qualities and attributes. Step two involves assessing environmental qualities that hold significance for the users. Based on the first two steps, the third step concludes and suggests design recommendations for implementing appropriate measures.

Three essential design concepts form the basis of the QET.

1. *A Comfortable Design:* This design approach considers the specific needs of the intended users, including cognitive, physical, and mental considerations. It aims to create a comfortable environment that fulfills requirements for security, safety, and overall comfort.

2. *An Inspiring Design:* The design seeks to inspire users, encouraging their

desire to engage with the outdoor environment.

3. *A Gradient of Challenge:* The design should offer a range of environmental qualities with varying levels of challenge. It should provide opportunities for both passive engagement with the outdoors and active engagement with the outdoors to cater to users with diverse needs for connecting with the outdoors.

Within the QET, 19 environmental qualities are outlined in an order that aligns with the theoretical principle. The first six qualities pertain to aspects of ensuring the comfort of the intended users within the outdoor area of the healthcare setting (section A):

- Closeness and easy access
- Enclosure and entrance
- Safety and security
- Familiarity
- Orientation and way-finding
- Different options in different kinds of weather

The consideration of these aspects should apply to the entire outdoor area of the healthcare setting.

The subsequent 13 qualities describe how users can access nature and engage with the surrounding environment, offering diverse possibilities for experiencing and using the outdoor environment: (section B):

- Contact with the surrounding life
- Joyful and meaningful activities
- Social opportunities
- Culture and connection to past times
- Symbolism/reflection
- Prospect
- Space
- Rich in species
- Sensual pleasures of nature
- Seasons changing in nature
- Serene
- Wild nature
- Refuge

These qualities are arranged according to a gradient of challenge (fig.2), starting with the most demanding qualities and gradually progressing to the least demanding ones.

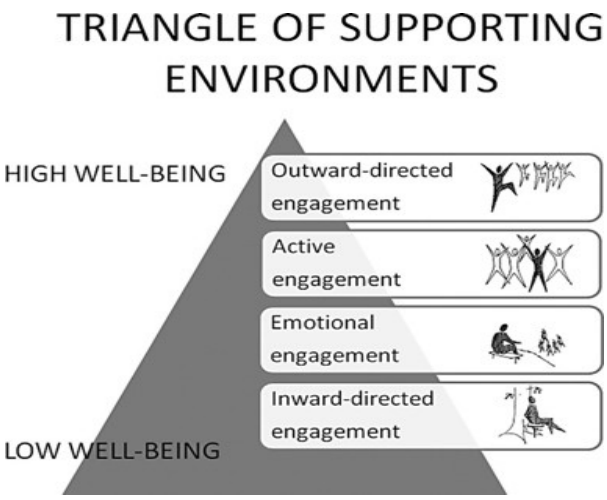

Figure 1. The TSE model links well-being and environmental sensitivity. Low well-being and high sensitivity lead to inward focus, while higher well-being reduces sensitivity, promoting outward engagement.

These qualities are closely connected to theories in the field through the Triangle of Supporting Environments (TSE). The TSE illustrates how an individual's relationship with the physical environment is influenced by their subjective well-being. In the lower part of the triangle, where experienced well-being is low and sensitivity to the environment is high, individuals engage inwardly. As well-being increases, sensitivity to the environment decreases, allowing for outward- directed engagement (fig. 1) (Grahn & Stigsdotter, 2010).

The TSE, aligned with the gradient of challenge (fig.2), serves as a framework for identifying environmental qualities as strengths or sensitivities for specific user groups. Areas closer to the building focus on qualities that correspond to the strength of the majority of the users, while areas farther from the building may incorporate more challenging environmental qualities, providing users with the choice of engaging with them as they see fit.

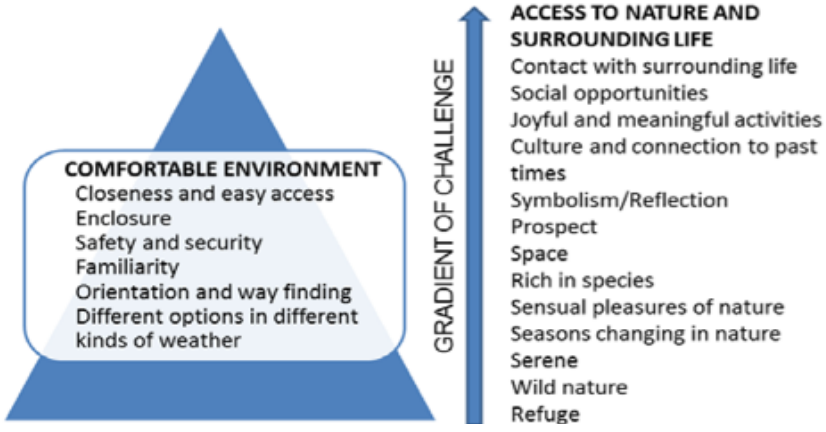

Figure 2. In this figure the 19 environmental qualities are ordered in a gradient of challenge, from most to least demanding. Linked with the TSE and the gradient of challenge, TSE guides us in pinpointing strengths and sensitivities for specific user groups (Bengtsson & Grahn 2014 p.3).

The TSE's shape, with its apex at the top, shows a person's sensitivity to overstimulating environments, typically seen in short-term contexts. In contrast, in long-term contexts, like RCFs, the triangle would be inverted, reflecting heightened sensitivity to under-stimulating outdoor environments (fig.3).

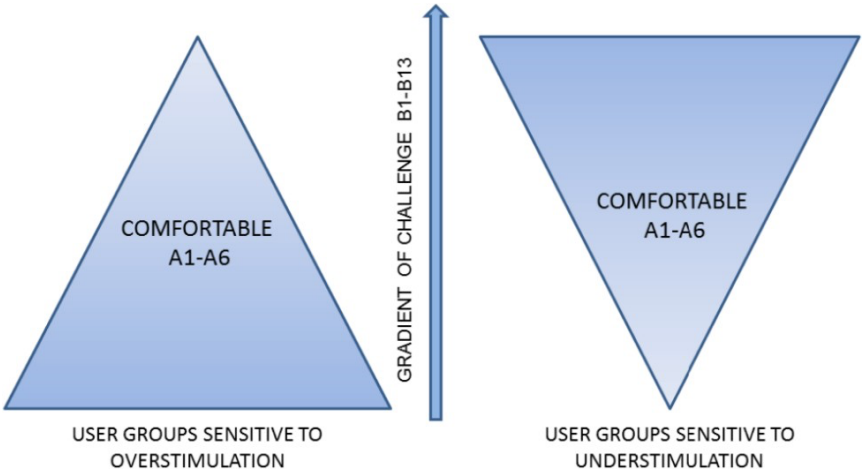

Figure 3. The TSE's apex reflects heightened sensitivity to overstimulating environments in short- term contexts. In long-term settings like RCFs, the triangle inverts, indicating increased sensitivity to under-stimulating outdoor environments (Bengtsson 2015 p.6)

Introducing the Principal Model of Four Zones of Contact with the Outdoors

The design process should encompass the entire healthcare setting, including not only the areas adjacent to the building but also the potential for indoor-outdoor contact within the building and the evaluation of environmental qualities outside the healthcare setting. This concept is addressed in the Principal Model of Four Zones of Contact with the Outdoor (FZCO) (Bengtsson, 2015). In the FZCO, the healthcare setting and its surroundings are categorized into four zones through which contact with nature can be established by the residents of a healthcare facility (fig.4) (ibid.).

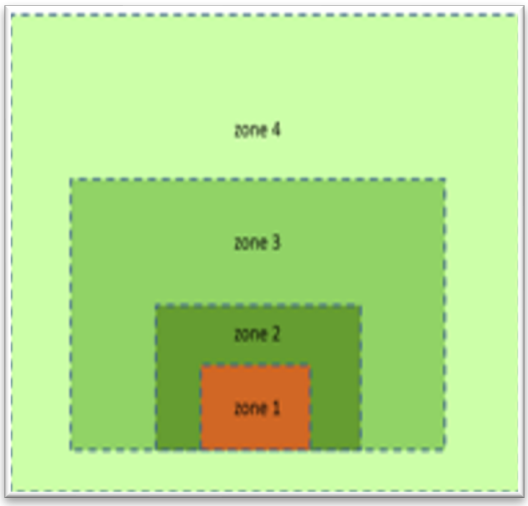

Figure 4. This figure illustrates the principal model of the FZCO, dividing healthcare settings into four zones. Zone One: Connecting with nature from indoors.Zone Two: Transition areas between indoor and outdoor spaces.Zone Three:Immediate outdoor surroundings.Zone Four: The broader neighborhood context. (Bengtsson, 2015)

The first zone pertains to the possibility of individuals having contact with the outdoors

from inside a building, for instance, through a window. Research has previously discussed how viewing an inspiring outdoor environment from indoors can have a health-promoting effect and encourage individuals to spend time outside (Chalfont & Rodiek, 2005; R. Ulrich, 1984; R. S. Ulrich, 1999; Zeisel & Tyson, 1999).

Zone two encompasses the transitional spaces between indoor and outdoor environments, such as balconies, winter gardens, and entrance areas. Chalfont and Rodiek (2005) suggest that these transition zones can mitigate the disconnection between the indoors and outdoors. Moreover, if the areas outside mirror the use of indoor areas, like dining areas or gyms, it supports the transition to the outdoors (Zeisel & Tyson, 1999).

Zone three pertains to the immediate surroundings, including the garden directly connected to the healthcare setting. As discussed earlier, it is essential to evaluate the environmental qualities necessary for the intended user group (Bengtsson & Grahn 2014; Bengtsson 2015).

Zone four corresponds to the broader context of the neighborhood (Bengtsson, 2015).

Emphasizing a Holistic Viewpoint in the Design of RCFs

Adopting a holistic approach in the design process of a RCF, one that integrates both architecture and landscape design, not only promotes a more comprehensive and beneficial environment but also enables increased independence for individuals with dementia diseases (Barrett et al., 2019; Bengtsson, 2015). This approach fosters a setting where architecture and landscape coalesce to provide RWD the opportunity to engage in activities that enhance their well-being. Simultaneously, it empowers healthcare professionals to deliver more effective care, making it an integral element of an NBCC. This collaborative approach ensures that both the built environment and the surrounding outdoor environment are harmoniously aligned to cater to the needs of RWD (Bengtsson, 2015). Creating an environment conducive to their safety, engagement, and overall quality of life (Brawley 2007; Zeisel 2007).

Building upon the principles of a holistic approach, the subsequent section examines the barriers and opportunities within RCFs, particularly in healthcare professionals' roles in implementing NBI. This discussion aims to shed light on the challenges faced and potential strategies for promoting the effectiveness of NBI within RCFs, which will be pivotal in addressing the core problem outlined in the following problem statement.

1.6 The Problem Statement

Dementia is becoming an increasing global concern, WHO has outlined specific targets for dementia care. Despite the potential for environmental psychology research to address some of these targets, many barriers prevent the successful implementation of NBCC and NBI in real-life RCFs (Chapman et al., 2007; Grant & Wineman, 2007). These barriers include limited involvement of healthcare professionals in NBI (Chapman et al., 2007; Leer Jørgensen, 2011) and a lack of supportive outdoor environments connected to RCFs (Chalfont, 2007; Grant & Wineman, 2007).

To comprehensively understand and overcome these barriers, there is a need for an in-depth study of an RCF that has successfully implemented NBI and NBCC. This study will explore healthcare professionals' roles in NBI within an NBCC, the strengths, and weaknesses of the RCF's indoor and outdoor environments, the interconnection between healthcare professionals' roles in NBI and environmental qualities in an NBCC, and other factors contributing to successful NBCC integration.

1.7 Aim, Research questions, and Limitations

1.7.1 Aim and Research Questions

The overarching aim of this study is to explore the incorporation of nature-based care culture, including nature-based interventions and the environment qualities, into a residential care facility for the residents with dementia.

Within the context of the selected RCF that has successfully implemented NBI and NBCC, this study seeks to address the following research questions:

- How do healthcare professionals contribute to NBI and NBCC?
- What are the strengths and weaknesses of the indoor and outdoor environment within the studied RCF?
- How do healthcare professionals and environmental qualities interact in an NBCC at the studied RCF?

1.7.2 Limitations

During preparing this thesis, four primary barriers to integrating NBCC in RCFs were identified. This study addresses two of these barriers, specifically issues related to the outdoor environment for individuals with dementia in RCFs and the role of healthcare professionals in NBI (for more details, see Section 1.3.2). The remaining two barriers, which involve organizational support and maintenance programs (Chapman et al. 2007; Grant & Wineman 2007) will not be extensively discussed in this research.

Because of the ongoing COVID-19 pandemic and ethical reasons, some areas at the RCF have not been visited. Moreover, contact with the residents has also been limited.

Following the recognition of the limitations, the upcoming section will elaborate on the methodology employed for the study. This will involve a comprehensive discussion of the strategies implemented for data collection, analysis, and interpretation to effectively address the research questions.

2. Methods

2.1 Research Design

In this study, a single intrinsic case-study methodology was used as the overarching method approach. The intrinsic case study is characterized by its exploratory nature, providing an opportunity to comprehend the unique aspects of a specific case (Johnson, 1996; Merriam, 1998; Mills et al., 2010; Yazan, 2015). The chosen RCF for this study adopts a distinctive approach, emphasizing the integration of outdoor environments and natural elements in the care of the RWD (see case-description in section 2.2). This choice aligns with the intrinsic approach of this thesis.

The epistemological commitment is towards the constructive research paradigm – knowledge can be constructed through interaction with the phenomenon and participants in the investigation (Given, 2008; Merriam, 1998; Yazan, 2015).

Data collection was conducted through two key methods: interviews (a focus group and a joint-interview) and place analysis. The strategic utilization of qualitative methods in triangulation enabled a comprehensive and in-depth exploration of the subject. Using triangulation in qualitative research enhances the reliability, validity, and depth of the research by cross-verifying information from multiple sources and perspectives (Merriam 1998; Denscombe 2011; Yin, K. Robert 2014).

The focus group and joint interview were the primary methods of answering the research question: *How do healthcare professionals contribute to NBI and NBCC?* The place analysis was employed mainly to answer the question: *What are the strengths and weaknesses of the indoor and outdoor environment within the studied RCF?*

The findings of the focus-group and joint-interviews, as well as the place analyses, are presented in the Result Section. These two partial results are discussed in the first two sub-section of the discussion section. Followed by a third part that discusses how the partial results are interconnected, thus answering the third research question: *How do healthcare professionals and environmental qualities interact in an NBCC at the studied RCF?*

In the Conclusion section, the results are contextualized in relation to the study's aim, and suggestions for future research are provided. In figure 5. an illustration of the research design is presented.

