Enhancing Dementia Care through Interior Design: Cultural Adaptation and Modification of Environments in the Middle East-North African Region

By

Dina Al Qusous

An MPhil Thesis

Submitted to the School of Architecture, Computing, & Engineering

University of East London

November 2023

DECLARATION OF AUTHORSHIP

I hereby declare that I alone am the thesis's author and composer and that no sources or study aids other than those mentioned have been utilised. In addition, I certify that I have recognised the labour of others by citing their contributions in-depth.

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ABSTRACT

This thesis explores the intersection of interior design and dementia care, focusing on the transposition of Western design methods to the Middle East-North African (MENA) region. The thesis follows a structured approach, beginning with an introduction to dementia and the potential of interior design to reduce anxiety and enhance comfort in dementia care spaces. A comprehensive literature review examines the existing research on interior design practices, the nature of dementia, and studies that demonstrate the impact of design interventions on individuals with dementia.

Drawing from the literature review, the thesis examines a series of case studies as the primary research method. The case studies comprise the Hogeweyk in the Netherlands, the Harmonia Village in the UK, and the Farah Rehabilitation Centre for the Elderly in Kuwait. These case studies provide valuable insights into successful design practices in different cultural contexts and their impacts design methods to the MENA region. It considers the cultural and contextual factors unique to the region, aiming to inform the creation of culturally appropriate and supportive environments for individuals with dementia. Through this exploration, the thesis uncovers an unexpected finding – the potential for the Western world to learn from MENA's home care services. This realization prompts a broader reflection on the exchange of knowledge and practices between regions, highlighting the mutually beneficial aspects of transposing care home design from the Western world to MENA, and the home care approach from MENA to the Western world.

In conclusion, the thesis provides a comprehensive understanding of the role of interior design in dementia care and highlights the significance of transposing Western design methods to the MENA region. It acknowledges the importance of culturally sensitive design practices and emphasizes the need to consider the individual's unique background, culture, and life experiences when designing dementia care spaces. The thesis offers valuable insights and recommendations to designers and architects, urging them to integrate simple design guidelines to enhance the well-being and quality of life for individuals with dementia.

The research adds to the existing body of knowledge on dementia care, interior design, and the transference of knowledge across cultures. It follows a methodical approach, commencing from basic concepts to literature review, case studies, and ending with fresh viewpoints on cultural adaptation. By spotlighting the potential of knowledge exchange and the importance of integrating diverse cultural practices, the thesis presents possible future research directions. Specifically, it calls upon designers, architects, and policymakers to devise dementia care environments that align with the unique cultural and personal requirements of individuals with dementia.

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CHAPTER 1. INTRODUCTION

1.1 Dementia: General Introduction

This thesis explores the potential of interior design in enhancing dementia care through the modification of environments and the integration of cultural considerations. The primary objective being to propose a strategic approach that addresses the structural requirements of spaces supporting individuals with dementia from diverse backgrounds. Furthermore, the aim is to provide recommendations for personalising these spaces, aiming to enhance residents' sense of security and self-expression. By considering the cultural and regional norms, expectations, and obligations that vary globally, this research aims to explore and comprehend the variances between Western care home models, such as those found in the UK and the Netherlands, and those in the Middle East-North African (MENA) region. The goal is to identify practices from both regions that can inform the design and operation of more culturally sensitive care facilities. Furthermore, this study strives to devise an effective approach for fostering a 'home-like' atmosphere within these facilities, thereby addressing common apprehensions associated with transitioning loved ones into such environments. By synthesising evidence-based design principles with cultural adaptation, this research strives to contribute to the overall well-being and quality of life of individuals with dementia and their families in the MENA region.

Dementia, defined as a decline in cognitive abilities affecting memory, thinking, and behaviour (Alzheimer's Association, 2021), poses challenges in performing daily activities and adapting to new surroundings. This disease has recently become an increasingly prevalent health issue. Neuropsychiatric and behavioural issues are major and frequent complications of dementia. Anxiety symptoms in this demographic are one of the symptoms that have not gotten much attention (Al-Abdulwahab et al., 2017). Nevertheless, anxiety is a frequent symptom in dementia patients, with prevalence estimates ranging from 8% to 71% for anxiety symptoms and from 5% to 21% for anxiety disorders. Independent of the existence of depression, this is also linked to inferior cognitive abilities, behaviour issues, impairment of daily living activities, sleep disruptions, and reduced quality of life. Dementia anxiety is also a strong predictor of eventual nursing home placement, indicating a significant caregiver burden (Kwak et al., 2017).

Dementia is a complex condition that encompasses a spectrum of cognitive impairments, affecting memory, attention, language, and problem-solving capabilities (Prince et al., 2013). It is a condition that necessitates not only medical and psychological interventions, but also environmental adaptations. Research has shown that the design of physical spaces, or the built environment, can significantly influence the quality of life for those living with dementia (Calkins, 2018). Carefully designed spaces, which take into account the specific cognitive and sensory challenges faced by those with dementia, can play a crucial role in fostering comfort, autonomy, and overall well-being (Marquardt et al., 2014). These 'dementia-friendly' environments are structured to reduce confusion and anxiety, promote safety, and ease of navigation, and stimulate positive sensory experiences (Calkins, 2018). From the choice of colours and materials to the arrangement of furniture and use of signage, every design detail in these spaces has the potential to either support or hinder an individual with dementia (Fleming et al., 2020). As such, the role of interior design in dementia care spaces is pivotal and necessitates

a deep understanding of the interplay between cognitive impairments and spatial perception (Marquardt et al., 2014).

The number of people with dementia has increased over the years, a trend largely attributable to the general increase in life expectancy and the aging population worldwide (Alzheimer's Society, 2022). As people live longer, the risk of developing dementia naturally rises, necessitating the need for spaces that are cognizant of this demographic change and allow for the relevant degree of flexibility. Modifying the environment to fit an individual’s needs and adjusting it to their lifestyle can help lessen the confusion and distress in their everyday life.

Dementia & Design

Individuals living with dementia should feel secure and comfortable in their living environments, whether it is their own home or a care facility (Lawton, 1990). Interior design can play a vital role in creating aesthetically pleasing and functional spaces tailored to the needs of clients, including those suffering from dementia.

Interior design, in this context, is used as a broad term to describe the design of the spaces where dementia patients live. It is related not only to the physical qualities of their room, but also, and very importantly, to how design allows them to connect with other people, how far they need to walk to do certain things, what elements of the spatial design allow them to be and feel independent (Moos & Lemke, 2016). Hence, interior design in this context involves also strategic decisions about elements of the space and the organization of the patients’ lives; it reflects the type of questions one needs to ask for designing for dementia patients.

The design elements employed in dementia-friendly spaces can significantly impact the well-being of individuals with dementia, reducing anxiety, and promoting a sense of connectedness within the environment (Huisman et al., 2020). This applies to individuals from diverse cultural backgrounds, as cultural influences and upbringing can influence their perception and comfort within a space. Therefore, it is crucial to also consider the cultural context when designing for people with dementia, in addition to generic frameworks underpinning design for those living with dementia.

Navigating unfamiliar spaces can be particularly challenging for individuals with dementia due to age-related declines in wayfinding abilities (Chen et al., 2020). Creating environments that facilitate spatial orientation and accommodate compromised navigational skills can ease the transition to new living situations and improve residents' overall quality of life (Fleming et al., 2019). This, in turn, reduces the workload on caregivers and promotes a greater sense of freedom for the residents.

While there are scientifically proven guidelines regarding lighting, color schemes, and design principles for dementia-friendly interiors, it is essential for designers and architects to understand the experiential aspect of dementia (Mace et al., 1991). By grasping the philosophical underpinnings of dementia and considering the lived experiences of users, designers can develop innovative and more comfortable living solutions for individuals with dementia.

By incorporating both scientific guidelines and a deep understanding of the users' experiences, designers and architects can enhance the quality of life for people with dementia while addressing their specific cultural and individual needs.

Designs for a space for someone with dementia follow certain guidelines and rules. These guidelines are based on studies and many different research papers that will create pointers that can help the person circulate better in the “living space, allowing it to be more accessible and supportive. These guidelines work on the individual with dementia or even staff or family members in the home. The suggestions can be used to modify or even adapt existing homes when the circumstance of a person changes (Greasley-Adams et al., 2012).

The strategic utilisation of colour and contrast plays a pivotal role in aiding individuals with sight loss and dementia to effectively navigate their living spaces. By introducing distinct colours, one can facilitate wayfinding, helping people distinguish different rooms and key features both inside and outside the home. This is crucial, as age-related vision changes, such as lens thickening, can cause colours like blues, greens, and purples to appear “washed out”, making them harder to differentiate. Contrasting hues, on the other hand, can be effectively employed to draw attention to potential hazards. Greasley-Adams et al. (2012) underscore the significance of these considerations, emphasising the importance of using colour and contrast to address visual challenges and enhance spatial experience for those with dementia and sight impairment.

Drawing upon the influential Stirling Standards for dementia-friendly Design (DSDC) as a primary reference, this thesis highlights the widespread adoption of these guidelines by interior designers and researchers. Key to this analysis is the guidelines produced by Stirling University whose long-established research centre has produced this key source. This is used as a framework to analyse the three case studies. It is also used as a model to provide protocols for the MENA region. Furthermore, these guidelines serve as a valuable model for developing protocols specifically tailored to the MENA region, ensuring their applicability and relevance in this cultural context.

This thesis explored a strategic approach that considered the structural requirements of spaces providing support for individuals with dementia from different cultural backgrounds. It presents recommendations on personalizing these spaces to enhance a sense of security and self-expression, benefiting both individuals with dementia and their families. Furthermore, it addresses the concerns associated with transitioning loved ones to care facilities by suggesting an effective strategy that creates an extended 'home' environment within these facilities.

The study reviews guidelines that have been created by architects and designers as a tool for the public to design spaces that will ease anxieties. To date, guidelines and studies have predominantly been conducted in the Global North[1] where awareness of dementia is much greater than in other regions such as the Middle East. This study explores care homes, which is

[1] The term 'Global North' predominantly refers to the more developed, wealthier countries, generally located in the Northern Hemisphere. This concept includes nations such as the United States and the United Kingdom, among others.

what is typically offered in the Western region, and then home care, which is more common in the MENA region (ABYAD, 2001).

This thesis critically reviews a series of articles that explore how different regions view care homes and home care services. It also includes case studies to compare these regions and find both similarities and differences across diverse cultural contexts. This comparative analysis provides important insights into the commonalities that connect different cultures.

While the universal core of dementia care is to improve the quality of life for patients and caregivers, it's crucial to recognize that caregiving practices are deeply intertwined with cultural contexts. It's not merely about importing or adopting Western models, but rather interpreting and adapting them in a way that aligns with local beliefs, traditions, and societal norms. Navigating these nuances requires a sensitive, informed approach. Embracing cultural uniqueness in dementia care strategies can lead to more holistic, effective, and compassionate solutions tailored to each community's distinct needs and values.

In Arab culture, the family serves as the primary caregiver for its elderly relatives, assisting them with daily tasks, providing financial support, and providing emotional support (Abyad, 2001). Family caregivers are more likely to encounter physical, psychological, cultural, and financial challenges as a result of industrialization, the rise of women in the workforce, and the dissolution of the extended family, which can hurt their quality of life and general well-being (Sinunu et al., 2009; Yount et al., 2009). The majority of older adults in Arab countries live at home and are cared for by one or more family members, such as children, spouses, or other close relatives because Arab culture emphasizes respect for older people, values highly the natural bond of affection between all members of the family, and places enormous obligations on the family to support members in old age (Sinunu et al., 2008; Yount et al., 2009). Nevertheless, the pressure on families that are in charge of caring for older people is growing as a result of industrialization, higher employment of women, and a loss in the extended family.

Since there are fewer family members able to care for those that are older in the MENA region, the publication of this study provides the necessary sources and information to create awareness in that region which can allow having a care worker in one’s home to be as beneficial as if they were to be in a nursing institute. It also is used as a tool to show how care homes can incorporate cultural elements in the resident’s past to make it more appropriate for family members to have their loved ones in a home without being shamed.