An Overview of Methodological Process

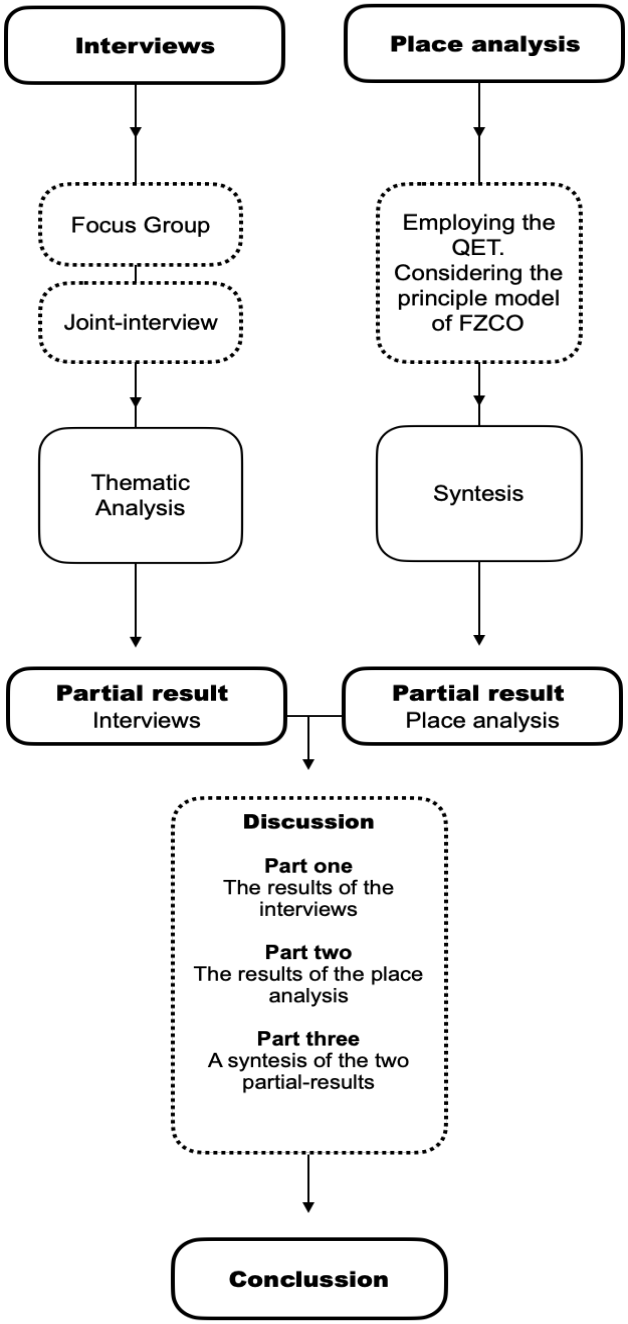

Figure 5. This graphical representation provides a visual overview of the systematic methods.

2.1.1 Epistemological Approach

In this subsection, the epistemological underpinnings that guided the methodology of this study will be outlined. The research is within the constructivist paradigm, which posits that knowledge is actively constructed through interactions with the research phenomenon and participants (Given, 2008; Merriam & Merriam, 1998; Yazan, 2015). The methodological choices in this study were heavily influenced by the constructivist paradigm, particularly in interviews and participant engagement.

Methodological Implications

Within the constructivist paradigm, active participant engagement is a primary consideration. Various activities within the RCF, such as gardening, excursions, cooking, and dishwashing, were participated in.

While some aspects, like spontaneous interviews and certain observations, were omitted from the final analysis, their value lay in assisting the research phenomenon to be comprehended, building connections, and trust with interview participants, as well as helping to determine the focus of the interviews.

Omitting spontaneous interviews and certain observations was based on considerations of their value to the research.

2.1.2 Organizing the Fieldwork

RCF that have the required prerequisites, such as NBCC, with a willingness to participate in a case study, can be difficult to find. RCFs with a Nature-profile are relatively scarce, and convincing them to engage in research requires active involvement from their management, as well as a willingness to make their employees available for interviews.

Several RCFs were found and contacted online, however, some did not meet all the aforementioned prerequisites for a case study and some did not wish to participate. However, the RCF selected for this case study met the prerequisites. Thus, it had an integrated NBCC.

The means of access to this RCF was through a gatekeeper. *Gatekeepers* in qualitative research can be defined as individuals used as entry points to a specific community or organization. They have 'inside' information helping researchers access the specific community or organization and decide the best individuals to contact or interview (Guha Martin, 2006) The gatekeeper (GK) was the nature therapist and had a significant role in implementing the NBCC at the RCF. To prepare for the field study, informal interviews via zoom were performed with GK. It was discussed which informants would be best suitable to interview for this study. The GK selected informants willing to participate in interviews, retrieved the

permissions to perform fieldwork at the RCF and helped organize other practicalities.

The data collection on-site was conducted between the 25th of May and the 29th of May, 2021. GK introduced other staff members and volunteers. Participating in excursions with the RWD, a meeting with the voluntaries, and participation in the annual garden day were facilitated.

2.2 The Case Description

The Residential Care Facility

The RCF comprises 38 housings and residents, divided into four wards*: Lærkevej, Solsikkevej, Rosenalle, and Fuglevænget.* Approximately 80 to 90% of the residents suffer from mild to more advanced dementia.

The staff at the facility has a diverse composition, encompassing health and social care professionals such as health assistants, educators, and nurses. The manager holds a nursing degree along with a diploma in management and diaconia. Additional team members include a janitor, janitor assistant, activity coordinators, a nature therapist, and house assistants. In the kitchen, nutrition assistants handle meal preparation, and among them is one with a bachelor's degree in nutrition and health.

The Location

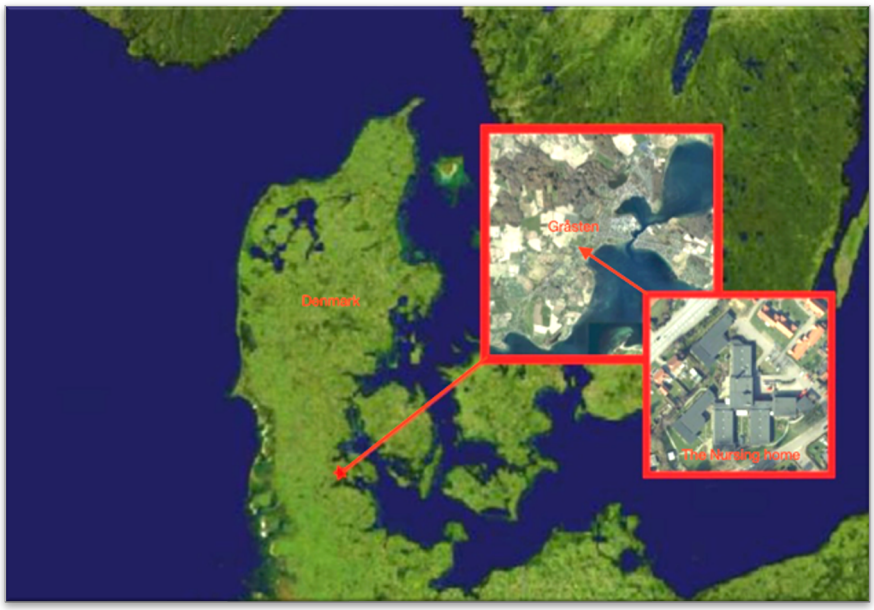

Figure 6. Map of Denmark, Graasten and the residential care facility. (Map data ©GeoBasis-DE/BKG(©2009).Google).

Near Gråsten, a picturesque town on the eastern coast of the Jutland peninsula in southern Denmark, the RCF enjoys a beautiful location surrounded by natural landscapes (fig.7).

Figure 7. The Graasten Palace (photo:Mia Trnka)

Located in a residential area, the RCF has access to a fantastic panoramic view of the undulating landscape, which provides a captivating perspective on Rinkenæs parish (fig.8) and Flensborg Fjord.

Figure 8. The Parish of Rinkenes(photo: Mia Trnka)

The Garden

The garden of the RCF comprises one surrounding garden, Garden I, entered from the main entrance area, and three courtyard-gardens, Garden II, III and IV, (fig. 9). In appendix 1 and 2, a more detailed map of garden I and IV can be found.

Figure 9. Photos from the gardens. The Pentanque court in Garden I (Photo Søren Gülck) Garden II featuring apple trees and a bed for sleeping outside (Photo Søren Gülck). the green- house decorated with lights, in Garden III (Photo Søren Gülck) and the Chicken coup in the Garden IV (Photo Mia Trnka).

Figure 10. Map of the Entrance (E), surrounding garden (I) and three courtyard gardens, (II), (III) and (IV).

(Map data © GeoBasis-DE/BKG (© 2009).Google)

The Origins of the Nature-Based Care Culture at the Residential Care Facility

Originating from a 2013 project called 'Friluftsliv og fælleskab' (Nature recreation and community), the RCF centers on enhancing resident well-being through NBI inside and outside. A specialized nature-life and an activity guide led these initiatives, sharing knowledge with other RCFs and dementia care volunteers.

The project concluded in 2016, coinciding with the RCF's certification as an 'Eden Alternative' RCF (Brownie, 2019; Hinman & Heyl, 2001).

Healthcare professionals actively participated in designing the outdoor environment and implementing NBI. This transformative shift profoundly affected the RCF's care culture, emphasizing individual nature engagement needs, and nurturing a genuine NBCC. The foundation of this NBCC aligns with the importance of supporting outdoor environments and dedicated healthcare professionals' involvement in NBI.

In the following section, the research methodology will be explored. This section outlines the research methods that were employed, including focus group interviews, joint interviews, and place analysis. These methods played a crucial role in the data collection process.

2.3 Focus Group and Joint Interview

Initially, the research design was to perform single interviews with two or three healthcare professionals. However, because of the COVID-19 pandemic and postponed field study, it was decided to conduct a focus group and a walk-along joint interview instead of single interviews.

Interview Method	Focus group	Joint-interview
Participants	• Nurse • Health care Assistant • Occupational Therapist • Nature Therapist/GK	• Project Leader • Nature Therapist/ GK
Setting	In the Workshop area inside the residential care facility.	'Gartner Slugten' the local Park
Duration	Approx. 1,5 hr	Approx. 1hr
Method	Un-structured	Semi-structured 'Walk-along'
Main topic	Experiences of NBI for RWD, and perceive your role in nature-based care culture?	Experiences of the environment and engaging in NBI with the RWD outside of the RCF.

Figure 11. Illustration of the Methods employed for the Focus Group and the joint-interview.

The focus group joint interview and joint interview were performed on-site. They were all recorded on a mobile phone. A description of the Interview process' follows. An overview of the interview processes can be seen in fig.11.

Interviews were a key method used to address the research question: How do healthcare professionals contribute to NBI and NBCC?

2.3.1 Focus Group Interview

The focus group was conducted in an unstructured manner, suitable for the reach of in-depth knowledge of a phenomenon (Denscombe, 2011). The participants could move the discussion to topics that they regarded as essential. It provided opportunities to describe their perception of the topic. Furthermore, they expressed accounts of their experiences in their own words.

The focus group occurred on the 28th of May 2021 in the workshop area of the residential care facility. The duration of the discussion was approximately one and a half hour.

Selection of Participants for the Focus Group
The process of selecting the participants was guided by a combination of non-probability sampling methods, specifically purposive and convenience sampling techniques (Merriam, 1998). Participants were selected deliberately based on their professional roles within the RCF and their active involvement in NBI.

Selecting participants with similar backgrounds, such as healthcare professionals in the RCF who share a genuine interest in the research topic, was advantageous in fostering open and honest discussions (Denscombe, 2011; Merriam, 1998).

In addition to purposive sampling, participants were selected using convenience sampling, which took practical factors into account, such as the accessibility of participants during the field study period (Etikan, 2016). GK played a crucial role in this process, choosing participants in accordance with the predefined criteria established during our initial zoom interviews, as further elaborated in Section 2.1.1.

This combined approach streamlined participant selection, ensuring that the group of participants assembled met the research criteria while maintaining practical feasibility.

1. Nurse (NS)

2. Healthcare Assistant (HCA)
3. Occupational Therapist (OT)
4. Nature Therapist (GK)

Interview guide, *Focus group*

The design of the interview guide was unstructured. It comprised two open-ended questions:

- *'What are your experiences of nature-based intervention for RWD?'*
- *'How do you perceive your role in nature-based care culture?'*

Furthermore, follow questions were prepared to moderate the discussions when needed, e.g.:

- *'Do you engage in with RWD inside?'*
- *'What kind of activities do you have with the RWD in the garden?*
- *'What is essential when changing to a nature-based care culture?'*.

During the discussion, spontaneous probing questions were used, e.g.:

- *'Can you elaborate on the concept of the common third?'*
- *'Can you tell me more about how you communicate with the RWD?*

2.3.2 Joint Interview

A semi-structured interview guide was employed to conduct the joint interview. The interview was executed through the utilization of the walk-along method. Researchers engage in the walk-along method by accompanying informants in their familiar environments, as observed in this case at the nearby park (Carpiano, 2009). This method can be advantageous when discussing an individual's experience of place. It facilitates impromptu discussions as verbal communication becomes more organic during walking (ibid).

The joint walk-along interview format allowed for a collaborative exploration of the topic, facilitated by the active participation of both the GK and PM
On May 26th., the joint-interview was conducted.

Selection of Participants for the Joint Interview

The participant selection for the joint interview was carried out with a specific emphasis on individuals who could contribute valuable insights to the research topic. More specifically, their experiences of participating in NBI with the RWD outside of the RCF. GK played an active role in the joint interview by participating in the discussion. Additionally, the former project manager (PM) of the 'Nature Recreation and Community' initiative was chosen to participate in the joint interview.

PM's inclusion in the joint interview was based on their extensive involvement in many nature-based activities and their in-depth knowledge of the subject. Moreover, PM could provide insight to implementation of NBCC i the RCF. With a rich background in the field, PM was well-positioned to contribute valuable perspectives and expertise to the discussion.

Interview-guide, *Joint interview*
In the Joint walk-along interview, a semi-structured interview guide was designed with open-ended questions. The main themes were as follows:

What are the informants' experiences of engaging in NBI with the RWD outside the residential care facility?

- In the park close to the RCF (where the interview took place)?
- The informants' perception of the environmental qualities to support NBI?
- Their experiences of NBI further away from theRCF?

How did the informants experience originating the ' Nature recreation and community' project?

- How did the idea arise?
- What were the challenges?

2.3.3 Processing of empirical material

Transcription Process

The transcriptions were recorded in a table within a Word document, with separate documents created for the Focus Group and the Joint Interview.

Participant initials, such as P1, P2, and P3, were used to distinguish between different speakers. During the transcription process for both the Focus Group and the Joint Interview, the primary focus was on accurately capturing words and sounds, rather than delving into their meaning. Each segment underwent meticulous review, involving repeated listening sessions with intervals dedicated to identifying and correcting any omissions or errors, as well as recovering previously unintelligible words. Transcribing audio data is widely recognized as a crucial element in qualitative research, known for its dynamic transformation, as opposed to being a mere translation (Denscombe, 2011; Sandelowski, 1994).

Thematic analysis

Thematic analysis, employing an inductive approach as inspired by Braun and Clarke (2006) was used to extract and comprehend data from the focus group and joint interviews. This approach was chosen for its focus on experiences, opinions, and informants' realities rather than theoretical frameworks. This aligns with the qualitative nature of the dataset used in this study. The process involved six key phases:

1. *Familiarization with the Data:* To initiate the analysis, the extensive dataset was immersed in. This involved an iterative process of reading and re-reading the transcripts of focus group discussions and joint interviews, aiming to acquire a profound understanding of the participants' narratives and the context in which they were situated. Relevant extracts were color coded according to their relevance to the research questions, and initial thoughts were noted on the side.

2. *Generation of Initial Codes:* Subsequently, generating initial codes were embarked upon. Specific segments of data were identified and labeled as meaningful units. These initial codes served as the foundational elements for the subsequent stages of analysis, capturing key ideas and concepts articulated by the participants.

3. *Exploration of Emerging Themes:* The next phase was marked by an extensive exploration of emerging themes within the coded data. Systematic analysis was conducted to identify patterns and connections across codes. This meticulous examination allowed for the revelation of underlying themes and concepts woven throughout the dataset. In this process, tables, mind maps, and visual representations were helpful tools to sort the codes into preliminary themes and subthemes. All codes were organized into the preliminary themes and subthemes, nothing was excluded, preliminary themes and subthemes emerged.

4. *Review and Refinement of Themes:* Once potential themes were identified, a critical review and refinement process was engaged in. This stage involved assessing the relevance and coherence of the emerging themes, ensuring they accurately represented the essence of the data. Themes were refined to encapsulate the central ideas and concepts that surfaced from the dataset. Hence, an ongoing organic process of re-coding and re-evaluating, some codes were discarded due to lack of relevance to the topic and others emerged. A thematic map was outlined.

5. *Definition and Naming of Themes:* Following the review, the themes were solidified, defined with precision, and given clear and meaningful names. This process aimed to provide themes that effectively conveyed the core findings and contributions to the data. Themes within the themes, subthemes, were identified. Subthemes are useful when creating structure for large and complex themes. They underline the hierarchy of meaning within the data.

6. *Creation of the Narrative:* The final stage involved weaving the identified themes into a coherent and compelling narrative. This narrative placed the themes within the context of the study, drawing upon illustrative quotes and participant experiences to provide a comprehensive understanding of the findings.

These six phases of thematic analysis were performed meticulously, with an emphasis on rigor and an unwavering commitment to preserving the integrity of the qualitative dataset. The approach allowed for the systematic extraction of key insights, uncovering the intricate experiences and perspectives of the participants in NBCC.

2.4 Place analysis

In landscape architecture, the method of place analysis is utilized for the recognition and leveraging of unique spatial characteristics to enhance environmental quality (Stahlschmidt, 2017). In this thesis, place analysis was employed, based on the FZCO model and the QET framework (Section 1.5.2), to address the second research question: *'What are the strengths and weaknesses of the indoor and outdoor environment within the studied RCF?'*

Four zones of contact with the outdoors were identified using the principal model of FZCO (Bengtsson 2015)

To comprehensively address the different characteristics that enable contact with the outdoors, an analysis of the relevant qualities in *zones one, two,* and *four* was conducted.

Zone two, which in the principal model of FZCO pertains to transitions between indoors and outdoors, was redefined within the context of this study. It was expanded to encompass detached spaces, which offered unique environmental qualities that facilitate engagement with the outdoors, e.g. transition from emotional engagement to active engagement with the outdoors. This addition to the Zone Two definition better suited the objectives of this research, allowing for a more nuanced understanding of the relationship between RWD and their outdoor environment.

The investigation of zone three was based on step one of the QET (Bengtsson & Grahn 2014) The analysis and synthesis of characteristics facilitating outdoor contact in zones one, two, and four were undertaken. Zone three was investigated using step one of the QET (Bengtsson & Grahn 2014). This involved the creation of summaries of the six environmental qualities promoting outdoor comfort and the thirteen qualities supporting access to nature and the surrounding environment. These summaries are based on an inventory of the 19 qualities found in zone three (see Appendix III).

2.5 Synthesis of the partial-results

This section elaborates on the method used to synthesize the partial results obtained from the focus group and joint interview (Section 2.3) and the place analysis (Section 2.4). The synthesis of these partial results aims to answer the third research question: *How do healthcare professionals and environmental qualities interact in an NBCC at the studied RCF?* The process of synthesis and its implications are discussed in the 'Discussion' section.

To accomplish this synthesis, a systematic approach was followed. It involved a careful examination of how the thematic findings, derived from healthcare professionals' perspectives, interrelated with the environmental qualities identified in the RCF. This process allowed for the identification of connections, patterns, and relationships between the roles of healthcare professionals and the environment at the RCF.

2.6 Ethical Considerations

In this thesis and during the field study, the research ethics met the requirements of good research practice (Swedish Research Counci 2017). It is not possible to identify if a person has a cognitive disorder. Hence, no active attempts were made to contact the residents at the RCF, and no conversations with them were included in the study. However, individuals, such as family members and volunteers present on the premises, were verbally informed about the study and provided oral consent. The study guaranteed complete anonymity and did not include any photographs that could identify individuals in the final thesis.

A written invitation was extended to the informants to partake in the interviews. It included comprehensive information about the study, such as a study description, details about the interview process, and a letter of content requiring a signature. They were notified of the forthcoming publication of the outcome. Given the distinctiveness of RCF, the final report minimized the usage of names, titles, and gender descriptors.

With the methodological framework having been outlined, the results of the study will now be presented. In the subsequent section, findings derived from the thematic analysis and the place analysis will be presented.

3. Results

The Results section presents the key findings of the study, shedding light on the transformative impact of nature-based care for RWD. Insights into the relationship between the natural environment and the well-being of RWD have been uncovered through the processes of thematic analysis and place analysis. As the results are explored, a deeper understanding of the emerging themes and the physical spaces that influence the residents' experiences will be attained.

3.1 Thematic Analysis

Three overarching themes have been identified in the analysis of participants' experiences within the context of NBCC: Theme I focus on integrating nature into the daily lives of RWD, Theme II presents a holistic perspective of RWD, and Theme III delves into the strategies and key-players involved in the NBCC.

Subsequently, this section delves into the nuanced exploration of each theme, offering an in-depth understanding of the participants' experiences and perspectives. These themes are further elucidated by eight subthemes, each shedding light on distinct facets within the thematic landscape. To facilitate comprehension, Figure 12 serves as an illustrative guide to this thematic terrain.

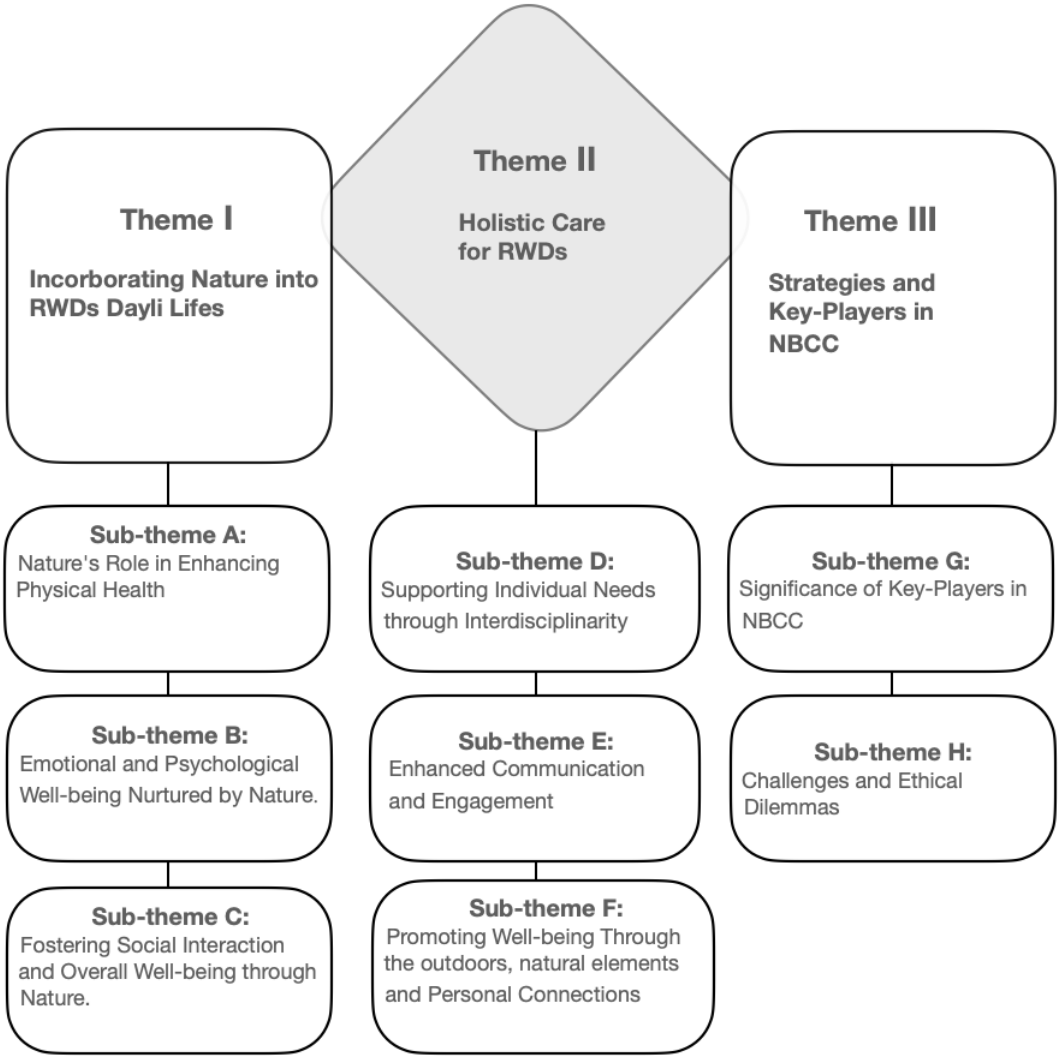

Figure 12. Three themes and eight sub-themes emerged from the thematic analysis (Illustration:Mia Trnka).

3.1.1 Theme I: Incorporating Nature into RWD Daily Lives

In this theme, the emphasis shifts toward recognizing RWD as individuals with unique physical, psychological, and emotional needs. It unfolds through the exploration of two key subthemes. The first underscores the essential integration of various professional competencies to foster a holistic understanding of RWD, while the second delves into the tools and techniques employed by participants to address the challenges in caring for RWD.

Subtheme A: Nature's Role in Enhancing Physical Health

The participants perceived engagement in outdoor activities with the RWD as a means to enhance their physical well-being. They elaborated on how they have access to a diverse range of physical activities in the park adjoining the RCF.

The park's innate natural features offer a chance for the RWD to experience the wilderness in a more contained and secure environment:

> "One of the things we have initiated is getting outside to walk every day if possible." [i]

The park's terrain, featuring steep hills and varied pathways, was instrumental in promoting physical exercise and enhancing balance. This contributed to a reduced incidence of falls, a common risk associated with aging.

Moreover, the RWD also had the opportunity to partake in excursions beyond the confines of the RCF. These excursions included visits to the beach, historical sites, nearby forests, and various other natural locations that offered diverse interactions with nature and opportunities for physical activity.

A participant noted that daily outdoor activities with the RWD also had a positive impact on sleep patterns. As a result, sleep-inducing medications and other types of medications have been reduced.

Another participant vividly recounted the transformation of an RWD who was previously heavily medicated, confined to a wheelchair, and rarely left their room. Through the assistance of a healthcare professional's dog, the RWD gradually reduced their reliance on heavy medication and began engaging in frequent outdoor walks in the garden.

Subtheme B: Emotional and Psychological Well-being Nurtured by Nature.
The participants emphasized that outdoor natural settings played an important role in addressing the emotional and psychological needs of RWD. They pointed out that RWD often responded more positively to natural elements and found complex environments and situations to be overwhelming. As one participant noted:

> "We have individuals here with dementia who are sensitive to too many stimuli. We do not need to add anything to nature when we are outside. The act of being together is itself soothing…I think." [v]

To cater to the emotional and psychological needs of RWD, the participants frequently adopted a one-to-one approach, wherein one healthcare professional accompanied one RWD. This approach was deeply ingrained in the care-culture at the RCF. One participant described their routine of taking an RWD, with behavioral challenges and anxiety, to nearby forests on a weekly basis. All participants reported significant positive changes in mood, behavior, and cognitive functioning when employing this one-to-one approach with the RWD.

This approach also served to familiarize RWD with the surrounding natural areas. A participant illustrated this by explaining how a healthcare professional would walk with an RWD in the nearby park every morning, and eventually, the RWD would take the same route alone every afternoon.

Participants shared many instances of cognitive improvement in RWD through NBI, expressing fascination with the way nature-based activities could spark conversation and reminiscence in RWD:

> "It connects some things, then when we go outside, they suddenly speak again. I find this fascinating. Because then you can move a lot of things and learn a lot, and you can live until the day you die, so you don't simply get stored and wither away." [viii]

Subtheme C: Fostering Social Interaction and Overall Well-being through Nature. Participants emphasized the value of engaging with RWD in various activities, including excursions and visits from others. It is a common concern that many people have wondered whether it is worthwhile to visit or engage in excursions with RWD, considering their lack of short-term memory.

However, the participants reflected on the notion that while RWD might lose recollection of particular experiences like outdoor activities, excursions, or family visits, the feeling of well-being endures even as the memories of these events fade away.. This phenomenon underscores the profound and lasting effects of nature-based care on the well-being of RWD.

Participants shared their experiences of involving RWD in Nature-Based Interventions (NBI) both within and outside the RCF. Integrating nature into indoor activities played a vital role in their approach. These indoor activities, such as painting Easter eggs, carving pumpkins, indoor gardening, and cooking with natural ingredients, not only evoked memories of past experiences but also fostered meaningful conversations. Although some activities might seem childlike, they triggered cherished childhood memories.

In outdoor spaces like terraces, patios, and the greenhouse, they engaged in collective gardening and conversations. Many activities centered on preparing and sharing meals with others (fig.13). Pancakes and meals were prepared outdoors year-round using bonfires and barbecues, while portable gas warmers and a fire pit provided cover during inclement weather. The participants noted that dining outdoors positively affected mood, lifting spirits and fostering pleasant conversations.

Figure 13. When possible, the RWD prepares meals and cooks outdoors. Photos: Søren Gülck

Several social activities are organized outside the RCF in the parking lot. Additionally, they attend music performances and play in the nearby amphitheater. Various social activities were organized outside the RCF, encompassing attendance at music performances and plays held at the amphitheater, conducting competitions, and engaging in sensory exercises in the park. These activities served a dual purpose: to promote interaction among the RWD and connect them with the broader community. Sometimes they reunited with individuals from their past, rekindling memories of their earlier lives.

A participant commented on the fact that the RWD also assist each other when the terrain in the park is challenging:

> "It reinforces that individuals help each other...I recall, when we were going downhill once, everyone (RWD) found out among themselves who could assist whom, and how they could assist each other". [xi]

Consensus was achieved among the participants regarding the outdoor environment serving as a catalyst for nurturing a sense of independence and purpose among the RWD. This empowerment, complemented by their engagement in a variety of nature-based activities, sets the stage for a deeper exploration of the upcoming theme: 3.1.2. Theme II: Holistic Care for RWD.

In the subsequent section, the significance of recognizing RWD as individuals with distinct physical, psychological, and emotional needs will be examined, emphasizing the holistic approach to their care.

3.1.2 Theme II: Holistic Care for RWD

Within this theme, the focus is shifted towards the recognition of RWD as unique individuals, with their distinct physical, psychological, and emotional needs being addressed. The theme comprises three subthemes, with the initial two emphasizing the incorporation of diverse professional skills and the application of innovative tools and techniques to improve RWDs care. The third subtheme delves into how nature and personal connections positively affect the well-being of RWD. Through these subthemes, a comprehensive exploration of holistic care for RWD is undertaken, ensuring that their multifaceted needs are met.

Subtheme D: Supporting Individual Needs through Interdisciplinarity

The participants emphasized the importance of collaborative efforts among professionals with varying competencies, experiences, and educational backgrounds. It was noted that RCFs have traditionally been led by nurses, primarily trained with a clinical perspective. However, a significant departure from this tradition was observed in one participant, who held a key managerial role during the development and launch of the 'outdoor recreation and community' project. With a background in pedagogy and a diverse range of work experiences, this unique perspective had a profound influence on the participant's approach to the management and care of RWD. The participants collectively recognized the value of interdisciplinary collaboration among healthcare professionals in achieving a comprehensive understanding of RWD, encompassing both their physical and psychological needs.

Two participants described their recent visits to the RWD at the RCF. A participant with a background in pedagogy engaged in a discussion with the RWD to understand their preferences for their private terraces. This included considering the possibility of having planters where they could grow crops, berries, or flowers. The participant stressed the importance of ensuring that individuals who are wheelchair-bound or bedridden have daily access to nature, even from the comfort of their own homes. Another participant with a clinical background highlighted their approach to assessing each RWD's individual needs.

> I initiate the evaluation of their functional level, interests, and areas of deficiency... then together with GK we ascertain strategies to enhance their sensory capabilities.

This assessment led to the development of individualized physical activity programs, indoors and outdoors, and practical assignments indoors, such as laundry or coffee making, tailored to each RWD's abilities and needs.