This research, at its earlier stages, employed a phenomenological approach, to encounter the personal experiences and consciousness surrounding dementia. However, as the study progressed, it became evident that a straightforward phenomenological method was challenging due to the fluctuating cognitive states of individuals with dementia. Interestingly, this exploration through a phenomenological lens unexpectedly illuminated the significant influence of cultural context on dementia experiences. It paved the way for a more comprehensive understanding through case studies across various regions. Thus, while phenomenology might not have been used in the anticipated manner, it inadvertently guided the research to emphasize the profound impact of culture on dementia care and understanding.

Instead, the research acknowledges the importance of cultural perspectives in dementia care, as different cultures have diverse approaches with the shared aim of promoting the well-being of individuals with dementia. By considering cultural variations, the research offers comprehensive recommendations for architects and designers, emphasising the creation of inclusive and culturally sensitive environments that enhance the quality of life for individuals with dementia. By integrating cultural considerations into design strategies, architects and designers can navigate the complexities of dementia care and support the unique needs of individuals from diverse backgrounds.

1.2 Becoming a Researcher in Dementia & Interior Design

Alzheimer's disease is widely recognized as the prevailing form of dementia in the Middle East. This research aims to delve into the profound impact of dementia on individuals, moving beyond the common perception of memory loss associated with old age. With no cure currently available, the focus shifts to management strategies, prompting a research journey driven by a deep sense of concern for the devastating consequences on individuals' lives. This thesis investigates the potential impact of interior design, specifically in the context of care homes and customized modifications, on the mental well-being of individuals affected by dementia.

Within the scope of my final year project for my Bachelor's degree, I developed a care home design concept comprising diverse apartments and studios. Concurrently, extensive research was conducted on various care home models in Europe, with a specific focus on Cyprus, known for its private sector's emphasis on providing greater comfort compared to the public sector. This exploration highlighted the limited availability of comparable options within the Arab region, as the prevailing preference among the elderly population leans towards receiving home care services rather than relocating to alternative environments.

Moreover, emerging technologies such as multi-sensory VR experiences are gaining recognition for their potential to delve deeper into the complexities of dementia. These experiences are not mere computer-generated simulations; rather, they offer a richly immersive perspective by engaging multiple senses – sight, sound, touch, and even mobility (Park et al., 2019). With these simulations, researchers and designers can step into the shoes of individuals living with dementia, gaining first-hand insight into the cognitive and sensory challenges they face daily. The immersive and multi-sensory nature of these experiences offers fresh avenues for empathetic understanding and effective design, extending the knowledge of dementia beyond traditional observation and interviews.

To address the continuous battle against dementia, proactive environmental management becomes crucial, whether in a care home setting or through customized modifications tailored to individuals' specific needs in their own residences. This research proposes the integration of diverse design techniques in collaboration with psychological considerations to enhance the well-being and quality of life of individuals living with dementia in the Middle East and North African region.

By examining the potential of interior design to positively impact dementia care and considering cultural factors and adaptations, this thesis aims to contribute to the growing body of knowledge

in the field and provide practical insights for improving the living environment and care practices for individuals affected by dementia.

The initial focus of this study explores how cultural background influences design by reviewing and synthesising articles to identify themes and conflicts. It investigated if and how residential spaces, such as living areas, bedrooms, social spaces, and dining areas, can be designed to reduce anxiety in people with dementia. Data was collected from existing studies to advise future policy on how anxiety for those with dementia can be reduced using best practices from different design guidelines.

In recent years, people are paying increased attention to designing institutes that are associated with patients with dementia, especially in the Global North. (Alzheimer's Society, 2018). Unfortunately, that is not the case for most countries across the world, especially countries in the Middle East. Having one's parent or grandparent put in an elderly home is usually known to be a shameful act that can be known as a dishonour to the family (Yount & Sibai, 2009). The reputation of the facilities is usually poor due to the lack of care in design and service which does not help the comfort of the residents (Hammad et al., 2022).

Environments that are dementia-friendly should stimulate the senses without overwhelming or confusing the person with dementia. The list could seem never-ending: they should be modified to accommodate changes in a person's mobility and ability while still feeling comfortable. Having all this knowledge at our fingertips gives us the chance to support a dementia patient's desire to age in place and continue living at home, but it may also be stressful and perplexing to the inhabitant. This is why this thesis breaks down different methods and strategies that can be used to modify the environment not only in generic steps but by keeping into consideration the cultural background of the user which can also alleviate their anxiety and allow their comfort to be at a maximum. Having elements in the room that are linked to your memories and background allows one to feel safer, to feel familiar, and also to latch onto a memory when everything else seems to be fading away (Hennelly et al., 2018).

Though specific practices may vary around the world, the function of elderly care across the globe remains the same and is designed for the comfort and safety of the facility's residents. Extra measures, however, may be implemented and prove beneficial, in caring for residents with dementia. This paper shows how the strategic use of interior design may help in reducing stress in residents with dementia ensuring that they live more comfortably. These designs will be customised and rooted in the personal life, experiences, and cultural identity of each resident, increasing quality of life through comfort-based familiarity and reducing dependency on medication.

This thesis seeks to reveal the influence of interior design on the mental well-being and quality of life of individuals coping with an incurable condition like dementia. Harnessing a broad understanding of design's profound impact on human cognition, coupled with insights from personal encounters with individuals affected by dementia, the study emphasises that interior design's role transcends the realms of mere functionality and aesthetics. It possesses the capacity to significantly mitigate feelings of discomfort within a given space. Furthermore, this research

advocates for increased awareness in the Middle East by endorsing the integration of advancements and studies from the Global North. It urges stakeholders, including designers and researchers, to consider implementing these practices within the Middle Eastern context. Crucially, the research also highlights the value of home care services prevalent in the Middle East and suggests that their strategies could offer valuable insights for implementation in Western contexts. Through this comprehensive exploration, the thesis endeavours to establish a platform for raising awareness and advancing the understanding of dementia care within culturally diverse settings.

1.3 Research Approaches

The research question was answered through a selection of case studies and literature review. Experiences of those with dementia were investigated to get a better understanding of how designers can find a way to design their space that will improve their well-being.

The Selection of Case Studies: Examining Diverse Care Models for Dementia

To explore diverse care models for individuals with dementia and consider cultural and regional variations, this thesis examines three case studies. Each case study offered unique insights into innovative approaches to dementia care. The case studies represent examples of best practice in both Western Europe and MENA contexts. This section will provide an overview of the rationale behind the selection of these case studies and describe their significance within the context of this research.

Case Study 1: Hogeweyk – Dementia Village, Weesp, The Netherlands

The first case study, Hogeweyk – Dementia Village, was chosen for its deviation from the conventional care home setting. Hogeweyk embodies a village concept that revolutionizes the conception of everyday life for dementia patients through unique elements of freedom and typical daily activities. By offering personalized residences that accommodate residents' individual lifestyles, Hogeweyk promotes a sense of community which generally enhances their well-being. This case study provides valuable insights into the contextualized creation of an environment conducive to residents' needs (Planos, 2018).

In addition to its unique layout and design, what sets Hogeweyk apart is its emphasis on maintaining a semblance of normalcy for its residents (Planos, 2018). Unlike traditional care homes, where routines can be rigid and restrictive (ABYAD, 2001), Hogeweyk's village setting encourages residents to engage in daily activities that resonate with their previous life experiences. Whether it's visiting the village grocery store, attending community events, or merely taking a leisurely walk, the village's environment is structured yet flexible (Kleinman, 1980). This design, rooted in fostering autonomy and familiar experiences, not only combats the feelings of isolation often associated with dementia care (Greasley-Adams et al., 2012) but also challenges the prevailing norms of institutional care. The success of Hogeweyk offers a compelling model for rethinking dementia care globally, emphasising the importance of environments that mirror real-life settings By "real-life settings," the intention is to create environments that closely mimic the everyday, familiar surroundings and routines that

individuals would have experienced prior to their dementia diagnosis, thus providing a sense of comfort and normality amidst the challenges of their condition (Planos, 2018).

While Hogeweyk might present an ambiance similar to 'normal' life, it's crucial to understand the depth of its approach. Rather than an exact replication of their prior lives, Hogeweyk facilitates an environment that reintroduces everyday actions, rituals, and movements—mimicking the essence, not the exact circumstances, of their prior life. The intent isn't to recreate an individual's exact former home, but to harness those elements that constituted the rhythm and warmth of their pre-dementia lives. This nuanced approach recognizes the importance of maintaining significant aspects of individual identity and daily routine, while also providing specialized care and a supportive community tailored to the specific needs of dementia patients.

Case Study 2: Harmonia Village, Dover, UK

The second case study, Harmonia Village, draws inspiration from the Hogeweyk model and stands as the first care home in the UK designed in a manner that emphasizes autonomy, familiar experiences, and structured yet flexible environments like Hogeweyk's approach. Although Harmonia Village has yet to officially accommodate residents, its features and care approach warrant exploration in this thesis. The incorporation of the Hogeweyk model in a care home setting in the UK demonstrates the potential for adapting and implementing innovative care practices to improve the lives of individuals with dementia.

Building on the foundation set by Hogeweyk, Harmonia Village integrates personal experiences and histories of its residents into its design and care approach. By recreating an atmosphere of normalcy and familiarity, it allows dementia patients to engage with activities and routines reminiscent of their past (Lennon, 2020). This adoption of the Hogeweyk concept in the UK signifies a shift in dementia care strategy, emphasising individualised and person-centred environments (Lomholt, I. et al., 2020).

Harmonia Village, in its adoption of the Hogeweyk model, also navigates this delicate balance between simulating a 'normal' life and meeting the distinctive needs of dementia patients. The central philosophy isn't about mere simulation but about creating an environment where residents can reconnect with significant daily rituals and movements that align with their personal history. It's not about replicating every brick and tile of their original homes but about bringing forward those elements of daily life that resonate with comfort, familiarity, and meaning. Through this method, Harmonia Village seeks to offer a person-centred approach, where care doesn't just treat the symptoms but nurtures the soul by bridging the past and present in a manner that values and respects each resident's unique journey.

Case Study 3: The Farah Specialist Centre for the Care and Rehabilitation of the Elderly, Kuwait

The third case study, The Farah Specialist Centre for the Care and Rehabilitation of the Elderly, was selected to examine how traditional and religious values influence dementia care in the MENA region (Al-Abdulwahab et al., 2017). Understanding the cultural and regional differences in dementia care is crucial due to the limited availability of care homes in the MENA region and

the cultural notion of ‘shame’ surrounding placing loved ones in a facility. This case study sheds light on the impact of cultural factors on care provision.

The Farah Specialist Centre is a testament to the MENA region's attempts to blend traditional values with contemporary care needs. In many parts of the Arab world, dementia care is complicated by cultural and religious beliefs, often leading to stigmatisation and the notion of 'shame' when seeking external care assistance. This facility seeks to challenge such perceptions, offering an environment where patients can receive specialised care whilst still respecting and honouring their cultural and religious backgrounds. Such initiatives are crucial for addressing the growing needs of the elderly population in the region, particularly in the context of rapidly evolving social and healthcare landscapes (Al-Abdulwahab et al., 2017).

The emphasis on mirroring a semblance of 'normal' life, as observed in the previous case studies, finds its unique interpretation in The Farah Specialist Centre. Within the MENA context, 'normalcy' goes beyond daily routines—it intertwines deeply with cultural and religious underpinnings. The centre doesn't just aim for a duplicate of previous living environments, but rather a rejuvenation of spiritual, cultural, and social aspects that were cornerstones of the residents' lives prior to dementia. The objective isn't to re-establish the confines of their former homes but to revive those deeply ingrained rituals, beliefs, and practices that anchor their identity and sense of self. By achieving this balance, The Farah Specialist Centre showcases how dementia care can be both culturally sensitive and modern, emphasising the individual's holistic well-being over the challenges posed by their condition. The selection of these case studies allows for a comprehensive understanding of different approaches to dementia care, considering both innovative models and cultural variations. These case studies provide valuable insights into the impact of location and cultural differences on care provision, contributing to the overall understanding of effective dementia care practices.

Figure 1 below shows the thesis structure that will be undertaken in this paper.

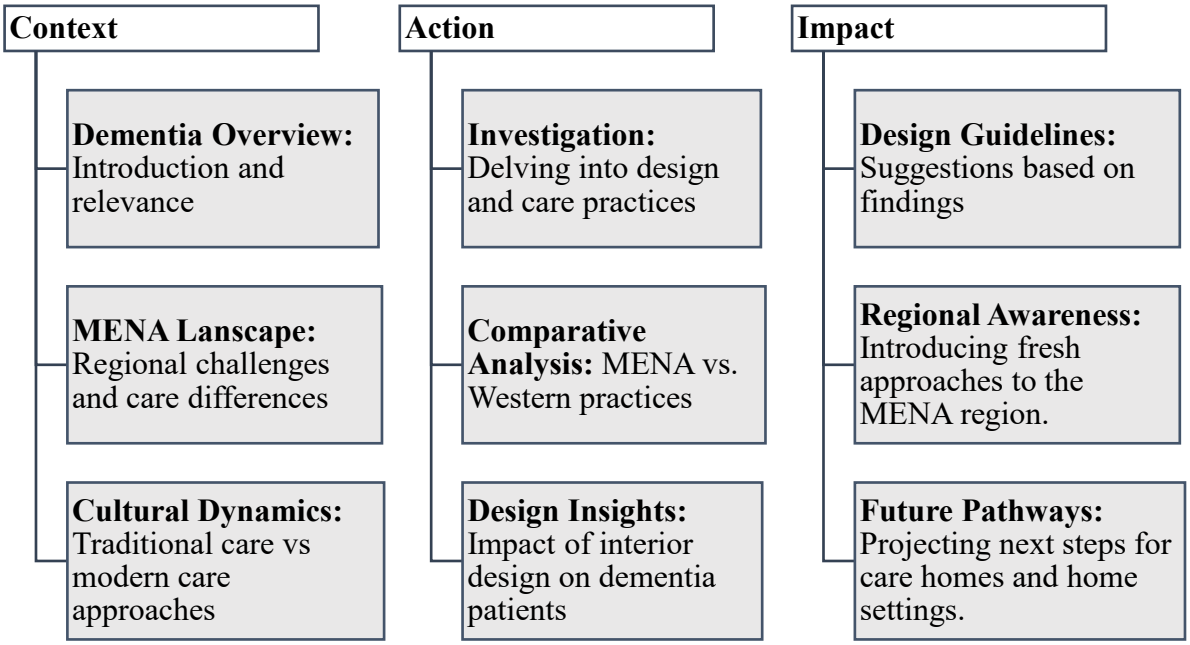


Figure 1. Structural Framework of the Thesis Progression

CHAPTER 2: METHODOLOGY

2.1 Introduction

This chapter outlines the methodological approach adopted to delve into the complexities of how diverse environmental and interior designs influence the well-being of individuals with dementia. Employing a qualitative lens, the research incorporates a mix of methods. This multifaceted approach not only facilitates a deeper understanding of the topic but also ensures ethical considerations are adhered to, especially when dealing with vulnerable populations like dementia patients. The subsequent sections detail the chosen methodological framework, the rationale behind certain methodological choices, and the influence of cultural factors in the research process.

2.2 Methodological Framework

The study adopts a qualitative research approach to glean insights into the effects of interior and environmental designs on dementia patients. This approach allows for a nuanced and in-depth exploration of the lived experiences of individuals, informed by their interactions with their surroundings. While phenomenology, a method typically used to understand human experiences, was evaluated, the focus of this research shifted to methods that are better suited for ethical considerations when dealing with dementia patients.

Instead, this research incorporates case studies, VR simulations, participant observation, and extensive literature review, which are more fitting to the research's goal and ethical considerations (Lawton, 2001; Marshall & Rossman, 2014).

2.3 Cultural Considerations

Culture shapes perspectives, influencing how environments are perceived, designed, and experienced. This research recognises the importance of cultural considerations in the exploration of dementia-friendly spaces. As such, it includes case studies from Northern Europe (UK and Netherlands) and the Middle East (Kuwait). These case studies from different cultural contexts provide an opportunity to observe and reflect on the cultural particularities and differences. This gives a broader perspective on how varying cultural contexts shape care home environments, revealing design elements that are universally beneficial as well as those that are contextually sensitive (Moos & Lemke, 2016).

2.4 The Role of Virtual Reality

Virtual Reality (VR) provides an innovative method for research, enabling a personal experience of dementia. As described by Park et al. (2019), VR is a computer-generated simulation that captures a collection of sights and sounds, imitating a genuine location or circumstance. This study utilised the Dementia Virtual Reality Tour Bus, a simulator that mimics the cognitive and sensory experiences of dementia.

The VR experience provides an immersive understanding of dementia by challenging participants with tasks made difficult by sensory impairments. The simulation allows individuals

without dementia to gain firsthand insight into the cognitive and emotional challenges that dementia patients face (B2B, 2021).

2.5 Data Collection and Case study Analysis

This study began with an in-depth literature review, drawing data from a variety of sources such as academic articles, design guidelines, and Stirling University's audits (Stirling University, 2021). This data was then classified and arranged into sections to facilitate comparison and synthesis.

Further, the experiences and insights gained from the Dementia Virtual Reality Tour Bus served as primary data, shaping the research and providing a deeper understanding of the lived experience of dementia.

2.6 Conclusion and Participant Observation

In this study, there was a significant emphasis on the examination and critical review of previously published material. Specifically, the research delved into accounts from participant observation and focus group discussions that were documented in existing literature, rather than orchestrating new participant observation sessions. Furthermore, the integration of VR simulations into the research methodology was pivotal. Such simulations provide a cutting-edge, immersive perspective on the lived experiences of individuals with dementia, granting an invaluable window into their world. By combining these methods—review of past observations and discussions, and contemporary VR simulations—a robust and multifaceted understanding was achieved. This comprehensive approach illuminated not only the personal journeys of those living with dementia but also shed light on how different design elements, both in care homes and in simulated environments, can significantly influence and shape these experiences.

The use of such varied methods, together with the insights gained from the VR experience, enable this research to provide a holistic understanding of the subject, contributing valuable insights to the field. In relation to phenomenology, this research dips its toes into the vast ocean of understanding individual experiences. While not directly employing phenomenological methods, this study acknowledges its importance. In this thesis, phenomenology is referenced as an approach to better understand the meanings held by those living with dementia and how such insights can guide space design in domestic settings. It further reviews studies that have utilized this approach. Such a perspective is paramount for designers aiming to enhance the well-being of their clients by diving deeper into the intricacies of individual experiences, emotions, and memories.

CHAPTER 3: REVIEW OF THE LITERATURE

3.1 Introduction of the Literature

The potential for adequate design to better living conditions for dementia patients is now widespread knowledge and provides much relevant literature. There has been a substantial increase in the amount of research into how design can increase the well-being of those living with dementia. This literature review in this paper is an investigation of how different design strategies for dementia environments are being applied in different countries, and looks into how cross-cultural examination can lead to meaningful learning.

This section of the thesis examines spatial design strategies that contribute to the reduction of anxiety in dementia patients. Building upon the introduction, this chapter presents a comprehensive investigation that encompasses various types of studies and provides qualitative evaluations of each, ensuring a thorough exploration of the topic at hand. This literature review aims to look into different social, ethnographic/geographic ways that can influence designing for dementia, specifically in Europe and the MENA region to assess what is there needed.

3.2 Dementia: The Scientific Explanation

The most established sources of knowledge on dementia are the World Health Organization, The Alzheimer's Society, and Stirling University's Dementia Service Centre. The World Health Organization offers national strategies that can address dementia issues in a way that is specific to each nation's culture and demographics. The WHO has a global plan for dementia and wants nations to create national dementia strategies by 2025 (*University of Stirling – DSDC*).

The Alzheimer's Society is an association in the UK that disseminates knowledge and offers professional counsel and advice. As an organization, the Alzheimer's Society concentrates on the issues that can have the greatest impact on dementia sufferers. This is used as a source of information on what dementia entails and how the disease impacts people (*Alzheimer's Society*, 2020).

Stirling University's Dementia Service Centre is a global hub for knowledge sharing and research impact committed to enhancing the quality of life for those living with dementia. It is cited in this study as a source that offers expertise on applying their design criteria to account for dementia (*University of Stirling – DSDC*).

The seminal text on dementia is considered to be *The American Journal of Alzheimer's Disease & Other Dementias* because it targets professionals who provide care to people with dementia, Alzheimer's disease, and clinical depression as well as other experts who look after patients with dementia and their families. The goal of the journal is to offer helpful knowledge regarding medical, mental, and nursing topics. This journal offers a range of information on the neurological factors of dementia and places the journalist 104th out of 185 journals in the field of "Clinical Neurology," according to the Journal Citation Reports and 27 of the 45 journals in the "Geriatrics & Gerontology" category.

Dementia is currently the seventh leading cause of death among all diseases and one of the main causes of disability and dependency among older people worldwide. (World Health Organization, 2021) Around 55 million individuals worldwide have dementia, and more than 60% of them reside in low- and middle-income nations. It is anticipated that this figure will increase to 78 million in 2030 and 139 million in 2050, because the proportion of older people in the population is rising in almost every country.

Despite the difficulty in obtaining data for statistics in the MENA region, the Global Coalition on Aging projected in 2018 that there were approximately 2 million people with dementia in the Middle East. (Jones, 2022) In Europe, there are more than 6 million people with dementia (Alzheimer's Society, 2020).

This illness aggravates the effects of these sensory changes and modifies the perception of stimuli as many sensory changes do occur with age, and dementia worsens it. People with dementia have varying sensitivities to indoor environmental conditions, which can lead to problematic behaviour with painful symptoms for both people with dementia and their family caregivers. Some people with this disease have no control over their emotions and may change their personalities. The severity of dementia varies from the mildest stage, which is just beginning to affect a person's function, to the most severe stage, which is completely dependent on others for basic living activities. (Alzheimer's Society, 2020)

Dementia Types:

One of the most common types of Dementia, and what is usually linked when one hears about Dementia, is Alzheimer's disease. Dementia and Alzheimer's disease are not the same. Dementia is a general term for cognitive decline and includes memory loss and difficulty thinking. Alzheimer's disease is a disease that affects the brain and causes dementia. Alzheimer's disease is just one of many types of dementia, each with its cause. This brain disorder slowly destroys memory and thinking ability, and ultimately even the ability to perform the simplest tasks. Late-onset symptoms emerge in the mid-60s for the majority of patients with this condition. The brain is made up of billions of nerve cells that are all linked. In Alzheimer's disease, the connections between these cells are lost. This is because proteins accumulate to form anomalous structures called "plaques" or "entanglements." Eventually, nerve cells die, and brain tissue is lost. People with Alzheimer's disease are not able to send signals between the cells because they have fewer of these "chemical messengers" in their brains. (Alzheimer's Society, 2018)

Several medications that are broadly used for the disease, help by raising the levels of chemical messengers in the brain, and these relieve the symptoms to some extent. It is a progressive disease which means that more and more parts of the brain will be damaged over time. When this happens, more symptoms occur and worse (Alzheimer's Society, 2019). Poor design for those with dementia makes it harder for them to get through each day. Creating an atmosphere that can alter this is crucial to care homes and one's own home.

Table 1 details the different types of dementia, their causes, and symptoms, as these help form the criteria for design.

Table 1: Different types of Dementia that would all fall under the same design guidelines

Type of Dementia	**Causes**	**Symptoms**
Vascular dementia	Damage to the vessels that supply blood to your brain. This can cause strokes or affect the brain in other ways.	Difficulties with problem-solving, slowed thinking, and loss of focus and organization. These tend to be more noticeable than memory loss.
Lewy body dementia	Lewy bodies are abnormal balloon-like clumps of protein that have been found in the brains of people with Lewy body dementia, Alzheimer's disease, and Parkinson's disease. This is one of the more common types of progressive dementia.	Acting out one's dreams in sleep, seeing things that aren't there (visual hallucinations), and problems with focus and attention. Other signs include uncoordinated or slow movement, tremors, and rigidity (parkinsonism).
Frontotemporal dementia	A group of diseases that is characterized by the breakdown of nerve cells and their connections in the frontal and temporal lobes of the brain. These are the areas generally associated with personality, behaviour, and language.	Behaviour changes, personality changes thinking, judgment, language, and movement.
Mixed dementia	When a person has more than one type of dementia.	Symptoms may vary, depending on the types of brain changes involved and the brain regions affected.