There was a unanimous agreement among the participants that engaging in daily practical tasks not only stimulated the residents' minds and bodies but also instilled

a sense of continued functionality. The participants emphasized the importance of creating a home-like environment for RWD, as expressed by one participant:

> "The fact that they have come here, continue to live at home, but with some supervision and some assistance... it's like... it's not seen that way at other RCFs [xix]

Subtheme E: Enhanced Communication and Engagement

Communication with RWD was a topic of great enthusiasm among the participants, who acknowledged the challenges in motivating individuals with cognitive disorders to venture outdoors. They adopted a distinctive communication approach to address this challenge. One participant stressed that instead of asking residents if they wished to go outside or partake in activities, they preferred an inviting approach:

> "It's a huge difference if we say: *'yes, do you want to come outside... let's pick some flowers'*... (they might think) *'I'm afraid of the stairs, I just dare not do that*'... If they can't handle it, the easiest answer is *'NO!'*... But if you hold their hand and say, *"I'd love to go outside with you"* or *"come, let's go for a walk"*, and lead them every step of the way... then it's someone else's responsibility... then you can start working on security".[xii]

Recognizing the importance of their communication, a participant emphasized the memory of activities and the potential impact of negative statements and emotions. Therefore, they prioritized both how and what they communicated. Their approach to communication with RWD was informal, using personal and relatable language, steering away from formal terminology. Healthcare professionals agreed that informal yet professional communication was effective, not only when engaging with RWD but also when communicating among themselves.

One participant with a pedagogical background introduced the concept of 'the common third' (Michael Husen 2022). This approach aimed to address the challenges of engaging in conversations with RWD who might have cognitive limitations. The 'common third' concept involved starting discussions based on shared experiences, such as observing a squirrel or an old tree, which stimulated conversations and evoked memories. Finding common ground became a key strategy to facilitate conversations with individuals with cognitive deficiencies.

To support the implementation of the 'common third' concept, the RCF employed a photographer who documented various activities, created photo albums, and shared photos on social media. These photographs served as a bridge, connecting healthcare professionals, family members, and RWD, ultimately enhancing their interactions.

Another participant recognized that maintaining conversations with RWD in natural settings could still be challenging. In response, they proposed engaging in shared activities as an effective strategy. Instead of relying on verbal communication, they suggested playing ball games or partaking in physical activities among the trees, offering alternative ways to connect and interact with the RWD.

Subsection F: Promoting Well-being through the Outdoors, Natural Elements and Personal Connections

Effort was devoted to comprehending the personal backgrounds of the RWD, including their past work experiences and passions. Volunteers and relatives played a crucial role in this process. For example, an ornithologist accompanied a former hunter weekly to observe birds, and a plane ride was organized for an individual who had once been a pilot. This focus on understanding individual backgrounds rekindled memories of the past, leading to an increased sense of well-being among RWD. As one participant aptly put it:

> "For Individuals with dementia, it's paramount... of course they need care and washing... but when they get up, just like for the rest of us, it's just as important to live. Also, being surrounded by individuals who understand who they were before their dementia and learn to use it" [xxiii]

Children, plants, and animals were invaluable resources for RWD, bringing joy and spontaneity to their lives. Nearby schools and Scout groups frequently visited the residential care facility, engaging in activities like building bird feeders, insect hotels, birdhouses, and outdoor adventures. A participant illustrated the transformative impact of such interactions and recounted:

> "An RWD had been in a foul mood for the entire day and could not climb the steep hill in the park. Suddenly, two of the children took the RWD under their arms and helped. Everyone was anxious about the RWD's reaction, but the RWD simply laughed, and the mood changed"

Ensuring a gradual introduction of nature, participants sometimes started the process indoors. One participant recounted a resident who rarely ventured outside; they gave the resident a rose indoors and gradually encouraged them to explore the garden. They explained that this approach accommodated the individual's needs and preferences.

RWD were encouraged to bring their pets to the residential care facility, which added an element of spontaneity to various situations. Dogs engaged in playful activities with cats, and cats chased birds, creating an atmosphere filled with laughter and joy. Even healthcare professionals introduced their pets (fig.14), further enhancing interactions with animals for everyone at the facility.

Figure 14. The dog of one of the healthcare professionals, visiting the RCF (Photo:Mia Trnka)

As the comprehensive exploration of holistic care for RWD reaches its conclusion, the focus now shifts to Theme III, which revolves around strategies and the intricate challenges faced during the transition from traditional care cultures to the novel NBCC.

3.1.3 THEME III: Strategies and Players in NBCC

Within Theme III, the discussion revolves around the challenges associated with transitioning from traditional care cultures to a new NBCC. Two significant subthemes emerge from this discussion. The first subtheme emphasizes the crucial importance of proactive leadership and various key-players in the establishment and maintenance of a NBCC. The second subtheme delves into the ethical dilemmas and challenges encountered during implementing nature-based care practices. Through the participants' narratives, the intricate dynamics of leadership, cooperation among various roles, and ethical considerations in this transformative process are explored.

Subtheme F: Significance of Key-Players in NBCC

Proactive leadership: According to the participants, a consensus emerged emphasizing that a solid strategy is the foundation of an NBCC. This strategy should be meticulously outlined and guided by visionary leadership. Participants emphasized that mere willingness among a few healthcare professionals within a RCF to partake in nature-based activities, even with managerial acceptance, is insufficient. One participant succinctly noted:

> "To begin, you must have management that wants it. Then you have to have some employees who will fight for it ... the old care culture is everywhere. You have to be ready to fight." [xxiv]

Furthermore, they discussed, to establish a sustainable NBCC, effective management plays a crucial role in recruiting healthcare professionals with a genuine interest in nature. Additionally, fostering a flat organizational structure that encourages conflict resolution and open communication is essential.

Management has endorsed their spontaneity, which the participants found essential for a nature-based care culture. They discussed how freedom under responsibility fosters spontaneous acts, and that the rest of the healthcare professionals follow the lead whenever spontaneous ideas arise.

One participant noted:

> "We are good at seizing the spontaneous, if we are here and the weather is good, we just go and eat at the park all of us or just one-to-one [xxviii]"

Ambassadors: They discussed how it is important for everyone to work together to implement a nature-based care culture. Regardless of their professional role as, e.g. nurse, caretaker, kitchen aid, or janitor, they must cooperate and participate for a nature-based care culture to be successfully implemented.

As well, one healthcare professional discussed the need for someone to motivate other healthcare professionals:

> "You need some ambassadors who say: 'You know what... let's do it that way. " [xxv].

The ambassadors may have varying professional responsibilities at the residential care facility, but they share the same passion for ensuring that the RWD has the best possible life. One participant stated:

> "I think it's amazing...to discover that spark in their eye again...it's like one of those adrenalin junkies... I chase that spark all the time...that's why I go to work."
> [xxvi]

Prime mover: A participant explained that, since the outdoor recreation and community project ended, an employee responsible for the RWD has been employed at the residential care facility. The prime mover coordinates nature-based activities and acts as a rope holder for personnel such as the cook, janitor, and care staff, as well as management, volunteers, and family members.

According to the participants, the idea was conceived to reduce the workload of other healthcare professionals, thus motivating them to engage in nature-based interventions. The participants stated they had not seen this professional figure in

any other residential care facility, but agreed that it had played a significant role in transforming the RCF into a nature-based facility.

Volunteers: Participants described how volunteers are integral to the culture of nature-based care. The volunteers organize their activities in close cooperation with the residential care facility, where the prime mover serves as their point of contact. It relieves and assists nursing staff. They help with gardening, take the residents on excursions, and visit the RWD. In figure 15 is an illustration of the Four Key-Players in a NBCC.

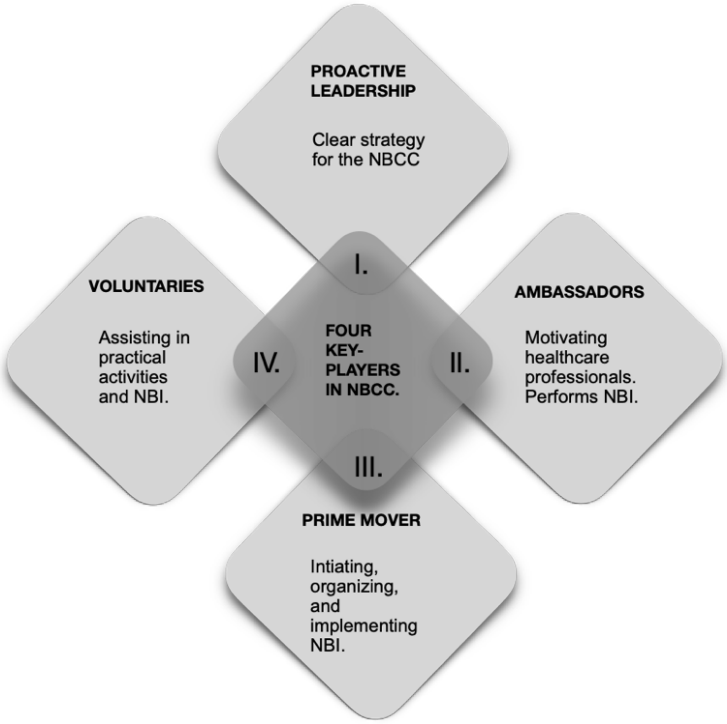

Figure 15. According to the participants, four key-players are essential in the NBCC at the residential care facility.Illustration:Mia Trnka

Subtheme G: Challenges and ethical dilemmas

The participants discussed in extensive detail the challenges and ethical dilemmas involved in the fundamental change toward nature-based care. They discussed the risks and benefits associated with the participation of RWD in outdoor activities. One participant explained that some healthcare professionals previously had concerns regarding RWD's risk of falling when outside. They have noted that walking every day strengthens muscles and improves balance, and reduces the risk of falling, a common hazard for older adults.

Additionally, the group mentioned the potential for RWD to experience restlessness after prolonged periods outdoors. Nevertheless, the group reached a consensus that, regardless of this fact, they would have had a pleasant day and would have gotten a good night's sleep. Therefore, everyone agreed the advantages outweighed the disadvantages.

The paradigm shift has given rise to various conflicts and discussions within the RCF. To foster a more positive work environment conducive to the success of this cultural change, the management sought the expertise of a consulting firm to tackle issues related to conflict resolution and communication. It's worth noting that significant progress has been made, and there is now a shared understanding among all healthcare professionals. However, it's important to acknowledge that this transformation has been a multi-year process.

As Theme III sheds light on the complexities of transitioning to a nature-based care culture, the focus now shifts to the next phase of examination. In this forthcoming section, the place analysis, the environmental features take centre stage, playing a critical role in shaping the relationship between residents with dementia and their outdoor surroundings.

3.2 Place Analysis

In this section, the outcomes of the place analysis are examined in relation to the FZCO model. The analysis is structured into four zones, with each zone contributing to an understanding of the relationship between the RWD and the outdoor environment.

Zone one explores the possibilities for establishing a contact with the outdoors from inside the RCF. This zone is dedicated to an examination of the indoor spaces and their capacity to provide residents with nature-related experiences.

Zone two encompasses the transitional areas, including spaces within the facility, those immediately adjacent to it, and those detached from the main building. These transitional areas play a crucial role in shaping interactions between RWD and the outdoor environment and natural elements.

The third zone focuses on the immediate surroundings of the facility. The analysis of this zone corresponds to the first step of the QET. It summarises 19 environmental qualities, which are categorised into two sections: Section A, encompassing qualities contributing to residents' comfort, and Section B, addressing qualities that facilitate their access to outdoor environments. For a comprehensive list of these environmental qualities, please refer to Appendix 3.

The fourth and final zone extends to the broader surrounding area, providing insights into the larger context in which the RCF is situated.

Together, these four zones contribute to a comprehensive understanding of the connections between residents, the outdoor environment, and the principles articulated in the FZCO model.

3.2.1 Zone one; the inside of the buildings

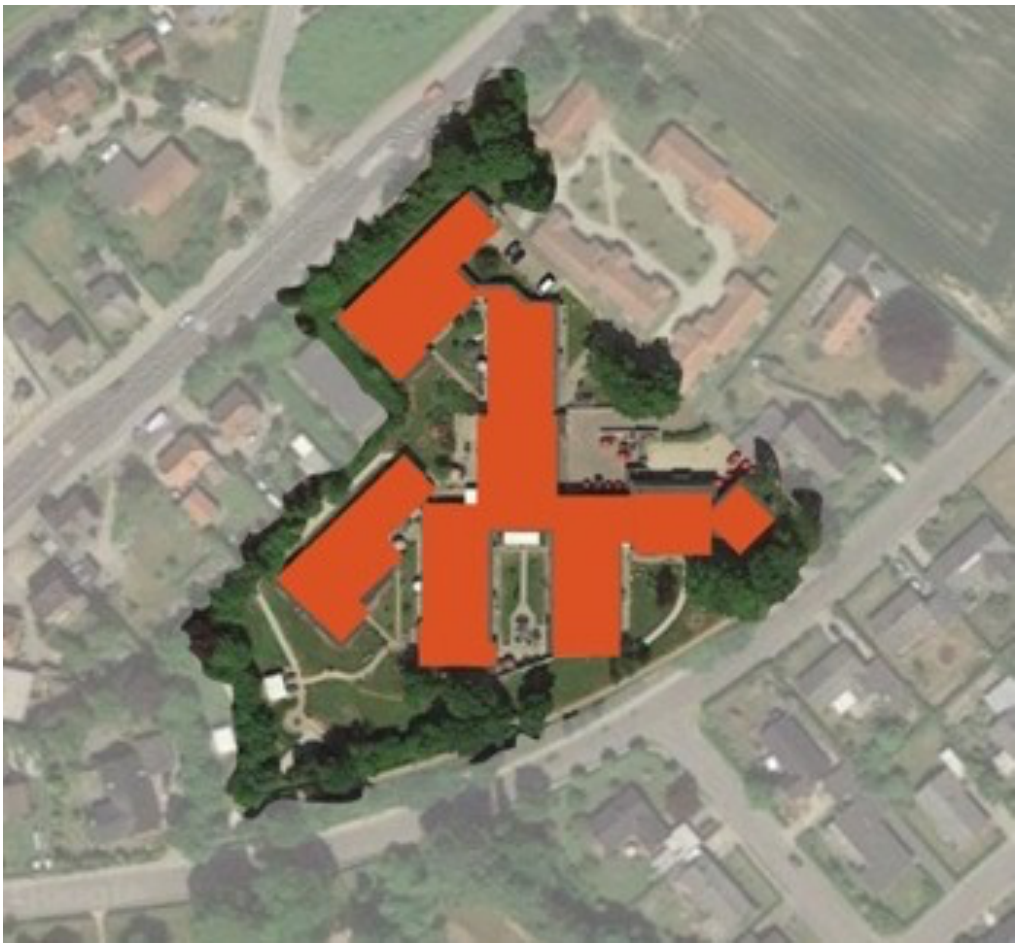

Figure 16. Zone one: Inside of the building – is marked in orange.Illustration Mia Trnka (Map data © GeoBasis-DE/BKG(© 2009).Google)

In the RCF, the main entrance (E) is accessed via glass sliding doors. It offers a view of the outdoor surroundings, and directly adjacent to the entrance, the Adult Day Care (ADC). The hallway connects residents' apartments, the kitchen, and the common dining area (fig.17). The common dining area is equipped with large window sections and window doors that open to Garden VI (fig. 17). where numerous tables and chairs are established on the terrace. The common areas are decorated with many potted plants, and the walls feature artwork with natural motifs.

Ample windows throughout the hallways provide visual access to the neighboring community and garden spaces.

On the left side of the entrance, an office, a conference room, an exercise facility (fig. 18), and a nature workshop can be found. The workshop is equipped with a variety of items, including stuffed animals, plants, and gardening tools, creating a fusion of nature-themed imagery. In addition, posters featuring animals and other nature- themed illustrations are displayed on the walls.