Note: Data are from ("Dementia, Mayo Clinic" 2021)

When it comes to the different types of dementia, all of them do get progressive. The symptoms can start mild at first, but they do get worse with time over numerous years. The symptoms include problem-solving, and problems with memory, thinking, and language, which often changes in emotion, behaviour, and/or perception. The stages can be identified as:

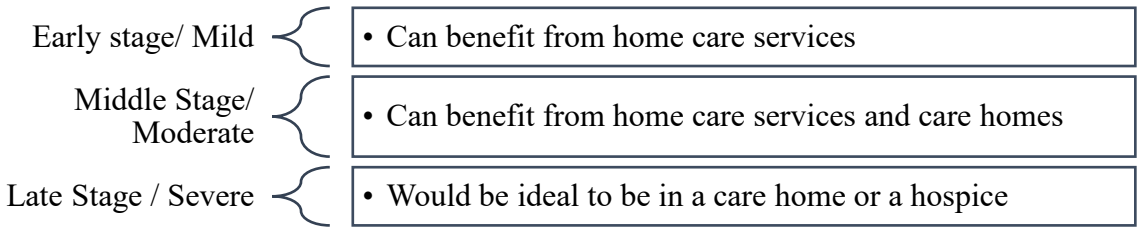


Figure 2. Stages of Dementia

These stages can be used to recognize how dementia can change over time and help people prepare for the future. The stage also serves as a guide to when certain treatments are given, such as Alzheimer's disease medications are probably the most effective. (Alzheimer's Society, 2021)

Building on the foundational knowledge of dementia stages, it is crucial to acknowledge ongoing medical research efforts in this realm. Current advancements suggest that in the not-so-distant future, refined treatments may significantly slow down the progression of dementia. This would mean that individuals could experience milder symptoms for extended periods before any pronounced deterioration in their health occurs (Alzheimer's Society, 2021). This evolving landscape has profound implications for the design of care environments.

The possibility of prolonged periods of milder symptoms necessitates a rethinking of residential design. Care spaces must be dynamic, adapting to residents' evolving needs over time. This perspective aligns with the notion of allowing individuals to remain in familiar environments for longer durations, potentially drawing inspiration from MENA cultural practices that emphasize domestic care (Al-Abdulwahab et al., 2017). As medical treatments progress and the lived experience of dementia potentially extends in its milder stages, the design paradigms must similarly advance to offer environments that maximize the well-being of residents over longer timeframes.

This thesis offers guidance on all stages, but primarily the middle/moderate stage.

These different stages of dementia will be examined in terms of how they can be suited to different environments. Some spaces can be suitable for a person, but that also depends on the severity of the stage of dementia they are in. Unfortunately, if one is going through the most severe stage of dementia, they are most likely going to be unaware of their environment and would need 24-hour care.

3.3 Dementia: Awareness for Better Wellbeing through Design

Dementia is frequently misunderstood, which leads to stigmatisation and obstacles to diagnosis and care. Spreading awareness of dementia globally will encourage more designers and researchers to investigate methods to improve the quality of life for those affected. While dementia affects the body physically and mentally, relief from its symptoms doesn't always need medication. A comforting environment can significantly reduce discomfort and stress in daily activities.

Educating the public about dementia can lead to the formulation and implementation of new policies, ensuring spaces are dementia friendly. Proper understanding facilitates better interactions with dementia patients, reducing potential distress. If individuals aren't aware of dementia symptoms, they might unintentionally provoke anxiety in those affected. Conversely, when people are educated about dementia, they can facilitate smoother interactions, acknowledging the cognitive disabilities of those with dementia and making their environment less stressful.

Dementia in old age is a global phenomenon with variations in prevalence and manifestation due to socioeconomic and cultural factors. Although researchers in the medical field have established the commonality of dementia, understanding its variation between cultures and ethnic groups remains a challenge. Since the incidence of dementia is rising, innovative strategies are essential to enhance the quality of life for those living with the condition.

Most of the findings on dementia come from Western research, shaping it primarily as a Western diagnostic category. Nonetheless, the World Health Organization has sought to standardize the definition of dementia to be universally applicable, encompassing a broad spectrum of symptoms and experiences. They've developed culturally fair diagnostic guidelines, criteria, and tools, initiating research to understand cultural factors influencing dementia, ensuring diverse cultural experiences are considered (Henderson, 1993, p. 2).

Western countries, particularly the UK, have many organizations specializing in dementia care, spanning from design considerations to social interaction initiatives. In contrast, resources from the Middle Eastern/North Africa region are less prevalent.

Raising awareness for dementia can manifest in multiple ways: fundraising campaigns, volunteering, education, and more. Such efforts not only make spaces more dementia-friendly but also educate people on early dementia signs. Even though awareness doesn't prevent dementia, it aids in preparation and understanding of the condition. Organizations like Dementia UK, Alzheimer's Society, and the University of Stirling's Dementia Service Centre contribute significantly to advancements in care.

The University of Stirling has established a robust platform that this research draws upon. DSDC is a pioneer in designing services and environments for people with dementia. This centre consists of clinical specialists, architects, and designers emphasizing the significance of design for dementia patients. Their work has yielded a unique understanding of supportive measures for those with dementia (Greasley-Adams et al., 2012).

Besides physical environment considerations, there are also standards, practices, and professional staff behaviours that influence how people with dementia interact within their living spaces. In terms of views regarding dementia, as well as clinical symptoms and risk factor profiles, developing nations differ significantly from Western countries, as they have poorer education and socioeconomic position, a larger cardiovascular disease burden, and genetic diversity. According to new research, ethnicity, genetics, epigenetics, environment, culture, and neurobiology, all have a role in dementia manifestations. As a result, studying dementia in a variety of settings, including from a broader global viewpoint, is critical for gaining a full

understanding of the condition and identifying fresh remedies. Through an integrated approach founded on hard scientific data, a world approach to dementia provides a chance to comprehend, manage, coordinate, and begin to prevent dementia. (Alladi & Hachinski, 2018)

In the paper 'Building Design for People with Dementia: A case study of a UK care home. Facilities', Fisher examines the impact that designing a building has on the quality of life for residents living in a care home with dementia. Participants in semi-structured interviews were asked about the effects of building design elements on occupants' quality of life. It was discerned that buildings for individuals with dementia must account for a multitude of elements. On one hand, the environment should be tailored to offer a secure and liveable setting for residents or relatives, ensuring their safety, comfort, and well-being. On the other, it should also provide functionally efficient spaces that offer staff a conducive and comfortable workspace. These represent the two conflicting needs: prioritising the well-being of the dementia patients and ensuring the operational efficiency for the caregiving staff. Striking a balance between these needs is essential, often necessitating solutions tailored to an individual's specific level of dementia. From the study, participants underscored the importance of three design aspects: 1) a secure atmosphere, 2) assistance with wayfinding, orientation, and navigation, and 3) access to nature and the outdoors. (Fisher et al., 2018)

Elements such as the orientation of the building or what time the sun enters the room must be considered in a care home as this lighting has a great impact on the mood of the residents. This work reports on building design for people with dementia and can be used by policymakers and building contractors to increase knowledge in this area. The study concludes with future research directions that should aim to offer evidence-based research rather than perceptual research and extend this pioneering research to more people living with dementia in nursing homes and at home.

Dementia studies in Arab-Muslim populations are underrepresented in different forms of literature and/or on any social media platform. The lack of awareness is caused by not having enough people talking about it, and not having it spread through online sources or taught in education, as it is associated with getting older, and not its disease.

In the MENA region, dementia care is primarily provided at home by family members, domestic workers, and private nurses. Domestic carers have diverse levels of comprehension and knowledge of dementia, which are due to socio-cultural and religious variables. With so much of the weight resting on the shoulders of unseen caregivers such as female family members, their needs must be examined more closely to create the best possible setting for caring for the dementia resident/patient. (Kane et al., 2021)

While there are several large religious minority groups in the region, most of the population is Muslim and speaks Arabic – which is the universal lingual in the MENA culture. In many Arab countries, Islamic ideas and traditions serve as the foundation for social order; despite the religion of the population, which shapes many of the region's generational support systems. Women are typically portrayed and expected to be the primary source of emotional and care assistance in such situations. However, Islam imposes a significant duty of care for the elderly,

particularly financially, on male sons (El-Ashi 2007). The same code of conduct could explain why older people are so involved in providing financial and domestic assistance to their children, including childcare, where an unspoken system of expectations and duties exists (Sibai and Yamout 2012). However, it is the day-to-day and hands-on care responsibilities that are often implicitly, if not expressly, assigned to daughters or daughters-in-law. While such cultural norms remain at the foundation of Arab society, the practicality of women providing senior care while also fulfilling their traditional roles as spouses and mothers and meeting other conflicting and increasingly required labour participation tasks can be difficult. There are significant dynamics that call for new policy and governmental support that addresses the care requirements of older persons outside the family sphere, as life expectancy increases and societal changes occur. Even when hospitalization is required, relatives often give bedside or personal care, such as assistance with eating and washing, rather than nursing professionals (Sibai and Yamout 2012). Foreign live-in domestic employees provide a solution to elder care in several of the wealthier Gulf States, albeit uncontrolled, creating several safeguarding issues (Shah et al. 2012).

Very little data on the levels or use of care facilities, long-term nursing, or social care in the area exists, with research focusing mostly on Egypt, Kuwait, Lebanon, and, more recently, Jordan (Sibai et al. 2004; Sinunu et al. 2009). Some universities and voluntary sector projects in several Arab nations, particularly Egypt and Tunisia, play a vital role in providing basic health and care services to poorer older people, mainly staffed by students and volunteers (UNFPA 2012). Policies could expand and support them, or financial incentives in the form of tax relief or other advantages could be granted.

Another set of policies could be geared toward promoting or collaborating with informal family support. Although several of these initiatives target and strive to promote work-life balance in general, they rarely have a clear focus on older people's care, even though they may have a favourable impact on informal caregivers. Given the many roles that women play and their growing labour involvement, they may be particularly important.

To the evidence from multiple sources, care services in the MENA region are lacking not only in services but in resources provided for the public (World Health Organization, 2017). The subject is not talked about very often and that only shows how it lacks knowledge in the community. About 2 million people in the Middle East suffer from dementia but this information may be lacking as it was very hard to come by (Alzheimer's Disease International, 2016). It is not often an illness diagnosed easily by general doctors. Dementia in the MENA region may be associated with getting old and being forgetful, and that begins to show the difference between the European Region and the MENA Region. (Al Sinawi, 2018)

Geriatric medicine education and specialization are lacking in all Arab nations. (Abdelmoneium & Alharahsheh, 2016). Nursing facilities are inadequate to care for elderly people when they are available. Elderly people in the Gulf Cooperation Council nations are often treated by general internists or physicians and admitted to acute care hospitals due to a lack of adequate geriatric services. The majority of elderly people complain that advanced home services are inadequate or non-existent and that caregivers don't receive enough social and financial support. There is a

need to establish creative care models, enhance recruitment and retention, and enhance education and training. (Abyad, 2022)

Geriatrics, however, lacks the appeal of other specialities and is a relatively young profession among Middle Eastern medical school graduates. Geriatrics is recognised as a separate speciality in Bahrain, Egypt, Iraq, Jordan, Lebanon, Morocco, and Syria. Many Arab nations have a dearth of geriatricians. Most Arab nations have less than 1 geriatrician for every 100,000 older people, except Bahrain (where there is 1 for every 8,250 persons 65 or older) and Lebanon (where there is 1 for every 20,000 people 65 or older). Older patients are frequently treated by general internists or general practitioners due to a lack of qualified specialists, who are unprepared to handle the specific problems and demands that older patients have as they age. (Abyad, 2022)

In contrast, geriatric care in the Western region is more developed. The European Union Geriatric Medicine Society (EUGMS) was founded in 2001 with the goals of developing geriatric medicine in Europe as a stand-alone speciality caring for senior citizens with age-related diseases, assisting in the availability of these services to all European citizens, assisting in the development of health services appropriate for an ageing population, and promoting education and ongoing professional development. (Soulis et al., 2020)

Dementia Prevalence, Care Arrangement, and Access to Care in Lebanon: A Pilot Study

As mentioned at the start of this chapter, there are few dementia prevalence studies in North Africa and the Middle East. In Lebanon, a pilot research was done to measure dementia prevalence, with cases being identified using the Arabic-validated 10/66 Dementia Research Group (DRG) diagnostic evaluation. Care arrangements and access to care were also investigated in the study. Through multistage cluster sampling, a random sample of 502 people aged 65 and their informants were selected from the governorates of Beirut and Mount Lebanon. Relatives were the primary caregivers for dementia patients at home. There was virtually little formal care available. Within the worldwide range of estimations, Lebanon has a high prevalence of dementia. These are the first evidence-based statistics on illness burden and care obstacles. (Phung et al., 2017)

This article reveals that care for those with dementia does not come easy but is presented as a burden. Caring for a person with dementia itself can be a full-time job, to have to incorporate that into their daily lives can cause a weight on their shoulders, especially with the pressure that any mistake that they do can risk the lives of their loved ones. They are not trained professionals and do not get a manual on making it easier for them. The unfamiliar disease in the MENA region is not presented in a way that would educate on the specifications of the illness and of mindfulness that can be bought to society on this cause.