From the nature workshop, a door opens into the container garden (IV), with a large expanse of window panels and double window doors providing an unobstructed view. In the exercise facility, exercise machines are strategically placed in front of windows and window doors, granting access to a terrace featuring an auxiliary bridge for residents to engage in physical activity and continue into the adjacent garden (I).

Figure 17. Outside the common eating area is a large terrace with tables and chairs.(Photo: Mia)

Figure 18. Outside the exercise room is an auxilliary bridge and view to th e garden (Photo Mia Trnka)

Figure 20. The view from a common area to Garden III. The Green house can be seen in the back of the garden (Photo Mia Trnka)

Figure 19. The view to the chicken coop. (Photo Mia Trnka)

In one hallway, an area is designated for water cans, pots, and gardening tools, allowing residents to care for the plants in this environment. Adjacent to one window is a chicken coup (fig. 20), while sofas are thoughtfully placed in front of another window. Bird cages and domestic animals like cats and dogs roam freely. There is a variety of training equipment available in the exercise facility.

3.2.2 Zone two; the transition zones

Figure 21.Zone two: the transitions – areas marked in dark green on the map. Illustration Mia Trnka (Map data © GeoBasis-DE/BKG(© 2009).Google)

Five transition zones were identified, of which one was within the building, two were adjacent to the building, and two were within the garden.

Inside the buildings:

- The Main entrance hall (E): has a double set of window panels with sliding doors. Outside of the main entrance area, is a bicycle rack and a parking area.

Adjacent to the buildings:

- The Patio (II) Is adjacent to the large section of window panels with a window door in the building in the back of the garden.
- The RWD private terraces adjacent to their residences (II, III, IV, I).

Figure 22. All Residents have their own private terrace. (Photo Mia Trnka)

Figure 23. One RWD sleeps outside on Their private Terrace, when the weather permits.(Photo Søren Gülck)

Detached from the buildings

- *The Patio* (I). This area is at the rear of the garden, overlooking the garden itself (fig.24).

Figure 24. The patio in garden (I) is a gathering place for RWD, their relatives, volunteers, and healthcare (Photo Søren Gülck)One RWD sleeps outside on Their private Terrace, when the weather permits.(Photo Søren Gülck)

The Greenhouse (II): The greenhouse is on a terrace near the gates of the garden, from which you enter and exit. The entire garden area can be seen from the greenhouse (fig. 25).

Figure 25. the greenhouse is used during day and evening and all year around.(Photo Søren Gülck)

3.2.3 Zone three; the immediate surroundings

Figure 26. The garden area, – is marked in a lighter shade of green on the map.Illustration:Mia Trnka(Map data © GeoBasis-DE/BKG(© 2009).Google)

Section A

This section corresponds to section A in the first step of the QET (for additional details, refer to Section 1.5.2.). It summarizes the investigation and observations related to the six environmental qualities that enable individuals to be comfortable in the outdoor environment. For a more comprehensive list of environmental qualities, further information can be found in Appendix 3.

Summary of section A:

Closeness and Easy Access/Enclosure and Entrance: On the terraces, residents frequently used the open doors, walking in and out at their leisure (fig. 27). Notably, in (II), residents strolled independently or with companions. Within the garden areas, residents often traversed the pathways, either independently, with walkers, or in wheelchairs.

Figure 27 The RWD can easily enter and exit their appartment, even with walkers (Photo Mia Trnka)

Safety and Security/Familiarity: No instances were observed where residents felt uncomfortable or encountered challenges while navigating the premises. The courtyard gardens (II) and (III) were separated from the surrounding garden by semi-transparent trellis fences, featuring discreet wooden locks (fig. 28). It's worth noting that garden (III) appeared less crowded, with few residents observed in garden (II), some of whom spent time inside the greenhouse. During observations, the hammock remained unoccupied.

Figure 28. semi-transparent trellis fences, separate the courtyard gardens, from the surrounding garden and camouflaged locks.(Photo Mia Trnka)

Orientation and Way-finding: Several distinctive landmarks aided in wayfinding. The main entrance (E) featured a unique metal frame. The flagpole in (II) was visible from all garden areas and the surrounding spaces of the residential care facility. A house-shaped pergola along the sensory path in (I) provided another recognizable feature, visible from both the patio and the entrance to garden (III). A tall sound sculpture near the main path (I) garnered attention due to its height and sound properties. When the bonfire was lit, it could be seen from all parts of garden (I), functioning as a social hub. The common eating

area (IV) and the bonfire site (I) were gathering places for residents, staff, and volunteers, where gardening activities and sensory games were often organized. The greenhouse and flagpole area in (II) witnessed several social activities, while the 'blue bench' offered a more secluded spot, distanced from larger social areas.

Different Options in Various Weather: The garden provided diverse options based on weather. Patios in (II) and (III) offered shade and shelter from the elements. During rainy weather, the large barbecue on the patio served its purpose. Parasols were used for shading, while gas heaters and outdoor wood-burners provided warmth on colder days. The positioning of the buildings in (II), (III), and (IV) also acted as a barrier against the wind.

Section B

This section examines the thirteen environmental qualities that support individuals' access to nature and the surrounding environment. This corresponds to Section B in the QET (refer to Section 1.3.2 for more details).

Summary of section B:

Joyful and Meaningful Activities / Social Opportunities / Contact with Surrounding Life / Culture and Connection to Past Times: The garden provides numerous opportunities for joyful and meaningful activities. It encompasses various features, including the container garden, which offers horticultural opportunities, a chicken coop, musical instruments, a four-person hammock, and a petanque court. Several places for chopping wood are also found throughout the garden. Additionally, there are clear signs of gardening activities across the garden areas, with pots and planters filled with newly sown flowers and crops (fig.29).

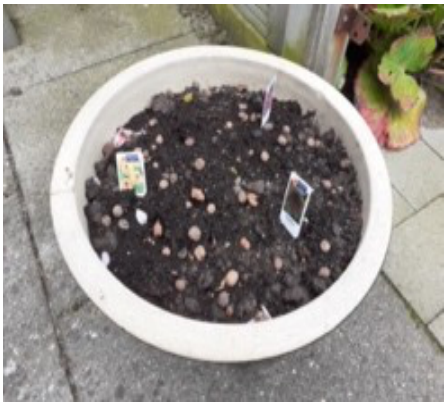

Figure 28. A Pot with summerflower seeds planted.(Photo Mia Trnka)

The ADC members on the premises actively participate in social activities, along with healthcare professionals, volunteers, and the family members of the residents with dementia (RWD). Various areas in the garden, such as garden I and IV's common terraces and patios, allow all RWD to dine together. Meals are often prepared on the patio for cooking over the bonfire or barbecue. Courtyard gardens II and III also feature barbecues and smaller eating settings for smaller group gatherings in the garden. Abundant plantings, including rosebushes, rhododendrons, hydrangeas, and begonias, are observed in most of the garden areas.

Symbolism / Reflection / Prospect / Space / Rich in Species / Sensual Pleasures of Nature: In one of the courtyard gardens (III), apple trees are meticulously planted, giving the impression of an apple orchard with only a few other plant varieties. The surrounding garden I feature a well-kept lawn, and the edges of the can be seen from various parts of the gardens. Overall, the gardens are well-maintained, except for specific areas intentionally designed to be 'wild on purpose' such as a small meadow in front of the container garden and the untamed area behind the tree

Figure 30. A nature-like place hidden behind a hedge of tall trees, with acces from garden.

Figure 29. Many insect hotels are placed in the garden. The are made by the RWD and visitors. (Photo Mia Trnka)

Figure 31. Mixed in with the vegetables in the containers in the Garden I, are perennials like Woodland Sage 'Salvia nemorosa', Herbs,and other plants that attract insects and stimulate the senses.

hedges at the back of garden I (fig.31). because of the season when the observation was conducted, there were few insects present. However, there are numerous features designed to promote biodiversity, including vegetation that attracts bees, butterflies, and other insects (fig 30,32).

Compost heaps (I) offer shelter, food, and hibernation opportunities for wildlife. Insect hotels, birdhouses, bird feeders, and birdbaths are strategically placed throughout the garden, often near the windows. Besides birds and insects, the vegetation provides sensory stimuli, including fragrant flowers such as roses

and other scented varieties, strawberries, and herbs in containers for tasting, and plants with soft foliage like 'Silver carpet' (Stachys Byzantina).

Seasons Changing in Nature / Serene / Refuge in the Wild: A Japanese cherry tree is planted in garden I, with falling flower petals collected in the birdbath below. In an enclosed area of the garden, a blue bench is in an arbor. There's also a bench in the rhododendron shrubbery in garden IV, near to the eating area but still partially hidden by the shrubbery. The area behind the tree hedges accessed from the garden one appears untouched and wild (fig.31).

3.2.4 Zone four; the surrounding area

Figure 32. Zone four: The sourounding area - The park. It's marked in a transparant green on the map. Illustration:Mia Trnka(Map data © GeoBasis-DE/BKG(© 009).Google)

The Park

Across from the RCF, the park is linked by a network of pathways. In the lower part of a gorge, a playground is situated, while further up the hill, an amphitheater

and a small park-like area with statues can be found. This area features meadow-like vegetation surrounded by trees, creating a serene ambiance. Some sections of the park resemble a forest, with native trees and shrubs, accompanied by a forest-like soundscape. From the highest point, one path provides a panoramic view, revealing a slope covered in blackberry bushes and offering views spanning several kilometers in all directions. The park is well-maintained and includes paths, benches, and a playground for everyone's enjoyment.

Different areas of the park are connected by a path system. At the bottom of a gorge, there is a playground. There is an amphitheater and a small park-like area with a statue located up the hill. A meadow-like vegetation is present in this area, which is surrounded by trees. Several parts of the park resemble a forest, complete with native trees and shrubs. There is a soundscape that is like that of a forest. As one path passes over the highest point, there is a view of a slope covered in blackberry bushes and a view of the entire area for many kilometers in all directions. Paths, benches, and a playground appear to be well maintained.

An overview of the results of the place analysis is provided in figure 42. And figure 43. Illustrates the result in relation to the inverse TSE.

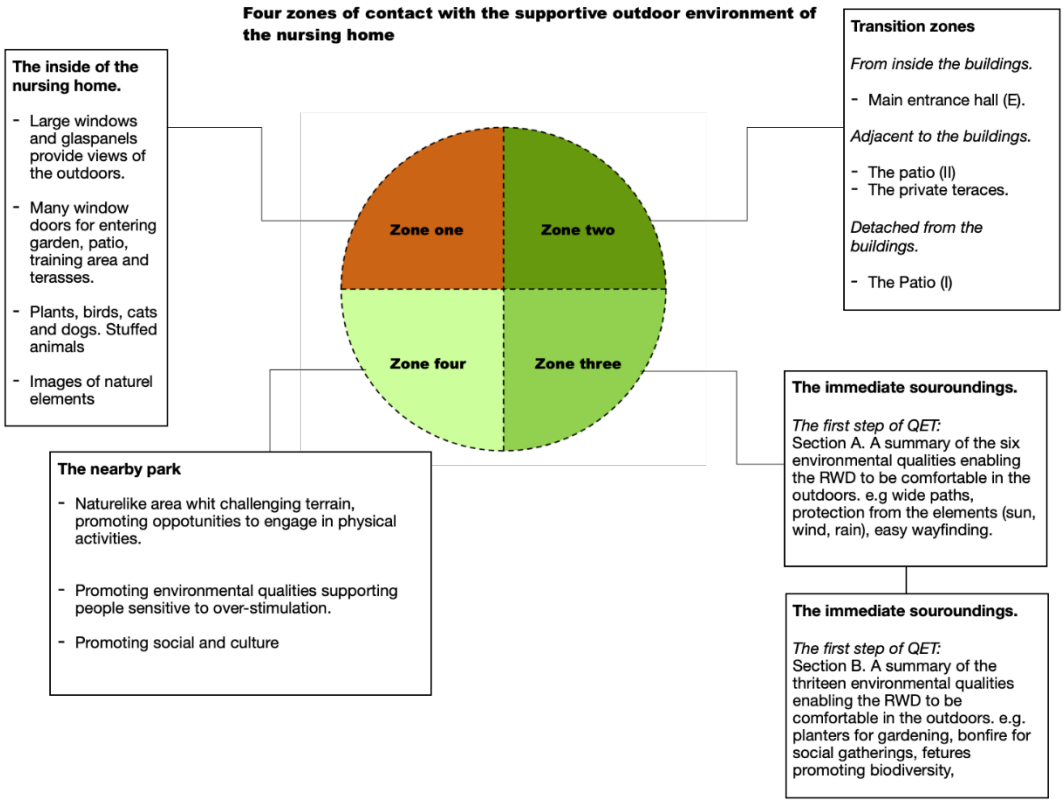

Figure 33. An overview of the result of the Place analysis.(illustration Mia Trnka)

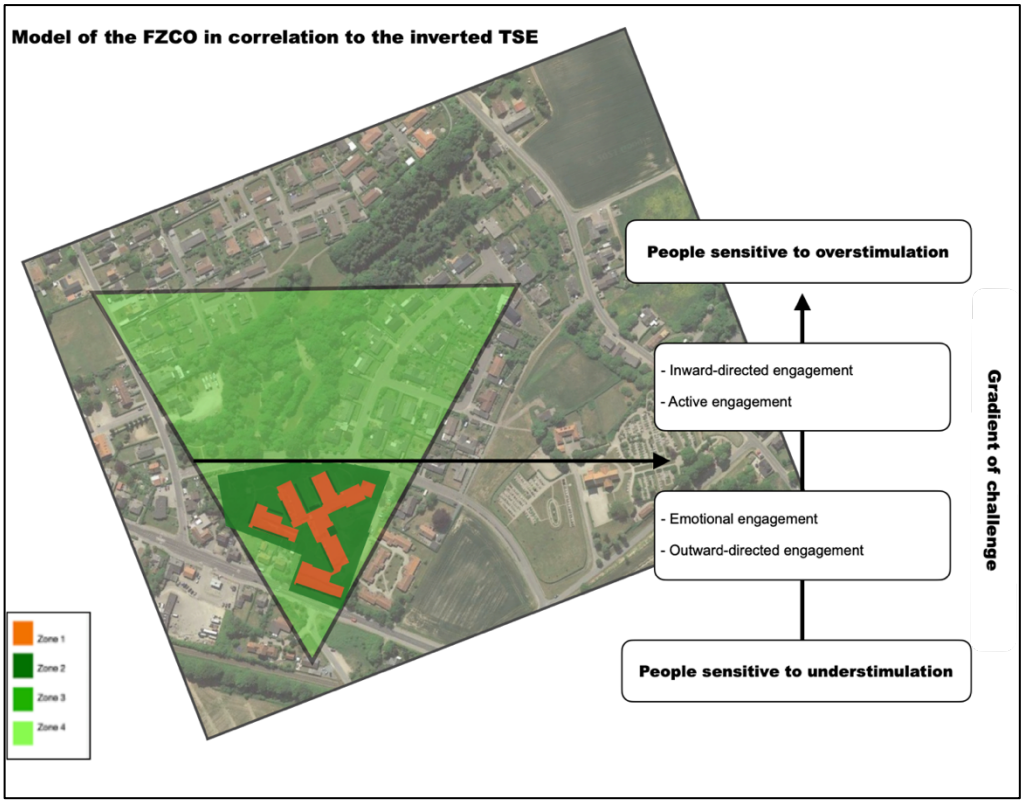

Figure 34. A model of the inverted TSE in correlation to the FZCO. Illustration Mia Trnka/(Map data © GeoBasis-DE/BKG(© 2009).Google).

Now that the results have been presented, the focus shifts to the discussion, where the broader implications and significance of these findings in the context of nature-based care for RWD will be explored. The following section will analyze the transformative potential of these insights and their relevance to future healthcare practices. Moving from the empirical results to their interpretation, the focus undergoes a shift from 'what was found' to 'what these findings signify,' underscoring the influence of the natural environment on the well-being of RWD.

4. Discussion

This chapter delves into an examination of the research results and methodological considerations. It scrutinizes the research's outcomes and the methods applied. Throughout this section, the research findings are dissected and the methodological choices are explored. This comprehensive analysis unveils the insights derived from the study, all while reflecting on the lessons learned during the research process.

4.1 Result Discussion

The aim of this study was to examine the experiences of healthcare professionals using NBI and the environmental factors involved in implementing an NBCC for RWD in an RCF.

Three core themes emerged from the thematic analysis of the interviews: *'Incorporating Nature into RWD' Daily Lives'* highlighting the positive effects of outdoor activities on RWD's well-being; *'Holistic Care on RWD'*, emphasizing individualized care and interdisciplinary collaboration; and *'Key-Strategy and Players in NBCC'* underscoring the importance of leadership and collaboration. A place analysis identified four distinct zones within and around the RCF, emphasizing the critical role of the physical environment in enhancing RWD's well-being.

These findings offer valuable insights for integrating nature-based care practices in RCFs and improving the quality of life for RWD.

The result discussion is structured into three sections. The initial section presents the focus group and joint-interview findings. It sheds light on healthcare professionals' experiences in relation to the use of the outdoors and natural elements as a resource for RWD and their contributions to fostering NBCCs.

The subsequent section delves into the findings of the place analysis. It offers insights into the environmental qualities of the RCFs' environment, encompassing both its internal and external surroundings.

In the last section, the interconnections of the findings from the interviews and place analysis are synthesized, to provide a comprehensive overview of the successful integration of nature-based care cultures in RCFs, benefiting RWD.

4.1.1 Healthcare Professionals Experience of Fostering NBCC

This subsection explores the key players central to the transformation of the traditional care culture into one rooted in nature and holistic well-being. Through narratives shared by healthcare professionals, an analysis is conducted to explore the unique contributions of these key players in the implementation and sustainability of the NBCC.

Four important key-players in NBCC at a RCF

A significant aspect of the NBCC is the active involvement of four distinct key players who play central roles in transforming the traditional care culture into an NBCC. Through narratives shared by healthcare professionals, an analysis explores the unique contributions of these key players in the implementation and sustainability of the NBCC. This transformative journey encompasses proactive management, passionate ambassadors, dedicated prime movers, and invaluable voluntary corps, each with a vital role to play.

Proactive Management - Key Player I: The first key player in the NBCC is strong management, which plays a central role in spearheading the transformation of the traditional care culture. The success of this transition is closely associated with robust, visionary leadership, as emphasized by healthcare professionals. Proactive management is tasked with crafting and implementing a powerful strategy that guides healthcare professionals in their engagement with NBI.

Responsibilities include the recruitment of healthcare staff who share an intrinsic interest in nature and a willingness to participate in NBI, fostering cooperation, ensuring effective communication, conflict resolution, and the creation of a conducive work environment.

Strong leadership is crucial as it addresses one of the key barriers preventing RCFs from successfully implementing NBCC (Chapman et al. 2007; Grant & Wineman 2007). Furthermore, proactive management plays an essential role in motivating colleagues. While proactive management is essential for the success of NBCC, the role of Passionate Ambassadors is equally critical.

*Ambassadors - Key Player II***:** The second key player, the Ambassadors, constitutes a group deeply committed to nature-based activities, aligning with management's

strategy and vision for the NBCC. Their proactive engagement has a motivating effect on other healthcare professionals, making them crucial agents of change (Chapman et al., 2007).

Ambassadors take the lead in organizing outdoor activities, spontaneously guiding residents outside for meals, and planning activities seamlessly integrating natural elements into the RCF's daily life. Having key figures passionate about the outdoors can effectively alleviate the reluctance and knowledge gaps among healthcare professionals (Barrett et al., 2019; Chapman et al., 2007).

Within the RCF, one ambassador takes on an even more prominent role by coordinating activities and working in collaboration with management, staff, and volunteers, serving as the 'Prime Mover'.

Prime Mover - Key Player III: The Prime Mover is an essential figure at the residential care facility, holding a pedagogical and therapeutic background, along with prior experience in NBI. The role encompasses organizing, planning, and implementing NBIs that align with the NBCC.

For instance, Prime Movers are liable for arranging excursions and collaborating with other healthcare professionals, the kitchen staff, and the Voluntary Corps. In addition, their orchestration may encompass gardening and horticultural therapy sessions, all meticulously customized to meet the specific requirements of individual RWD. This unique role emerged in connection with the *nature-recreation and community* project and has become fundamental to both the implementation and sustainability of the NBCC's. To complement the Prime Mover, the Voluntary Corps plays a decisive role in delivering day-to-day support, reducing the workload of healthcare professionals.

The Voluntary Corps - Key Player IV: The fourth key player, the Voluntary Corps, plays an indispensable role in the daily life of the residential care facility. While some RCFs may also have volunteer groups, their role within the context of the NBCC is distinctive and not thoroughly researched, as per this author's knowledge. The Voluntary Corps actively engages in excursions, diligently organizes both indoor and outdoor nature-based activities, and extends their support to practical projects. Their active involvement significantly lessens the workload of healthcare staff while benefiting the well-being of RWD. For instance, they may lead RWD in bird watching, engage in constructing birdhouses with the RWD, or assist in the maintenance of the outdoor environment.

Different Needs Require Individual Care:

Healthcare professionals employ a diverse range of approaches to cater to the individual needs of RWD. Customized NBI is organized to foster a sense of

connection with the rhythms of nature and promote meaningful traditions, aligning with the principles of the Eden Alternative project (Hinman & Heyl 2001; Brownie 2019; The Eden Alternative 2020). Strategies to ensure bedridden RWD remain connected with nature from within the facility are implemented, in alignment with research highlighting the benefits of contact with nature, both inside and outside, in promoting health and well-being (Bengtsson, 2015; Chalfont & Rodiek, 2005; R. Ulrich, 1984; R. S. Ulrich, 1999).

Interdisciplinarity and communication: Healthcare professionals with interdisciplinary competencies, including occupational therapists, nurses, nature therapists, social workers, and health workers, work together *in a coordinated manner.* This approach allows them to acquire a comprehensive understanding of the physical, mental, emotional, and social needs of *RWD, ensuring* a holistic approach to their care. Maintaining an optimistic tone and avoiding clinical expressions is emphasized, aligning with previous studies emphasizing the importance of positive communication in interactions with RWD (Guzmán-Vélez et al. 2014; Hall et al. 2018).

The Healthcare professionals have incorporated the 'common third' concept (Michael Husen, 2022) in the communication. This approach addresses the challenges of engaging in conversations with RWD who may have cognitive limitations. It involves initiating discussions based on shared experiences, like observing a squirrel or an old tree, which sparks conversations and stirs memories. This strategy fosters meaningful interactions with individuals who have cognitive deficiencies, underlining the value of interdisciplinarity in providing holistic care for RWD. The utilization of "the common third" exemplifies the advantages of interdisciplinarity, offering a valuable communication tool that enriches the quality of interactions with RWD, fostering a more holistic approach to their care.

Two Approaches for Two Types of Support from Nature: Outdoor environments are harnessed to provide support through two primary approaches: one-to-one interactions and group activities. These approaches cater to the individual needs of RWD and have proven effective in enhancing their well-being. As the transformative strategies employed to foster a Nature-Based Care Culture are illuminated through the experiences of healthcare professionals, it becomes apparent that the physical environment of RCFs is significantly influenced by these initiatives. Now, the findings of the place analysis will be explored, offering insights into the environmental qualities within and around the RCF.

4.1.2 Contact with a Supportive Outdoor Environment and Natural Elements

The Four Zones of Contact with the Outdoors: Shaping Well-being for RWD:

The principal model of FZCO supports the understanding of how RWD can connect with nature in RCFs. Each zone plays a key role in facilitating interactions among RWD, healthcare professionals, and the environment (Bengtsson, 2015). This sub-section explores the four zones, their features, and their alignment with existing research. It begins within the RCF, emphasizes indoor strategies for contact with nature, delves into transition spaces, examines garden areas, and discusses the influence of the nearby park on RWD's well-being.

Zone one: Enhancing RWD Well-being within the RCF: To promote well-being among RWD in the RCF, several indoor strategies were meticulously integrated. These elements encompass melodious birds and freely roaming domestic animals, which research suggests have a positive impact on the physical and mental well-being of older adults, as well as serving as motivational factors for activities (Gee & Mueller, 2019). Indoor plants, and nature-themed decor, in line with research stating that also the view of images depicting nature motives have positive effects on people (R. S. Ulrich, 1979).

A core aspect of this approach is the strategic use of windows and window doors throughout the RCF. Furniture and exercise equipment were thoughtfully placed adjacent to these windows to facilitate garden view engagement (Bengtsson, 2015; R. S. Ulrich, 1999; Zeisel & Tyson, 1999). A hen house and chicken coop were situated just outside, with a comfortable seating area for observing the chickens from indoors. The presence of features like bird feeders, birdhouses, and lush vegetation near the windows added to the inspiration (Chalfont & Rodiek, 2005). Research highlights the positive effects of indoor views on health and well-being and their influence on motivating individuals with dementia to engage with the outdoors (Ulrich 1984, 1999; Zeisel & Tyson 1999; Zeisel 2007; Bengtsson 2015). This design strategy within the RCF embodies the principles of the NBCC and underscores the impact of intentional design on residents' well-being.

In specific indoor spaces, including the common dining area, which boasts an adjoining large terrace with barbecues and many tables, the indoor gym offering a view of the auxiliary bridge for training, and the nature room located adjacent to the container garden outdoors, activities closely mirror those outdoors. This alignment resonates with Zeisel and Tyson's (1999) concept of adjacent spaces supporting transitions to the outdoors, for individuals with cognitive disorders.

Zone Two: Cultivating Nature Engagement Transitions:

From the indoors to the outside: Transition zones within the RCF act as decisive connectors between indoor and outdoor environments. They have been studied for their role in minimizing the divide between indoor and outdoor spaces (Chalfont & Rodiek 2005; Chalfont 2010; Bengtsson 2015).

These areas provide safety and security for the RWD at the RCF, facilitating their transition from the indoors to the outdoors, e.g. the covered patio (Garden II), near the entrance of the building. RWD can also enjoy the comfort of their private terraces, observing nearby activities, and venture into the garden when they feel secure. Chalfont and Rodiek (2005) emphasize their role in mitigating the disconnection between the indoor and outdoor environments for individuals with cognitive disabilities.

Detached from the buildings: Separated from the main building, some garden spaces were identified as areas facilitating various levels of interaction with the physical environment (see fig. 24 and fig. 25) (Bengtsson & Grahn, 2015). These zones range from emotional engagement to active engagement, such as transitioning from inside the greenhouse, to the social areas in Garden II, and from active engagement to outward-directed engagement, like the Patio in Garden I, to a more extensive garden area with exercise options and a boule court is easily accessible. These transition zones play a role in guiding RWD from spaces that encourage emotional and social engagement to areas conducive to active outdoor participation, promoting their holistic well-being.

Zone Three: Nurturing Nature Connections in the Garden

The assessment of the garden, conducted using the QET (Bengtsson & Grahn, 2014), identified key qualities that contribute to RWD's comfort, engagement, and connection with nature. These qualities include easy accessibility, orientation aids, sheltered spaces, and opportunities for meaningful activities. Additionally, the presence of symbolic elements and natural features that encourage residents to engage with nature was noted (Zeisel & Tyson, 1999; Bengtsson & Grahn, 2014)

The presence of musical instruments, gardening containers, and the bonfire near the garden path subtly encourages residents to engage with the outdoors, similar to the concept of nudging proposed by Thaler and Sunstein (2008). This approach enhances residents' interactions with the garden and promotes well-being.

The findings align with existing literature on dementia care nature-based interventions (Barrett et al., 2019; Evans et al., 2019), and environmental design (Bengtsson, 2015; Bengtsson & Grahn, 2014) . Research has consistently shown the positive impact of well-designed outdoor spaces on individuals with dementia.

(Zeisel & Tyson, 1999; Bengtsson & Grahn, 2014). The findings reiterate the importance of considering accessible, safe, and stimulating outdoor environments that cater to the unique needs of RWD (ibid).

Zone Four: Expanding Scenery Beyond the RCF The nearby park, closely situated to the care facility, allows RWD to visit independently or with support, providing a vast and familiar view of their former homes (Bengtsson, 2015; Ottosson & Grahn, 2006; Tang & Brown, 2006), regional flora, and wildlife. It offers natural areas for solitude and serenity, essential for those sensitive to overstimulation (Bengtsson & Grahn, 2014). Moreover, the park provides many of the environmental qualities promoting passive engagement with nature (Barrett et al., 2019; Bengtsson & Grahn, 2014), thus extending the qualities that the garden of the RCF (Zone Three) doesn't offer at large. Effectively serving as an extension of the garden.

For active nature engagement, the park features hills and pathways while maintaining safe access to social and cultural areas, like statues carved from stone, an amphitheater, and a playground, encouraging connections with neighbors (Bengtsson & Carlsson 2006, 2013; Bengtsson & Grahn 2014).

4.1.3 The Interconnection Between Healthcare Professionals, Collaboration, and Supportive Outdoor Environments within the NBCC Model

In this section, the pivotal interconnection between healthcare professionals, collaborative efforts with RWD, volunteers, and relatives, and the establishment of a supportive outdoor environment within the NBCC, are explored. The critical theme, emphasizing the significance of cooperation and collaboration at various levels to foster the NBCC, emerged from the comprehensive analysis, which includes findings from both the thematic analysis (Section 4.1.1) and the outcomes of the place analysis (Section 4.1.2).

Collaboration with RWD and Volunteers: During in-depth conversations with healthcare professionals, it became clear that collaboration with RWD, volunteers, and relatives is fundamental to the success of the NBCC, to promote active participation in NBI and engendering a profound sense of inclusion and ownership among all parties involved. (Brawley, 2007; Chapman et al., 2007).

Healthcare professionals are engaged in the design process and include the RWD in the design and development of the outdoor environment, ensuring their preferences are considered (Brawley, 2007). This collaborative approach not only caters to specific needs but also cultivates a sense of inclusion and shared ownership of the garden among all involved parties. Volunteers actively participate

in the development and maintenance of the outdoor space, offering emotional support and valuable insights). Implementing this approach yields a dynamic and person-centered atmosphere (Barrett et al., 2019).

Promoting Well-Being from the Interior:
Furthermore, healthcare professionals emphasized the importance of ensuring that residents can connect with the outdoors from the interior of the RCF. To achieve this, strategic measures have been implemented, including the placement of beds near windows, positioning the chicken coup within view of the windows (Barrett et al., 2019; Tang & Brown, 2006; R. Ulrich, 1984; R. S. Ulrich, 1999),and creating social gathering spots immediately outside the window doors (Zeisel & Tyson, 1999).

These thoughtful initiatives serve a dual purpose. Not only do they provide residents with scenic views of the outdoors (Tang & Brown, 2006, p.; R. Ulrich, 1984; R. S. Ulrich, 1999)but they also act as inspirations for residents to venture outdoors(Chalfont & Rodiek, 2005; R. S. Ulrich, 1999). The visual connection with the natural world enhances the well-being of the residents and stirs a desire for outdoor engagement (ibid.). The model of NBCC in RCF operates as a cohesive ecosystem where the collaboration between healthcare professionals, RWD, and volunteers is integral to its success. It is a holistic approach that encapsulates not only the physical but also the emotional and psychological dimensions of care, creating an environment where residents are not just beneficiaries but active contributors to their well-being.