It is quite common for bias to be included in articles, especially those of a sensitive nature that is linked to personal beliefs and traditions. Nevertheless, as this article was written by multiple authors, both Middle Eastern and Western, the chance of bias based on personal experiences is low, and this article is purely stating facts that they have collected from their questionnaires.

3.4 Dementia: World Health Organization's Approach

The World Health Organization offers helpful advice to Member States for developing and implementing a dementia plan. Governments have significant obstacles in responding to the rising prevalence of dementia. To enhance the care and quality of life of persons with dementia and family carers, a comprehensive public health strategy is required. Either a stand-alone dementia policy or plan, or an integration into current health, mental health, or old-age policies and plans, should set forth the goals and objectives of the strategy.

Below is the definition of the dementia plan that the WHO published in their guide on *Towards a Dementia* plan, 2018:

A dementia strategy acknowledges the importance of senior citizens and people with dementia to society. It also makes the case for the necessity of policy changes targeted at improving dementia prevention, treatment, and care for patients and their caregivers through improved integration of the social and health sectors (i.e. long-term care). The basis for coordinated action to be taken by the government and non-governmental partners is laid out in a dementia plan, which is a written document.

A thorough dementia plan outlines a future vision and a strategic framework, which highlights a shared set of values and goals that direct action. It outlines targets to guide resources towards attaining goals and gauging impact, defines and prioritizes action areas, and provides coordination responsibilities and channels. Together, the key elements of a dementia plan work to defend the human rights of individuals with dementia, their caregivers, and families, fulfil population needs, and lessen the burden of dementia. They also work to increase public knowledge of, and foster mutual understanding about, dementia. (*Towards a dementia plan: A WHO guide* 2018)

The worldwide action plan on the public health response to dementia 2017–2025 was approved by the seventieth World Health Assembly in Geneva, Switzerland, in May 2017. The adoption of the global dementia action plan shows a commitment on a worldwide scale to enhancing the lives of those with dementia, as well as their caregivers and relatives. Similar to other global dementia action plans created by the WHO, it places a strong emphasis on multisectoral collaboration, equity, human rights, empowerment, prevention, and service integration across the care continuum. (*Towards a dementia plan: A WHO guide* 2018)

Seven action areas are listed in Table 2. For the global dementia action plan.

Table 2. Global Dementia Action Plans

Action	**Explanation**
Priority one for public health is dementia	Urging governments to take action
Friendliness and awareness of dementia	Educating the public on dementia
Reducing the risk of dementia	Change of lifestyle to reduce dementia

Diagnosis, care, and support for dementia	Care homes, support, and volunteer
Assistance for dementia caregivers	Helping caregivers and ensuring their mental well-being as well
Dementia information systems	Guidebooks on care for dementia as well as support for care homes
Innovation and research in dementia	Papers such as this one, investigate different methods on bettering the life of those with dementia

Note; retrieved from WHO global dementia action plans

As dementia is growing throughout the population on earth in the upcoming years, WHO is starting to look at it as an epidemic. More countries need to have a plan to find ways to help people live with it, not only through research but through raising awareness in countries where their citizens do not have a lot of knowledge about dementia.

3.5 Dementia: How Culture Has an Impact on Living with Dementia

Every society, ethnic group, and nation has its own unique cultures, views, and meanings. Some cultures occasionally converge with society or with other nations, however, each has its unique ways to emulate, respect, and recreate it. According to the Encyclopaedia Britannica, the definition of culture is:

"… language, ideas, beliefs, customs, codes, institutions, tools, techniques, and works of art, rituals, and ceremonies, among other elements. The existence and use of culture depend upon an ability possessed by humans alone. This ability has been called variously the capacity for rational or abstract thought, but a good case has been made for rational behaviour among subhuman animals, and the meaning of abstract is not sufficiently explicit or precise." (A. White, 2022)

In other words, culture is a broad term that encompasses the social behaviour and norms of human society as well as the knowledge, beliefs, arts, rituals, laws, and habits of the people who make up these communities.

In Europe, there exists a complex interplay of cultural attitudes towards residential care for elderly individuals and the concept of "giving up" one's relatives to such facilities. Research has shown that cultural perceptions and societal norms greatly influence how care is perceived and delivered in European countries (Jones, 2018). The prevailing sentiment often revolves around concerns of abandonment, guilt, and a perceived lack of filial responsibility when an elderly family member is placed in residential care (Smith, 2016). These cultural attitudes and stigmas associated with residential care shape the choices and decisions made by families and individuals when it comes to eldercare.

To comprehend the approach to elderly care in the Middle East and North Africa (MENA) region, it is vital to contextualize it within the broader understanding of cultural norms and values. In contrast to some European attitudes, the MENA region places significant emphasis on

familial responsibility and the obligation to care for elderly relatives (Haque & Al-Khalifa, 2019). Caring for elders within the family unit is seen as a fundamental cultural duty, deeply rooted in traditions and religious beliefs (Abu-Ras & El-Geledi, 2015). Failure to fulfill this duty may bring about a sense of shame and societal judgment (Bentley & Mohammed, 2018). Understanding these cultural perspectives is crucial when examining care provision models in the MENA region, as they significantly influence the choices and decisions made by families and individuals regarding the care of their elderly loved ones.

Therefore, to effectively address the provision of elderly care in the MENA region, it is necessary to acknowledge and appreciate the cultural attitudes and societal expectations surrounding caregiving and the avoidance of residential care. Developing an understanding of these complex dynamics will help inform the design and implementation of care models that align with cultural norms and values, while also ensuring the well-being and quality of life for elderly individuals (Almalki, Fitzgerald, & Clark, 2011). By recognizing the influence of cultural attitudes and the notion of shame on caregiving decisions, policymakers and healthcare professionals can work towards developing comprehensive and culturally sensitive eldercare strategies that effectively meet the needs and preferences of individuals and families in the MENA region.

When designing a space for those with dementia, the hospital culture is considered, as dementia is associated with illness and the need for medical equipment, as well as staff members that will offer care. The space will be created based on the needs of the user, and the function of the space plays a role in how the design is going to be implemented by the user.

In this thesis, *The Social Care Institute for Excellence*[2] is used as a source to look into why culture is important in a care setting that was posted on October 2020. The Social Care Institute for Excellence (SCIE) creates and spreads knowledge regarding ethical social work and care practices. To create guidelines for good practice and suggestions for more research to inform good practice, the Institute identifies relevant data, research, and examples of good practice.

On their user guideline, the SCIE list examples of how care workers need to assess people that come into care homes for evaluation, and most of the questions link to their ethnicity and background. This information as they state is quite useful when pairing up residents with care workers as they can be from similar backgrounds which can create a more understanding, and less stressful, situation for the resident with dementia.

It's also crucial to recognise that the risk of any label is that it leads to preconceptions. For many cultures and faiths, there are stereotypes; nevertheless, rather than letting preconceptions guide a decision, learning about someone's true preferences should be a priority. (*Cultural and religious needs of People with Dementia,* 2020)

Moreover, the WHO's emphasis on a comprehensive approach to dementia care brings attention to the inherent complexities of this topic. This is especially true when considering the cultural

[2] "SCIE improves the lives of people of all ages by co-producing, sharing, and supporting the use of the best available knowledge and evidence about what works in practice. "

diversity of Member States, which plays a significant role in shaping local healthcare practices and attitudes towards dementia. The cultural background can influence the interpretation and understanding of dementia, thus affecting care practices, stigmatization, and community support (Daker-White et al., 2002). Therefore, the implementation of a WHO dementia plan needs to account for these cultural nuances to ensure culturally sensitive care and improve health outcomes for individuals with dementia across different cultural groups.

This cultural sensitivity has far-reaching implications on the design of dementia care homes. For instance, specific design elements might prove beneficial in one cultural context but ineffective in another, depending on culturally-specific attitudes and practices. This is one of the areas where the current research seeks to fill the gaps and provide culturally specific recommendations for dementia care and care home design.

Furthermore, the WHO's action plan also recognises the role of caregivers in dementia care, which underlines the need to explore personal residential experiences in providing care for dementia patients. These experiences can vary substantially across cultures and countries, and understanding them can inform effective strategies for supporting caregivers and enhancing the quality of life for those with dementia.

Therefore, by examining the WHO's approach and the gaps identified, this thesis aims to provide a more nuanced understanding of dementia care in various cultural contexts. It seeks to develop recommendations for care home design and caregiving strategies that respect and leverage these cultural diversities and personal residential experiences.

3.6 Dementia: How it Impacts Anxiety

According to the Oxford Dictionary, anxiety is defined as *a mental illness that causes somebody to worry so much that it has a very negative effect on their daily life.*

People who have previously experienced anxiety are more likely to do so again. However, those who are just beginning to develop dementia may experience anxiety that is directly related to their concerns about their memory and the future. Compared to those who have Alzheimer's disease, those with vascular dementia frequently have more insight into and awareness of their situation. This may help to explain why anxiety is more prevalent in patients with vascular dementia. A lack of individualized care and unmet requirements may contribute to the anxiety experienced by residents of care facilities. For instance, they might lack a regular conversation partner or afternoon hobbies. People with dementia become more confused, forgetful, and less able to reason as their illness worsens. Anxiety may result from some people's inability to make sense of the world. (Alzheimer's Society, *Anxiety and Dementia* 2022)

The person with dementia themselves is the most frequent source of information to ascertain the presence of an anxiety condition in the general population. This choice might not always be the best one in dementia cases because some people have trouble communicating and remembering their symptoms. Some authors have opted to just use caregiver reports to circumvent these challenges. This approach may be effective when the primary symptom is behavioural (e.g., avoidance in specific phobia). However, in the case of GAD, the main symptoms of worrying

and having trouble controlling the anxiety are private in nature, so caregivers may not be aware of them, especially if the patient and caregiver relationship is tense. Furthermore, several of the outward signs of anxiety, including difficulty concentrating, are sometimes confused with dementia-related symptoms. Thus, when patients are too impaired to communicate adequately, the only option may be to exclusively rely on caregiver report. (Seignourel et al., 2008)

Anxiety in people with dementia is a very common mental strain that they go through, it is also associated with poor outcomes and quality of life. Being able to identify anxiety in individuals that suffer from dementia is quite tricky as it overlaps between the symptoms of depression, dementia, and anxiety. (Goyal et al., 2016) However, several instruments are used to access anxiety in people with dementia, this includes general neuropsychiatric instruments and two scales designed specifically for this use. As these instruments are reliable to assess anxiety in a person with dementia, the validity of the tests has not been sufficiently examined which may make it quite difficult to differentiate between anxiety symptoms and depression. Anxiety can occur in different types of dementia, for example, it's more common in vascular dementia rather than in Alzheimer's, and it decreases in the severe stages of the disease. Social and environmental factors play a huge role in the levels of anxiety within a person. (Seignourel et al., 2008)

Individuals with dementia encounter a myriad of psychological and biological challenges that contribute to anxiety. This anxiety can potentially exacerbate the symptoms of dementia, amplify the need for medication, and further burden their physical health. The stress of losing one's control, ability to cope with daily living, and fear of an uncertain future can be intense. Despite its significance, anxiety, as a component in the treatment of dementia, is under-researched compared to other behavioural and psychological symptoms of dementia (Kwak et al., 2017).

Understanding the relationship between environment, quality of life, and anxiety levels is fundamental. While designing spaces specifically tailored to an individual's needs may not guarantee a reduction in anxiety or medication use, the objective remains to minimise potential stressors in the environment. Through careful design, the intention is to alleviate elements that may cause distress, thus creating a more harmonious and supportive environment for individuals with dementia.

Historically, research from approximately two decades ago predominantly focused on the effect of specific design elements, particularly as they related to controlling movement in dementia care environments.

For example, Dickinson, McLain-Kark, and Marshall-Baker (1995) investigated the role of visual barriers in preventing dementia patients from leaving care units. Their study found that by introducing simple measures such as a closed blind for the window and a cloth barrier for the door, exiting was decreased by 96% and 44%, respectively. From these results, they recommended that doors be designed with colours that blend into their surroundings and have handles that do the same, particularly in areas where controlling exit behaviours is a concern (Bowes & Dawson, 2019).

Similarly, Hewawasam (1996) explored the perception of two-dimensional floor grid patterns by dementia patients. It was observed that these patterns were often seen as barriers by some individuals, especially those with Alzheimer's Disease (AD) dementia, and this led to a decrease in wandering behaviours. During a trial with 10 participants, while the grid patterns effectively aided those with AD dementia, the results were less promising for those with other types of dementia (Bowes & Dawson, 2019).

This theme is continued in Price et al, 2001's Cochrane review, which sought to determine whether arbitrary restrictions may stop dementia patients from roaming. When they refer to "subjective barriers," they are referring to strategies other than locked doors that have been touted as preventing people with dementia from attempting to open doors or enter specific spaces. These strategies include (but are not limited to) floor patterns that resemble barriers (as in Hewawasam's work; Hewawasam, 1996), mirrors on doors, door camouflage (as reported by Dickinson et al., 1995), and blocking the view through at the time, they couldn't find any RCTs or other kinds of controlled trials. The majority of the experimental studies that were discovered had an unacceptable bias, the outcomes were narrowly defined, excluding anxiety and distress, quality of life, and resources, and no research was conducted in participants' homes or with delirious subjects. They concluded that there was no proof that these subjective barriers worked due to the poor quality of the research. (Bowes & Dawson, 2019)

Recent studies adopt a more comprehensive viewpoint. For instance, Yao and Algase (2006) investigated the connections between wandering behaviour and settings in care homes. They utilized a scale to assess the "ambiance" of the care facility, or how "soothing and engaging" it was. They claim that their results corroborate earlier research between boredom and roaming. We believe that this study still has some issues because it believes that wandering is harmful while moving may be advantageous. (Yao & Algase, 2006)

Algase, Beattie, Antonakos, Beel-Bates, and Yao (2010) examined how environments affect "wandering" by examining what people often do in various settings. 122 participants from 28 care facilities participated in this study, which used quantitative methods to analyse data on people's movements and environmental factors such as location, light, sound, crowding, and ambience (an observer-defined subjective measure), with the help of prior literature. People were more inclined to walk around in brighter light, with varying sound levels, with other people present, and in engaging environments, according to scientists, who hypothesize that altering these variables could change people's behaviours. (Algase et al., 2010)

This chapter’s literature review contains components for designing a space that can reduce distress in those with dementia when doing daily tasks in their home.

Table 3 compares anxiety and dementia and how to differentiate between both for those with dementia.

Table 3. Anxiety VS Depression

	Anxiety	Depression
Symptom Persistency	Not persistent, often situational, in a secure environment, they often forget their anxiety	More or less persistent
Future Orientation	Usually worries about the future	More past-oriented often see no future or it is dark and hopeless
Response to care Intervention	Can be alleviated or reduced by care interventions	It may not be easy to alleviate only by care interventions
Mentation[3]	Often action-oriented, hyper-vigilant, and alert	More or less indecisive, apathetic, and slow
Facial Expression	Express less despair as compared to depression	Often have sad facial expressions
Motor	Often have an absence of latency, are quick in motions	Often motor impairment and self-blame
Sleep	Often have difficulty falling asleep at night	Often get up very early in the morning

Note: Data are from Dementia and Neurocognitive Disorders 2017; 16(2): 33-39.

The above states the reason why anxiety can be inflicted by dementia, is the fear of the unknown, fortunately, there are methods for reducing anxiety that does not require medication which as this paper will prove, accommodates the design to the need of the client. However, depression does require medication or different forms of therapy that design regrettably cannot fix. Creating an environment to fit one's needs will allow them to reduce the focus on elements in a space that would upset them or cause stress in any way.

A study by Goyal, A.R., Engedal, K. & Eriksen, S. in 2016, titled "Clinicians' experiences of anxiety in patients with dementia," investigated the impacts of anxiety on dementia. Despite the palpable prevalence and adverse effects of anxiety in dementia, it is often overlooked by both caregivers and medical professionals (Seignourel et al., 2008). The reasons for this oversight can be multifaceted:

1. **Coexistence of Anxiety and Dementia Symptoms**: Patients with dementia might manifest symptoms that mimic anxiety, such as restlessness, fatigue, and concentration difficulties without genuinely experiencing anxiety (Seignourel et al., 2008).

[3] Mental activity

2. **Challenge in Differentiation**: The delineation between anxiety symptoms and other behavioural and psychological symptoms of dementia (BPSD) - like irritability, anger, wandering, and sleep disturbances - can be indistinct (McClive-Reed & Gellis, 2010).
3. **Misattribution of Symptoms**: There's a prevailing notion that anxiety symptoms are inherently linked to dementia. The hypothesis proposed by Porter et al. (2003) suggests that anxiety symptoms might be a universal outcome of advanced dementia. This idea, however, remains unsubstantiated (Starkstein, Jorge, Petracca, & Robinson, 2007).

In their study, physicians delved into the signs and potential causes of anxiety in dementia from both biological and psychological perspectives. Through a series of clinical cases, they illuminated the environment in which anxiety manifests in dementia patients. They underscored the challenges in accurately identifying anxiety symptoms within this demographic.

Three primary themes emerged:

1. **Coping with Unfamiliarity**: Patients grapple with trepidation when faced with new situations or environments.
2. **Navigating Daily Challenges**: As dementia progresses, daily tasks can become arduous, amplifying feelings of fear and disorientation.
3. **Physical Expressions of Fear**: Observable symptoms of anxiety can sometimes further complicate the emotional landscape.

Dementia invariably inflicts profound losses on patients. These losses span tangible day-to-day capabilities, but also affect deeper existential domains: an eroded sense of self, diminishing control over personal circumstances, and a vacated sense of meaning. The cognitive decline turns the surrounding world into an enigmatic maze, fuelling feelings of unease, disquiet, and restlessness.

While anxiety in dementia is often perceived as a reaction to loss and unease - and an integral symptom of the disease - mitigating these symptoms solely through care can be daunting, especially when coupled with depression. The need for validated, dementia-specific anxiety-screening tools is paramount for precise diagnosis and effective intervention.

> *"One phenomenon, which I recognize from many occasions with patients with dementia, is that the patient insists to go home ... to go to the other house, although the patient has been living in the same house for the last 40 years. One can just wonder what he or she means to go home. I think, they mean to go to their childhood home. They feel insecure, that's what it represents when they say they will go home." (Goyal et al., 2016)*

The quote illustrates a common experience among individuals with dementia - the longing to return to their childhood home. This desire is likely a response to feeling anxious or insecure in their current environment. For patients with dementia, their childhood homes often represent a time of security, familiarity, and comfort. The disconnection from their current surroundings can heighten feelings of isolation and fear.

Within the context of this thesis, this longing underlines the critical importance of understanding the cultural and emotional contexts of dementia patients. Their connection to their past, including their cultural upbringing, plays a crucial role in how they perceive their surroundings. By incorporating elements from their past and their cultural background, the design of their environment can be transformed into something familiar and comforting.

In turn, this has the potential to mitigate some of the anxiety that is often associated with dementia. By creating an environment that resonates with their past experiences and cultural identities, designers and care providers can promote a better quality of life for people with dementia. A home that is not just a physical space, but a space of emotional and cultural resonance can serve as an effective tool to manage some of the distress and symptoms associated with anxiety. This approach exemplifies the intricate interplay between dementia, anxiety, culture, and the design of living spaces.

People with dementia face both psychological and biological mechanisms because of anxiety. They may experience less coping ability in daily living and lose overview, control, and fear for the near future. Anxiety not only will worsen the symptoms of dementia but can also increase the amount of medication they will need to take, causing more strain on their physical health. Anxiety is an important factor that should be considered in the treatment of dementia, unfortunately, according to Kwak in the article “Anxiety in Dementia”, there is not much research on it compared to other behavioural psychological symptoms of dementia. (Kwak et al., 2017)

While anxiety in dementia patients has been extensively studied from clinical perspectives, the role of the physical environment in influencing these emotions remains under-explored. Researchers like Goyal, A.R., Engedal, K. & Eriksen, S. emphasise the challenges in distinguishing anxiety symptoms from other behavioural traits. However, linking this to interior design, it suggests that ambiguous or unfamiliar settings could exacerbate feelings of unease. Therefore, interior design shouldn't just adopt a one-size-fits-all approach. Instead, designers should be critical in choosing design elements, ensuring spaces resonate with a person's previous experiences and cultural context, which may mitigate feelings of confusion and anxiety. Testing such designs on real-world dementia patients would add practical validation to this analytical approach.

3.7 Dementia: Home Care VS Care Home Services

When it comes to the care of those with dementia, alterations in the space are required in their lifestyle to manage the changes and difficulties they go through. The options for these vary especially with the different stages of dementia, but all eventually require assistance doing daily tasks and which entail changes in their environment.

Home care services for people with dementia can consist of a variety of amenities that make it possible to ease the discomfort of dementia by still being in your own space. Home services can be modified to the extent of the stage of dementia in the client and also can be full-time or part-time. Some domestic services include non-medical support, such as support for daily chores.

Treatment by a licensed medical professional such as a nurse or physiotherapist in which is another type of home service. (Pike, 2019)

For example, a Scandinavian study was conducted in a Norwegian nursing home in 2019 by Ree, E. & Wiig, S. to examine the Employee's perception of patient safety culture. Most medical services are provided in primary healthcare settings, and more and more old people need these services in Norway. Still, research on patient safety culture in-homecare services and nursing homes is inadequate. The Norwegian study describes staff awareness of patient safety culture in Norwegian home care services and nursing homes, and how various aspects of patient safety culture can help explain overall patient safety awareness. There is a difference in the perception of patient safety culture between nursing homes and home care services. Staffing is important for patient safety awareness in both medical services. In-home care, teamwork seems to be a significant contributing factor to patient safety, and building sound teams with mutual trust and collaboration should therefore be an essential part of managers` work with patient safety. In nursing homes, the main focus when building a good patient safety culture should be on open communication, ensuring that staff`s ideas and suggestions are valued. (Ree & Wiig, 2019)

This study shows that patient safety culture explained a high percentage of the variance in overall perceptions of patient safety in both home care and nursing homes. However, the results revealed some notable differences between nursing homes and home care services in terms of patient safety culture perceptions, and which dimensions are most important for health personnel`s overall perceptions of patient safety. The highest percentage of positive scores are in the home care services, and home care services scored significantly higher than care homes. Nursing homes scored significantly higher than home care on handover, although the mean difference was small.