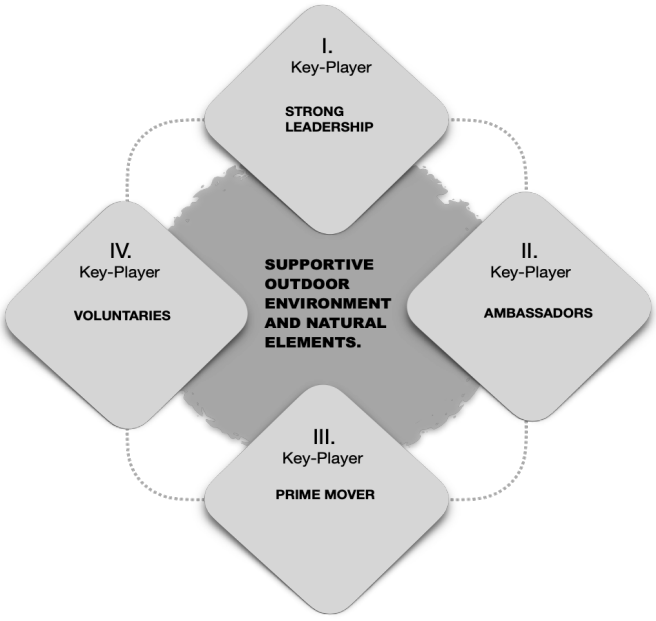

Figure 35. The NBCC model for RCFs illustrates the interconnection of a supporting outdoor environment and natural elements and the Key-Players engaging in NBI.(Illustration Mia Trnka)

The focus now shifts from the discussion of results and their implications for the methodological aspects that underpinned this study. Within the forthcoming section, the research design, data collection methods, and analytical approaches that guided the investigation will be comprehensively examined. This exploration of the methodology is essential for a complete understanding of how these insights were acquired and how they can be applied in practical contexts and future research endeavors.

4.2 Method Discussion

In this section, methodological aspects of the research process are examined. The emergence of the focus group and joint interviews, resulting from practical considerations such as COVID-19 restrictions and staff schedules, is discussed. Descriptions of participant interactions, along with the challenges faced, are impartially presented. The author explores the rationale for choosing thematic analysis and delves into the complexities of place analysis while reflecting on the experiential learning process. This passage unveils the evolving nature of the research process, emphasizing adaptability and the subtleties of qualitative research methodologies.

4.2.1 Focus Group and the Joint Interview

In the original research design, no plans were made for a focus group or joint interviews; the initial plan was to conduct only three or four individual interviews. However, due to COVID-19 restrictions, the fieldwork had to be postponed, coinciding with a week when all staff were engaged in course activities. As a result, the focus group came into existence more out of necessity than by deliberate design. The joint interview was initially intended to be a solitary walk-along interview with GK. There was a suggestion to invite the project manager of the 'Outdoor recreation and community' project to acquire a deeper understanding of the nature-based strategy used at the residential care facility.

GK's involvement in selecting informants proved to be a commendable approach. Previous projects have presented challenges in finding informants without

assistance, especially when management did not permit interviews during working hours.

The initial approach involved conducting a walk-along joint interview, with a semi-structured set of questions. Despite this, the interview had an informal conversational character, and natural pauses for reflection were more comfortable than those encountered in face-to-face interview setups. The natural environment not only triggered memories and perceptions of the place, but also stimulated memories of activities and experiences from the interview location. Given the shared experiences of the two informants, the conversation flowed naturally. This was particularly appreciated, as it was the first live interview for all participants.

However, managing the interview guide and the recording device simultaneously while walking and maintaining a focus on asking questions and listening presented its challenges. The handheld recording device, a phone, was also sensitive to environmental sounds, especially wind, which subsequently complicated the transcription process. In future interviews, it is advisable to use improved equipment that is not handheld.

Using a focus group for data collection proved to be a valuable method. It not only allowed for the collection of insights from a larger number of participants than originally planned, but also, because the questions were unstructured and the environment was informal and familiar to the participants, it elicited many interesting perspectives. However, the role of the moderator posed challenges, as personal interest in the topic could lead to losing sight of the intended moderating role.

Inductive thematic analysis was employed using transcripts from both the focus group and the joint interview. The decision to analyze both interviews together was influenced by the environmental context. The focus group discussions occurred inside and primarily revolved around NBI within RCF, encompassing zone one, two, and three. In contrast, the joint interview occurred outdoors in the park, specifically zone four, and centered on participants' experiences with NBI involving RWD in that specific outdoor environment.

Employing Thematic analysis proved suitable for extracting codes (meaning units), identifying patterns, and grouping codes with similar meanings into thematic categories when seeking to grasp the deeper significance of interviews (Kvale & Brinkmann, 2014). Thematic analysis, inspired by Braun and Clarke's (2006) six-phase approach, is a method commonly used in qualitative research.

This approach involves several key-steps, including data familiarization, generating initial codes, searching for themes, reviewing and refining themes, defining and naming themes, and producing the final report. Each step plays a crucial role in the process of identifying, analyzing, and interpreting themes within qualitative data-set.

While these steps may appear straightforward, the practical nuances of coding and pattern recognition often require learning through experience, making it initially challenging. This approach is susceptible to subjective interpretation, potentially introducing bias into the analysis.

4.2.2 Place Analysis

Place analysis is used in landscape architecture to identify distinctive characteristics of places, spaces, and landscapes. However, place analysis in environmental psychology is not only to identify characteristics of spaces, places, and landscapes, but also to analyze the health-promoting qualities of the environment. The place analysis of the environment inside and outside the RCF, was conducted using the FZCO and the first step of the QET.

The FZCO was comfortable to use, with some uncertainty. It is not described in detail how to define the four different zones. Specifically, the transition zones (zone two) have proved challenging to define in this study.

A patio (I) is a transition zone in this analysis because of its environmental qualities that facilitate outdoor contact. Although not directly promoting transitions from the inside out, it was easier to identify different views from the inside out (zone one), as well as the park close to the RCF (zone four).

The QET is a valuable design tool. It is partly based on research of the outdoor environments in RCF (Bengtsson 2015); thus, it applies to this context. Although the QET does not outline how the nineteen environmental qualities can be measured, it has been found to be an appropriate method of describing the environment in writing.

4.2.3 Method Consideration

This research study marked this author's first venture into research, presenting many learning opportunities. The case study process, characterized by frequent plan adjustments, unfolded organically. Deviations from the original plans, both in the planning and execution of data collection, occasionally proved to be helpful. An unexpected yet valuable addition was the use of a focus group, a method likely to be employed in future research.

The depth and quality of this research were significantly enriched by the constructivist approach. Through active participation in the daily activities of the residential care facility, trust was not only established with the participants, but valuable insights into their experiences were also acquired. These insights informed the subsequent interview process and the ultimate focus of the study.

A major takeaway from employing qualitative methods was the realization that their application is often open to the researcher's interpretation. For instance, the QET, the FZCO, and thematic analysis lacked detailed manuals. While the experience was challenging, it yielded invaluable insights for future research endeavors.

This venture also taught me the importance of making difficult decisions about what to include in the research. I learned this lesson the hard way, particularly for the use of secondary research methods. Initially, I incorporated these methods into the thesis. However, I had to make the tough decision to omit them because they only complicated the research without adding substantial value. This experience highlighted the necessity of maintaining a clear and focused approach in research, even if it meant letting go of elements that may have initially seemed valuable.

As this methodological discussion concludes, it should be observed that the research process has been characterized by significant learning. Unanticipated deviations from the initial plan, including a focus group, and the exploration of thematic and place analysis, have given the research a distinct character. The challenges encountered and the valuable insights acquired offer a meaningful context for the forthcoming conclusion, which will emphasize the study's contributions and implications.

5. Conclusion

This study examined the effective integration of NBI and NBCC in a RCF, to explore their implementation.

Throughout this investigation, the decisive roles played by healthcare professionals in implementing NBI within a NBCC at a RCF have been revealed. The findings emphasize their dedication to fostering the well-being and engagement of residents with dementia. Moreover, the examination of the site has underscored the significance of integrating environmental characteristics, including sensory vegetation, strategic cues, and proximity to nature-rich areas, which have played a fundamental role in ensuring inclusive access to nature.

The findings suggest that implementation of NBCC is contingent upon visionary leadership, passionate healthcare professionals, in particular the prime mover, voluntary corps, and the nurturing of a supportive outdoor environment.
In conclusion, the success of an NBCC transcends the physical space, extending into the dedication of healthcare professionals. Their passion and commitment are integral to the realization of an NBCC. Together, an ecosystem conducive to meaningful activities within the realm of the RCF, from the indoors to beyond the RCF, is created by these key players.

While an in-depth exploration of these aspects has been conducted, it is acknowledged that further research is deemed essential to enhance the understanding of implementing a NBCC in RCFs.

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Original Quotes in Danish

[i] "noget af det som vi er gået igang med …er det her med at komme ud og gå hver dag… hvis man overhovedet kan "

[v] "også med de mennesker med demens vi har herinde, som ikke tåler for mange stimuli. Når vi så kommer ud i naturen så behøver vi ikke tilføre nogle stimuli. vi kan bare være der, og det er bare dejligt at være i sammen synes jeg"

[vi] "Og det er ikke sikkert at det har noget med det her at gøre men det er fra den dag …har han været mere ude fordi det er som om han behøver ikke at skulle en hel masse, bare man er ude, bare det at man er der, er nok"

[viii] " det kan ligesom bedre connecte nogle ting og så lige pludselig har de faktiskt et sprog igen når vi kommer ud så det er nok det jeg har oplevet når vi kommer ud i naturen… Og det synes jeg er jo mega interessant fordi så kan du ligesom flytte nogle ting og man kan lære og man kan leve til den dag man dør, så man ikke bare bliver opbevaret og ligesom dør hen"

[xii] "ja der er meget stor forskel på om vi siger *'ja vil du med ud ...vi skal ud og plukke nogle blomster* '…så får de jo ansvaret for om de tør gå …jeg tør ikke gå på den trappe, jeg tør slet ikke det der …man kan slet ikke overskue det så, det korte svar er 'nej' …men når du så tager I hånden og siger : nej hvor kunne jeg tænke mig at komme med dig ud eller bare sige kom nu går vi en tur, og så leder hvert et skridt…for så er det en anden som tager ansvaret …og så kan man jo langsomt arbejde med trygheden men man bliver utryg af at skulle overskue det hele selv"

[xv] "…man kan jo have en bold med eller bruge nogle træer at lave nogle øvelser med og alt så noget, man kan lave mange ting som er mere leg aktig …som ikke handler om at føre en samtale"

[xviii] "Så det hænger jo sammen med… vi ser mennesket som unikt og værd og interesserer os faktiskt for deres livshistorie…"

[xix] "at se at de er kommet her for at fortsatte deres eget hjem men bare med noget tilsyn og noget hjalp ved siden af …det er ligsom sån bliver det ikke set (på andre plejehjem).

[xx] j … jeg har startet med at finde deres funktionsnoveau, deres interesse og hvad savner de …så skal jeg jo sammen med NT jo finde ud af at få styrket deres sanser ehhh finde ud af hvordan vi kan gøre det… [xx]

[xxi] (det er af stor betydning at hver familje og et hvert medlem får adgang til naturen uanset om det er 'NAME ' som er sengeliggende … hun havde ikke vaeret ude I flere aar …hun skal også ud , natur det er også for hende og det *den* strategi … (forøvrigt) hun er også kommet ud her sidste år…hun har været nede ved stranden)

[xxii] det er det med at finde ud af hvor meget får de ud af at være med på tur kontra hvor meget kan vi gøre I deres eget hjem …netop det der med at have nogle flere krydderurter eller ehh nogle flere blomster noget mere farverigt …) .
[xxiii] (Og det der er vigtigt for mennesker med demens det er… selvfølgeligt skal de jo plejes og vaskes og alle de her ting… men det er lige så meget livet når vi er stået op, ligesom for os andre, der er vigtig. Også været omgiven af mennesker der forstår hvem de har været også inden deres demens og lærer at bruge det) OT

[xxiv] Det kræver en ledelse der vil det, altså det skal jo starte derfra og så skal man jo nogle medarbejder som virkelig har lyst til at kæmpe for det her…det er en plejekultur som er alle steder og det er en kamp så det skal man gøre sig klar når man går i gang med det her

[xxv] (det skal være nogle ambassadører som siger "ved du hvad nu gør vi sådan her")
Ambassadors
[xxvi]
(Altså det er jo helt fantastiskt synes jeg… At finde den der gnist i øjnene på dem igen, det er ligesom meget livsgnisten man, syntes jeg, går efter…lidt ligesom de der adrenalinjunkies det er jeg nok lige den der livsgnist junkie fordi man gå efter livsgnist øjeblik hele tiden …det er ihvertfald det der gør at jeg gider gå til arbejdet hver dag)

[xxvii] (…vi har jo frihed under ansvar, og så hvis jeg vurderer at det er det vi gør; så gør vi det!
…jeg ville aldrig drømme om og sku spørge om lov til "må vi godt gå derover og spise til middag" fordi selvfølgelig må vi det og så gør vi bare det)

[xxviii] (vi er gode til at gribe det spontane … det er vi er her og det er godt vejr så går vi ovre og spiser i Gartnerslugten enten mange eller en til en)

Popular science summary

5.1 Popular Science Summary - English

Enhancing the Well-Being of Residents with Dementia: Exploration of Integration of a Nature-Based Care Culture in Residential Care facilities

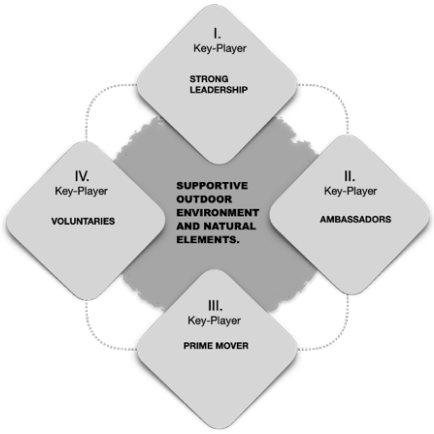
An environment where residents with dementia are not mere recipients of care but are actively involved in their own well-being is exemplified by Nature-Based Care Culture (NBCC). This holistic approach integrates nature into the lives of individuals with dementia.

In a time marked by the growing aging population and an increase in dementia cases, a significant concern emerges—numerous residential care facilities (RCFs) find themselves lacking the essential support of outdoor environments. Simultaneously, healthcare professionals grapple with time and knowledge limitations when attempting to infuse outdoor and natural elements into their care practices. While prior research has endeavored to bridge the existing knowledge gaps in outdoor environment design for individuals with dementia and to comprehend the challenges faced by healthcare professionals, it remains evident that RCFs embracing nature-based care culture in a real-life context, are a rare find.

The transformative potential of NBCC in RCFs was examined in this study. The core of an NBCC revolves around the connection with nature. However, it was revealed that a vital role is played by healthcare professionals in realizing of an NBCC. By collaborating across disciplines, including nurses, occupational therapists, nature therapist, and health workers, a comprehensive understanding of the residents' needs is achieved. Significantly, the importance of a positive tone in communication, without the use of clinical expressions, is emphasized. Collaboration between healthcare professionals, residents with dementia, volunteers, is considered fundamental for the success of NBCC. This collaborative approach ensures the consideration of individual needs, creating a dynamic and person-centered atmosphere.