People with dementia's quality of life is heavily influenced by their living circumstances. Although informal (home-based) care is preferred, transitioning to formal (institutional) care is frequently required, particularly in the later stages of dementia. However, there is presently no conclusive evidence that either informal or professional care improves the quality of life of people with dementia. (Nikmat et al., 2013) There are certain advantages of care homes that home care lack, and home care that care homes lack. It all depends on the person's preference and what works best for them.

The distinction between home care and care homes, underscores the complexities of providing optimal care for dementia patients. Home care may offer better patient safety perceptions, but it's crucial to ask if these directly correlate with improved patient well-being. On the other hand, care homes provide a more structured environment but seem to lag in certain safety culture aspects. These variations highlight that a singular approach might not be the most effective for dementia care. Despite the benefits each offers, the ultimate measure should be the holistic well-being of dementia patients. As we progress in our understanding and approach to dementia care, we must re-evaluate and refine our strategies to genuinely cater to the needs of the patients.

Tables 4 and 5 outline the advantages and disadvantages of choosing home care versus care home services.

Table 4. Home Care

Advantages	Disadvantages
Carers visit every day to help with everything from **bathing** to **cooking**, cleaning, grocery shopping, and transportation to doctor's appointments.	Although home care appears to be less expensive on the surface, it may need the installation of ramps, railings, and chairlifts, which may be costly and time-consuming.
Individuals can continue to live in their own homes and maintain a level of independence, which is important to many people.	Many home care services switch from week to week, which can be worrisome for seniors and their families. If home care is chosen, be certain that all financial possibilities are reviewed and that everyone is in agreement.
Family and friends can visit at any time and are not confined by visitation hours, which can be beneficial in preserving mental health and minimizing loneliness.	Some seniors may be suspicious of outside help. They may feel vulnerable and alone as a result of this. It's crucial to talk to elder parents about their concerns and determine whether the caregiver is the proper fit for them.
Home care is frequently more economical than residential care since the older person remains in their own home and does not require 24-hour care.	Some older individuals who are particularly sociable may benefit from the social aspects of sheltered living or residential care which is not offered in-home care.

Note; data derived from (Pike, Advantages and disadvantages of Home Care & Residential Care 2022)

Table 5. Care homes

Advantages	Disadvantages
Residential care is a **safe** and **secure** choice for seniors who are unable to live alone or are lonely. It guarantees that all of an individual's basic requirements are met, as well as provides a room and full board. This will relieve them of the burden of household chores and food preparation.	Residential care is usually more expensive than in-home care since it is more comprehensive, and assistance is available around the clock.

Personal and medical care is accessible 24 hours a day, seven days a week, which may be quite beneficial for older persons who are lonely, prone to falling, or who need to take many prescriptions but frequently forget them. Having employees on hand to assist elderly folks can also provide reassurance.	Despite the activities available, some seniors may find it difficult to adjust to life in a care facility and miss their freedom.
Many residential care institutions enable married couples to remain together. Many senior citizens who are terrified of being alone may find this comforting.	Although most facilities allow visitors all day, the residential care facility may be some distance from the family. This makes maintaining family relationships and regular activities more difficult.
Most residential care facilities include activities and field trips. Gardening, baking, mild exercise, and music are some of the activities that care teams might provide, depending on the location and size of the house. Specialist activities such as brain training and supplementary treatment are available at certain residential homes.	The unfamiliarity with the space and environment might increase anxiety and depression symptoms for those with dementia especially since their lives are already changing so fast.

Note; data derived from (Pike, Advantages and disadvantages of Home Care & Residential Care 2022)

Support should be provided to enable caregivers to provide better care for people with dementia at home. In the report 'The comparison of quality of life among people with mild dementia in a nursing home and home care—a preliminary report' written by Nikmat, A. W., Hawthorne, G. and Al-Mashoor, S. H. (2015) a study was conducted to compare the quality of life of those with dementia between a care home (nursing home) and home care services and to identify factors that differentiate their wellbeing. A cross-sectional survey was conducted. A total of 49 dementia patients under the age of 60 were gathered from government care homes and hospitals (home care). The Short Mini-Mental State Examination[4] (SMMSE), Short Assessment of Quality of

[4] A Mini-Mental State Examination (MMSE) is a set of 11 questions that doctors and other healthcare professionals commonly use to check for cognitive impairment (problems with thinking, communication, understanding and memory).

Life (AQoL-8)[5], Barthel Index (BI)[6], Cornell Scale for Depression (CSDD)[7], and Friendship Scale[8] were used to assess cognitive severity, quality of life, activities of daily living, depression, and social isolation/connectedness in consenting participants. It was concluded that in comparison to those in institutional care, older persons with dementia who lived at home had a more comfortable quality of life, assistance with daily activities, and social connectivity.

These tests explain that home care services for older people give them a better quality of life, as well as better social connectivity, but it does not explain the situation of each participant. The background of whether they have family members, friends, or loved ones still in their lives is not discussed. If this study could be further investigated, suggestions could be made on how the lifestyle of the participants was before needing assistance in their daily living activities.

3.8 University of Stirling, Dementia Service Development Centre

The University of Stirling plays a pivotal role in assessing and reviewing design guidelines, establishing a robust foundation for this research. Their Dementia Service Development Centre (DSDC) is a global frontrunner in curating services and environments tailored for people with dementia. Comprising clinical specialists, architects, and designers, the centre underscores the significance of design for dementia patients. Through rigorous research and investigation, DSDC has garnered unique insights into actionable implementations that can bolster support for dementia-afflicted individuals.

To foster more dementia-friendly homes, buildings, and public spaces, experts from the University of Stirling have pioneered the Environments for Ageing and Dementia Design Assessment Tool (EADDAT). This tool, integrating the latest findings on cognitive change design and expertise from renowned architects, supersedes DSDC's Dementia Design Audit Tool introduced in 2008, which revolutionised care facilities globally. As noted in a 2022 report, "Pioneering tool to support design of dementia-friendly spaces,"

> *"This ground-breaking new tool is designed to be more accessible and covers an array of building types. Whether you are a person living with dementia, a small business owner or commissioning a new care home, there is a version of EADDAT available to support you."* Lesley Palmer, Chief Architect at DSDC

Palmer emphasises the potential of tools like EADDAT to transform public and private spaces into safer, more comfortable environments for dementia patients. Beyond just altering the

[5] The AQoL measures 5 dimensions: illness, independent living, social relationships, physical senses and psychological wellbeing. Each has three items. Exploratory factor analysis showed the dimensions were orthogonal, and each was unidimensional.
[6] The Barthel Scale/Index (BI) is an ordinal scale used to measure performance in activities of daily living (ADL). Ten variables describing ADL and mobility are scored, a higher number being a reflection of greater ability to function independently following hospital discharge.
[7] The Cornell Scale for Depression in Dementia (CSDD) is a way to screen for symptoms of depression in someone who has dementia. Unlike other scales and screens for depression, the CSDD takes into account additional signs of depression that might not be clearly verbalized by a person.
[8] The Friendship Qualities Scale is a theoretically grounded, multidimensional measurement instrument to assess the quality of children's and early adolescents' relationships with their best friends according to five conceptually meaningful aspects of the friendship relation.

physical space, holistic dementia design also demands adjustments in professional staff's standards, practices, and behaviours, impacting how dementia patients engage with their living environments.

Deterioration in cognitive and mobility capabilities complicates interactions with the built environment, influencing behaviour, independence, and ultimately, quality of life. Grasping these impairments is crucial to crafting living spaces tailored to the needs of dementia patients, as noted by the Courtney Thorne Nurse call systems in 2021. Furthermore, DSDC posits that effective dementia-friendly designs mandate specialist knowledge throughout all design and development stages. While addressing tangible factors like lighting, colour contrast, and signage is pivotal, it's equally imperative to overhaul services. Simple technological adaptations can render positive outcomes, and the integration of arts into design can provide enduring benefits for those with dementia.

Stirling University's design guidebooks can be used as a method to apply to the case studies with modifications based on cultural traditions for the comfort of the residents. Studies such as Fisher's Building Design for People with Dementia, and Dawson's *Good Practice in the Design of Homes and living spaces for People with Dementia and Sight loss* show that an age-friendly environment helps promote healthy and active ageing by building and maintaining cognitive skills throughout our lives. When Generational Cultural beliefs and traditions are applied to people with dementia, the outcome can enhance the quality of life and comfort in that space. (Greasley-Adams et al., 2012)

Numerous sets of design guidelines have been released, but there is little information on their use and effects, and it is unclear what evidence was utilized or whether the guidelines have been updated. Some of the literature cites Stirling's design creations as well as design role models. For instance, Philpott (2006) talks about visiting the Iris Murdoch Building[9], which he calls "a paragon of design for people with dementia," McCabe and Sim (2006) talk about working there, and Farrelly suggests using Stirling's Dementia Design Audit Tool Part 2: Workbook as a guide when redesigning clinical spaces. (Farrelly, 2014) Furthermore, it is worth discussing and contrasting the University of Stirling's approach with Hogeweyk, a dementia village in the Netherlands (this is further discussed in the case study chapter.) renowned for its innovative approach to dementia care. Unlike traditional care homes, Hogeweyk creates a space that mirrors the everyday world, thereby fostering a sense of familiarity and comfort for the residents. While Stirling's DSDC focuses heavily on the technical aspects of dementia-friendly design such as lighting, contrast, signage, textures, and sensory stimulation, Hogeweyk goes a step further by emulating the real-life layout and scale of a small village (Verbeek, van Rossum, Zwakhalen, Kempen, & Hamers, 2009).

The Hogeweyk model, thus, underlines the potential power of interior architecture in creating effective dementia-friendly environments. In essence, the University of Stirling and Hogeweyk represent two ends of a spectrum in dementia care design. Where the former tends to prioritize practical design aspects, the latter focuses on holistic lifestyle emulation. A possible way forward

[9] **The home of the Dementia Services** and **development Centre (DSDC) at the University of Stirling.**

could be an approach that combines the technical excellence of Stirling's DSDC with the lifestyle-oriented perspective of Hogeweyk. Further research is required to draw more lessons from these models and apply them in different cultural contexts.

3.9 Designing for Dementia

Culture is a way of life, on the other hand, design is a way of planning and developing a way to ease one's life. These two cannot be separated and are moving cooperatively from ancient human civilizations to the current world. Over the past decades, that has been a rising interest in how culture is influencing design research. Culture consists of a shared set of values that can compromise human behaviour and activity, material culture, and social conditions, all of which encourage designers to build products regarding people's lived experiences. (Company, 2020)

When it comes to dementia-specific design, the majority of plans have been altered to meet the demands of the user, but this has made these areas more resemble hospitals than homes. The majority of building design recommendations from academic research (e.g., Fisher et al. 2018; Fleming and Bennett 2015) and educational organisations (DSDC 2018, 2013, 2011; HM Government 2015) see the physical environment as a treatment to counteract behavioural and mechanical difficulties brought on by living with dementia. Residential care practice typically normalises person-centred care paradigms (Day, Carreon, and Stump 2000; Gramegna and Biamonti 2017).

However, research from this angle frequently problematises resident challenges and seeks mechanical and ergonomic fixes to symptomatic issues, which limits their capacity to look into the relationship between more structural architectural concepts in the spatial design of care environments (such as thresholds, space sequencing, and scale) and residents' wellbeing. Lundgren (2000) observes a tendency for technical and aesthetic veneers to otherwise unquestioned and default spatial-material factors in the residents' experiences, which lends weight to this issue (Pollock and Fuggle 2013; Fisher et al. 2018). This contrasts with a deep comprehension of more fundamental principles of spatial design. (Veliz-Reyes & Burke, 2021)

Burke et al.'s (2018) study examined the floorplans of existing residential care facilities to discover consistent supporting features. They did this by using structural-spatial configurations to frame support for residents' welfare. According to the analysis, more open floor layouts with fewer walls and accessibility between rooms are crucial, with access to outdoor space and adequate daylighting receiving specific focus. Although they are based on audit criteria rather than the opinions of residents, these assessments nonetheless fall under the purview of the floor plan. Additionally, well-being support is referred to as "assistance for cognitive disability" rather than aiding residents in realising their full potential or finding fulfilment (Burke & Veliz-Reyes, 2021)

Professionals like interior designers, architects, contractors, and real estate agents carry a significant responsibility in understanding a client's cultural background and personal preferences to craft living spaces that balance aesthetics with specific needs. While many clients gravitate towards an "international" design style, infusing unique, high-quality elements from

various cultures, individual tastes deeply rooted in personal lifestyle and cultural background should not be overlooked.