Exploring the principal model of Four Zones of Contact with the Outdoors yielded insights into how residents engage with nature within and around the RCF. Zone one emphasizes indoor strategies, including indoor plants, freely roaming domestic animals, and views of outdoor features like the chicken coop and the outdoor garden, all designed to enhance the well-being of residents with dementia (RWD). Zone two serves as a transitional area, facilitating the movement from indoor to outdoor spaces. Zone three, represented by the garden, offers safe spaces and meaningful activities. Lastly, zone four, the nearby park, provides opportunities to experience the outdoors in a more natural environment. The study also included a variety of methods, including the use of a focus group, joint interviews conducted during a walking session, as well as thematic and place analyses. The utilization of multiple qualitative methods contributed different dimensions to the study, allowing for comparisons and enhancing the validity of the results.

In conclusion, the success of an NBCC transcends the physical space. Visionary leadership, the unwavering dedication of healthcare professionals, the pivotal role of the prime mover, and the support of a a committed voluntary corps are recognized as integral to its achievements. This research underscores the paramount importance of these key players in cultivating an ecosystem that fosters meaningful activities both within and beyond the RCF. Further research is essential to advance NBCC implementation and enhance the well-being of residents with dementia.



An illustration of the the NBCC with the four key-player interconnected with the outdoors environment and natural

This research provides a glimpse of a more compassionate and nature-connected approach to dementia care, where residents are active contributors to their well-being, surrounded by the healing power of nature.

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5.2 Popular Science Summary - Danish

Forbedring af Trivsel for Personer med Demens: Undersøgelse af Hvordan Naturbaseret Pleje kan Integreres på Plejehjem

Et miljø, hvor personer med demens ikke blot modtager pleje, men aktivt deltager i deres eget velbefindende, illustreres af naturbaseret pleje kultur. Denne holistiske tilgang integrerer naturen i livet for personer med demens.

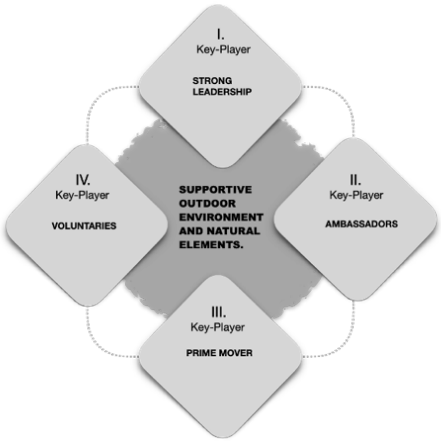
I en tid, hvor den aldrende befolkning og antallet af demenstilfælde er stigende, tegner sig en bekymrende problemstilling - mange plejehjem mangler støttende udendørs miljøer. Samtidig står sundhedsprofessionelle ofte over for tidsmæssige og vidensmæssige udfordringer, når de forsøger at integrere udendørs aktiviteter og naturlementer i deres omsorgspraksis. Tidligere forskning har forsøgt at udfylde eksisterende videnshuller inden for design af udendørs miljøer for personer med demens og for at forstå de udfordringer, sundhedsprofessionelle står overfor. Det står dog klart, at plejehjem med en naturbaseret plejekultur er et sjældne syn i virkelighedens verden.

Dette studie undersøgte det transformative potentiale af naturbaseret pleje kultur (NBCC) på plejehjem. Kernen i NBCC handler om forbindelsen til naturen. Det blev tydeliggjort, at sundhedsfagfolk spiller en afgørende rolle i realiseringen af naturbaseret pleje. Ved at samarbejde på tværs af discipliner, herunder sygeplejersker, ergoterapeuter, naturterapeuter og social- og sundhedsassistenter, opnås en omfattende forståelse af beboernes behov. Betydningen af en positiv tone i kommunikationen, uden brug af kliniske udtryk, blev understreget.

Udforskning af FZCO-modellens fire zoner for kontakt med udendørs miljøet gav indblik i, hvordan beboere har forbindelse til naturen både indenfor og omkring plejehjemmet. Zone ét fokuserer på indendørs strategier såsom stueplanter, dyr, der går frit omkring, udsigt til hønsehuset og den omkringliggende have. Alt sammen designet til at forbedre beboernes velbefindende. Zone to fungerer som et overgangsområde, der gør det lettere for personer at bevæge sig fra indendørs til udendørs rum. Zone tre, repræsenteret ved haven, byder på trygge oplevelser og meningsfulde aktiviteter. Endelig giver zone fire, den nærliggende park, muligheder for at få mere naturtro oplevelser. Studiet omfattede en række andre metoder, herunder anvendelsen af en fokusgruppe, fælles interviews under gåtur samt tematisk analyse. Brugen af flere kvalitative metoder, som interviews og plads analyse, bidrog med forskellige dimensioner til undersøgelsen, hvilket muliggjorde sammenligninger og øgede validiteten af resultaterne.

Konklusionen er, at en naturbaseret pleje kultur's succes går ud over det fysiske rum. Visionært lederskab, sundhedspersonale som er ambassadører for naturbaserede aktiviteter, støtte fra en initiativrig tov-holder og en dedikeret korps af frivillige anses som afgørende for dens succes.

Dette studie understreger betydningen af disse nøgleaktører i at skabe et økosystem, der fremmer meningsfulde aktiviteter både inden for og uden for beboer med demens. Yderligere forskning er nødvendig for at fortsætte forbedringen af NBCC-implementering og forbedringen af personer med demens' velbefindende på plejehjem.



An illustration of the the NBCC with the four key-player interconnected with the outdoors environment and natural

Denne forskning giver et glimt af en mere medfølende og naturforbundet tilgang til demenspleje, hvor beboerne er aktive medskabere af deres eget velbefindende, omgivet af naturens helbredende kraft.

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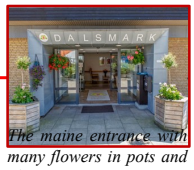
Appendix 1

Garden I.


The adult wheelchair-accesible Swing.


One of the musical instruments in the garden.



The maine entrance with many flowers in pots and planters.


The house-shaped pergola.


The blue bench.


One of the containers with herbs and flowes in the container garden.


The training walking bridge outside.the gym.


The pentanque-court.


The patio where cooking and social gatherings take place


Near the path are musical instruments and behind the bon fireplace.

Appendix 2

Garden IV.

A bond-fireplace (work in progress)

Figure 1The terrace in front of the common dinning area inside. Behind it is a voliere.

A fountain (work in progress)

A bench is placed in the bushes.

The chicken-coop

A barbecue.

Appendix 3

Environmental qualities	Step 1. Investigation of environmental qualities in the outdoor environment
Section A. Six environmental qualities allowing persons to be comfortable in the outdoor environment:	
1. Closeness and easy access	There is *easy access* from all doors. The entrance has sliding doors. The doors inside and the terrace doors are light, *opens easily*, and the *thresholds can be passed* with wheelchairs and walkers. The residents all have private terraces, and they are easily accessed from their residences. The terraces are *tiled and not fenced,* which supports access to the garden are some areas and features of the garden are more distant for the residents, but the path passing *all garden areas can be easily reached.*
2. Enclosure and entrance	The (G), (A), (H)are fenced with wood and welded wire mesh trellis fence. The door gates are made of the same material, so they appear camouflaged, The locking device is made of the same type of wood. A hedgerow enclosure continues around the perimeter and consists of trees, bushes, and shrubberies (C). The main entrance area (M) appears very open, and there are no visible divisions between (M) and the pavement or street. Only a few trees and bushes confine the edge in this part. However, in front of the nature café, some bushes are planted between the trees creating a semi-transparent border.
3. Safety and security	*Physical* The lawn as well as the hard surfaces, e.i. Terraces and paths are well-maintained in all garden areas. The hard surfaces are laid in concrete stone at ground level. Chairs or benches are strategically placed close to the paths and in other parts of the gardens. Some paths/shortcuts are not paved but appear even. The locks on the garden gates are made in the same wood as the fences. The paths are wide enough for wheelchairs and walkers to pass. There are no lakes, ponds, or poisonous plants. *Psychological* For the most part, Area (A) consists of a lawn with apple trees with vegetation without excessive colour. There are

	a few apple trees and scrubs in the lawn, a greenhouse, and vegetation with no excessive colour in (G). In (G), (A) and (H), there is no noise from traffic or other artificial sounds, in (C) for the most part as well. Alongside the buildings are private terraces, with views over the garden areas and private entrance to their home. Against the hedgerow (C), there is a blue bench secluded from the more crowded areas.
4. Familiarity	- Hammoch - Barbecues - Flagpole - greenhouse
5. Orientation and way finding	*Pathways:* Most of the paths lead to terraces, connects entrances, nodes, and have no dead-ends. Some are shortcuts, proposing a more direct or shorter way to different areas of the garden.The main path surrounding the buildings starts at the main entrance and ends at H. Passing through all the garden areas. It continues towards the patio (C), with the musical instruments on each side of it. At the patio, it turns 90 degrees to the left towards the campfire site and petanque court. And 90 degrees to the right towards a blue bench. From the Blue bench, it turns 90 degrees to the right and follows on the 'sensory path', under the pergola towards the garden gates of H. *Landmarks:* The main entrance (M), the flagpole (G), The patio, tall soundsculpture/garden percussion, the pergola and even the bonfire site, when the fire is lit (C) *Nodes:* The patio and bonfire site (C), Blue bench (C) Eating and henhouse area of (H) Greenhouse and flagpole area of (G) and outside the workshop (M)
6. Different options in different kinds of weather	The (G), (A) and (H) layout with walls on three sides offers protection from the wind. The patios in (G) and (C) protect from sun and rain, and the greenhouse protects from rain and is warmer than the outside.
Section A. *In this section, the thirteen environmental qualities supporting persons' access to nature and surrounding life are investigated.* *It corresponds to section B in the QET.*	

1. Joyful and meaningful activities	There are table-sets in all the garden areas, i.e. small ones in the corners of the courtyard gardens and private terraces, and larger table-sets on the patios and common terraces. Barbecues are available in all gardens. In (H), there is a Henhouse with chickens, and in all gardens, there are bird feeders. There are different musical instruments in the lawn (C), some make music, and others deliver resonant tones when operated. There are non-paved shortcuts (Fig.) in the garden (billede). a walking bridge for training purposes, and a four-seat swing. In all the gardens, there are planters, plant beds.
2. Contact with the surrounding life	The NH is adjacent to a cul de sac. On the other side of the NH is a street with a pavement where people from the area pass. It does not appear very trafficked. There is direct contact with the surrounding life from this part of the garden (C).
3. Social opportunities	On the patio in (C), there are two large table sets, barbecues where more significant amounts of food can be cooked. Next to it is a bonfire site where one can sit around on a curved bench. Behind the fireplace is the Petanque court. The patios and common terraces in (C), (G) and (H) are all equipped with barbecues and larger table sets.
4. Culture and connection to the past	Close to the main path throughout (C), there are pieces of art carved in wood. In front of the (A), (D) and (C), there is a Japanese cherry tree and an Asian style birdhouse. There are traditional perennials in all garden areas, i.e. hortensia, roses, common columbine, hosta, and lady's mantle: Bulbs, i.e. tulips, narcissus. There is a large shrubbery in (H) with many rhododendrons. Moreover, garden (A) have many apple trees. Close to the bonfire site, there are also firewood storage units and chopping devices for the firewood. Some of the garden decorations are horseshoes and old barrels.
5. Symbolism/reflection	There are apple trees in all garden areas but particularly in (A) and the flagpole in (G)
6. Prospect	A major part of (C) is lawned.
7. Space	Inside the hedgerow (C) between the threes and the hedges, and at the centre of the Rhododendron shrubbery (H)
8. Rich in species	There are many birdhouses, birdfeeders, birdbaths, water containers, insect hotels in all garden areas. In the hedgerow (C), there are compost heaps with leaves, twigs, and boughs. Some areas have wild meadow-like vegetation and unkempt lawn. There is vegetation attracting insects, i.e. lavender, butterfly bushes and roses. There are three chickens in the henhouse (H) and domestic animals like cats and dogs.

9. Sensual pleasures of nature	There are plants with sensory properties, in the planters, outside the workshop, i.e. herbs, fragrant and colourful flowers. In the other garden, areas are fragrant rose bushes and planters with herbs and strawberries. There are many containers with water.
10. Seasons changing in nature	In all the garden areas are apple trees (A) and deciduous trees and bushes, e.i palmatum f. atropurpureum oak and betulla. In C is a and Japanese cherry tree.
11. Serene	In (A), there are many apple trees, and in one corner, a shielded area. (A) There is an area with a blue bench with a hedge and threes behind and on the sides(C). In the lawn near the eating area (H) is a water fountain.
12. Wild Nature	Inside the hedgerow at the perimeters of (C)
13. Refuge	The rhododendron shrubbery with the bench (H) and the private terraces was detached but still near the social areas.

Bridging Nature and Care

Nuturing Individuals with Dementia in Residential Care Facilities

INTRODUCTION

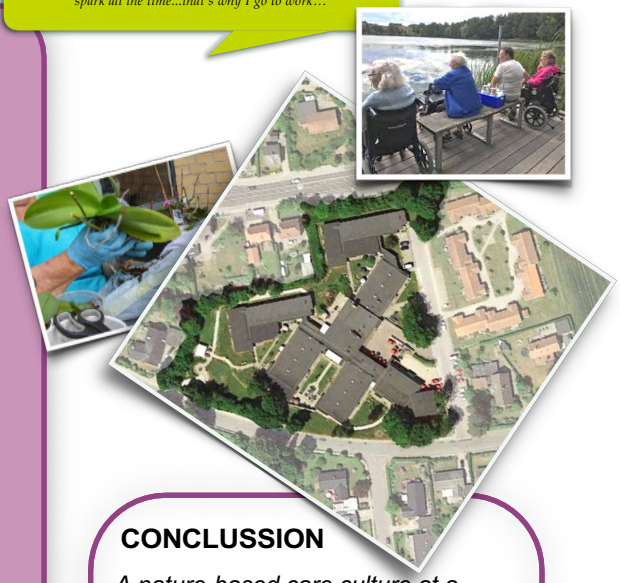
- The rise in dementia prevalences, is attributed to increasing life expectancy, creating a growing public health concern.
- The health and well-being of people with dementia can be enhanced by engaging with nature.
- However, The presence of nature-based care culture and nature-based interventions is conspicuously absent in RCFs in real life.

…"It has to do with how we perceive people as being unique and worthy, and how we are actually interested in finding out more about their life story"...

Research Questions

- How do healthcare professionals contribute to nature-based interventions and Nature-based care culture?
- What are the strengths and weaknesses of the environment inside and outside of a RCF?
- How do healthcare professionals and environmental qualities interconnect in a nature-based care culture at a recidential care facility

…I think it's amazing…to discover that spark in their eyes again…it's like one of those adrenalin junkies... I chase that spark all the time...that's why I go to work…

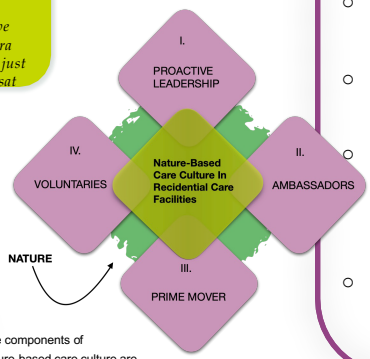


…We've had a resident with dementia move in from a short-term accommodation. He just cried and cried inconsolably...here we haven't used any extra medicine… because we just used nature and just sat with him…

FUTURE RESEARCH

Further research could explore:

The implications of the prime mover and the interactions between management, voluntaries, healthcare professionals, and the physical environment of a residential care facility.



The components of nature-based care culture are illustrated in the figure above.

CONCLUSSION

A nature-based care culture at a residential care facility requires an interconnection of :

- *A supportive outdoor environment*

Four Key-Players

- *Proactive leadership* (with a strong strategy)
- *Ambassadors* (Dedicated healthcare professionals motivating collegues).
- *A prime mover* (a designated healthcare professional, responsible for planning nature-based interventions).
- *Voluntaries* (Assisting in practicalities and nature-based interventions)

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