The design process starts with an in-depth consultation where the designer strives to understand the client's lifestyle and aesthetic preferences. This encompasses a thorough review of daily routines, habits, and specific needs, such as accommodating for disabilities or cognitive conditions like dementia (Verbeek et al., 2009). Such an approach underlines the importance of cultural sensitivity and bespoke design, particularly evident when considering the wide-ranging interior design styles across different regions, countries, and cultures.

Designing spaces for individuals with dementia adds an extra layer of complexity, with design choices significantly impacting their well-being and daily functioning. A study by Day, Carreon, and Stump (2000) highlights the need to incorporate this cultural sensitivity into healthcare design, a principle equally applicable to residential settings, especially for those living with conditions like dementia. Ultimately, combining cultural competency with an understanding of unique health challenges can result in aesthetically pleasing and therapeutically supportive environments.

In the realm of culturally influenced design preferences, for instance, individuals from the Middle East often favour living spaces that evoke a sense of historical grandeur and opulence (Al-Qawasmi, 2003). One culturally specific practice prevalent in this region involves walking barefoot within homes, influencing interior design to incorporate an abundance of carpets and rugs for comfort and aesthetic appeal (Al-Naim, 2009).

On the other hand, residents from European regions often prioritize the element of security in their home designs (Jones, 2011). They tend to have a progressive approach towards interior design, appreciating a blend of both traditional and contemporary styles, mirroring their dynamic lifestyle (Smith & Jenkins, 2014). This signifies the necessity for designers to acknowledge these culturally influenced design preferences to create spaces that echo the personal and cultural identities of their clients, thereby enhancing their comfort and ease at home (Hussein, 2016). It also underlines the importance of adapting such design considerations for individuals living with cognitive conditions like dementia, incorporating elements that aid in their day-to-day life while maintaining the cultural resonance of the space (Hussein, 2016).

Using the information given on designing based on culture and background, is key when designing a space for those with dementia overseeing their need but also looking at their past as a link to their comfort in the space.

“Architecture can express different perspectives, material conditions, and scales as a process defined by multiplicity. Inherently, the discipline is not an isolated practice. Its focus is as much functional and aesthetic as it is political, social, economic, and ecological. Addressing social and environmental justice issues through an intersectional lens, architects are beginning to reimagine not only the discipline but also its makeup and whom it serves. To revolutionize architecture, the intersectional design presents a way in which designers can begin to confront their privilege and power. In turn, they can better serve clients and communities alike.” (Baldwin, 2021)

The statement above states how designers can use their power to revolutionize the design world, to gain more than what they can serve. The idea of being to impact political, social, economic, and ecological through design and what they can create gives them an advantage in which intersectional design will allow them to use that privilege and power through their work. The result will conclude in better client satisfaction. Designing a space for someone with dementia should not be any different, they can manoeuvre obstacles that can allow the environment to give them more comfort and find ways to consult the anxieties that they go through while trying to orientate themselves in a place.

Designers can impact the way a person feels in a room and assist orientation and circulation. If designers keep into consideration their background and own personal preferences, it can allow a person to feel more comfortable in their own space rather than feeling like an outsider.

3.91 Designing for Dementia: Orientation & Wayfinding with Social Interaction

Research on human spatial cognition focuses on the study of wayfinding during navigation. Routine, everyday tasks like navigation need the use of several cognitive processes, including perception, declarative[10] and non-declarative memory[11], imagination, language, reasoning, and decision-making. Emotion is also implicated. For example, in situations where anxiety hinders spatial decision-making during emergency exits or in which positive emotional associations with landmarks make them easier to recall (Gartner, 2011, 2012; Palmiero and Piccardi, 2017; Ruotolo et al., 2018).

In actual surroundings, a wide variety of contextual factors affect how navigators make decisions. Research on wayfinding in cognitive psychology and neuroscience has mostly focused on the internal mechanisms by which different guidance helps represent and retain spatial configurations and landmarks. The co-presence and potential influence of other people (such as those with dementia) are not considered in almost all wayfinding studies, which is a frequent trait. Some spaces are designed for older people but do not take into consideration that cognitive abilities differ between older people and older people with dementia.

As Romedi Passini, (visual artist) suggests in their 1981 study in Urban Ecology, wayfinding is a decision-making process (Passini, 1981). Wayfinding builds on people's perception of the surroundings, recollection of prior experiences, spatial learning processes, motor processes, and inferential as well as emotional assessment of navigational possibilities, making it a model real-world example of complex cognition (Sternberg & Ben-Zeev, 2001). The existence of other people, interactions with others, and social elements, can have an impact on the user's plans and expectations (e.g., Zacharias, 2001).

Designers can and should impact positively the decision-making of the user of the space through their organization in the space. They can do this through the arrangement of furniture, signage, and through the circulation that they've designed in the space.

[10] a type of long-term memory that involves conscious recollection of particular facts and events.

[11] Non declarative memory covers memory capacities that support skill and habit learning, perceptual priming, and other forms of behaviour, which are expressed through performance rather than recollection.

O’Malley’s (and others) article ‘All the Corridors are the Same: A Qualitative Study of the Orientation Experiences and design preferences of UK older adults living in a communal retirement Development’, focuses on how environments need to be designed in a way that supports successful orientation with adults that have dementia who already have difficulties with their orientation abilities in their everyday life. They explain that to better understand how a space can allow for decreasing orientation skills, the voice should be given directly to the residents by describing how they find their way around to understand their design preferences. Their study explores the navigational experiences and design preferences of adults in a retirement home in the United Kingdom through 13 semi-structured interviews with adults with memory loss.

They asked questions that described the experience of navigating in the subject’s environment, as well as about specific navigation difficulties in more detail. Thematic analysis identified 3 main themes: highlighting environmental design that causes disorientation, strategies to overcome disorientation, and residents’ suggestions to improve the design. To always receive the best outcomes of studies like these are through resident direct questions as well as in-depth interviews. This can better help lead a designer to figure out the best solution for any problem in the design of the space.

These informative design suggestions focused on the importance of having memorable and meaningful spaces. This memorable or meaningful space was more in favour than relying on signage as an orientation aid. The findings in this study establish the need to consider environmental design to support orientation for those with dementia. The use of meaningful and relevant “landmarks” or objects around the space as orientation aids can additionally stimulate conversation and increase well-being – this can be a tool for reducing anxiety in a resident. With the range of suggestions in dementia-friendly design guidelines aimed to support orientation, it is crucial to always speak directly to those living in different environments to find their way around what design works best for them in that specific environment. (O'Malley et al., 2017)

As O’Malley mentioned in his article, using objects around the space that can be “landmarks” can be used to identify different areas in a room. These landmarks can each be linked to specific residents’ background and their pasts so each landmark can have a different meaning to each resident based on their upbringing and what the symbol means. Signage is the ideal solution in homes that have a diverse group of people in which landmarks can have a different meaning to each resident.

Wayfinding in varied situations was the subject of several research, particularly in residential care and public areas. Numerous studies have been conducted in this field, and these and the following studies show that various navigational aids can be useful. This evidence is significant since many dementia sufferers experience specific difficulty with navigating.

Some fundamental conclusions from early research by Passini, Rainville, Marchand, and Joanette (1998) and Passini, Pigot, Rainville, and Tetreault (2000) have been confirmed by further studies. These two investigations examine the wayfinding skills of Alzheimer’s disease

patients in hospital (Passini et al., 1998) and care home (Passini et al., 2000) settings, respectively. (Passini et al., 2000)

The earlier study (Passini et al., 1998) makes several general recommendations, including paying attention to the spatial organization so that people can move from one decision point to another without having to plan out decision-making; designing circulation systems to include well-articulated secure paths; designing buildings to provide good architectural communication; and making sure that graphical and architectural communication are complementary, with the former being more effective. The design messages from the latter research include multiple signage, being able to view a destination, and the necessity for reference points to facilitate wayfinding (Passini et al., 2000). Additionally, they mention that floor patterns can be confusing and that elevators may cause anxiety and/or disorientation.

In a 2000 study, Tune and Bowie evaluated the environmental standards of 46 residential and nursing care facilities for dementia patients. They employed the "Rating Scales for the Assessment of Environments for the Confused Elderly" that had been created in the early 1990s for use in long-stay wards. The rating scale covers criteria for activities and facilities, reality orientation signals (including signage), condition (including decoration, lighting, noise, and scent), and how restricted or otherwise care procedures are. One of their main recommendations was to improve reality orientation because it was often lacking in the houses. (Tune & Bowie, 2000)

Additionally, there were differences between the different types of homes: Elderly Mentally Infirm[12] houses had more restrictive care practices, local government homes offered more recreational opportunities, and private sector homes were in better shape but had more institutional care procedures. Despite using terminology that is now somewhat outdated, this study was useful to demonstrate how poorly supported wayfinding was at the time. (Tune & Bowie, 2000)

In the UK, one in five adults over 75 and half of those over 90 have some degree of vision impairment. In the UK, it is estimated that one in 14 persons over the age of 65 and one in six people over the age of 80 have some type of dementia. Visual errors, false impressions, and misidentifications may be caused by impaired vision. For those who have dementia, the repercussions may be more severe because they may not be aware of or remember their visual error or be unable to rationalize what they think they are seeing. (Bowes et al., 2021)

In the publication *Good Practice in the Design of Homes and living spaces for People with Dementia and sight loss,* the researchers from the **University of Stirling** give a detailed guide on how elements in an interior space can be modified to ease the struggles that the residents go through with dementia in a space. Having a clear and concise design that allows wayfinding can make it easier for those who especially have sight disabilities. Different types of dementia can damage the visual system in different ways, depending on how the disease changes the structure

[12]Elderly Mentally Infirm (EMI), refers to individuals who have lived with dementia-related conditions for a significant amount of time and need 24-hour care as their symptoms become more severe.

of the brain. Common visual difficulties are poor sensitivity to changes in the contrast between the object and the background. Decreased ability to recognize movement. (Bowes et al., 2021)

The recommendations are an accumulation of data from practice and research, but there is still no solid definition of what "best" means in the context of dementia and vision loss. In the "points for reflection and further evaluation" at the end of each section, the study identified "gaps" and "deficiencies" in the existing scientific evidence. (Greasley-Adams et al., 2012) Additionally, research data might not yet be accessible for goods with more recent, possibly beneficial design elements, such as "smart" and "talking" kitchen appliances. It is crucial to follow the broad principles of person-centred assistance when thinking about making any changes to a person's house or living quarters. These principles include respecting people's dignity, defending their right to make their own decisions, and encouraging their independence. (Greasley-Adams et al., 2012)

Furthermore, an individual’s demands and capabilities evolve. Therefore, it is crucial to get their input before making any changes and to regularly check in to see how they are doing and what might be starting to bother them.

Dementia patients were questioned about the layout of the care facility. The residents' opinions of the care homes were generally favourable, and their interview responses showed that they valued the assistance provided by the employees there. Although tenants did not expressly discuss the design elements of their home, it was clear that they valued several of them, including the straightforward design of the different sections and the use of clear signage, notably on bedroom doors. As the eye ages, it makes it quite difficult to be able to differentiate between different hues of colours which can cause misperception in a space. The staff at the homes didn't undergo environmental design training, but they did offer their opinions on parts of the homes that they considered were advantageous for patients with dementia and vision loss. The staff found several aspects to be beneficial, including the railings' contrasting colours, the flat gardens' clear walkways, the signage, the smooth flooring, and the encouragement given to residents to personalise their chambers. The staff also identified certain areas that needed to be improved, like the use of more vibrant colours, finding space for a quiet room, and, ideally, developing residences with an inside circular hallway that would allow people to move freely throughout the structure. (*Good Practice,* 2014)

These guidelines can be used as a tool to assist persons living with dementia and sight loss to establish a set of evidence-based best practice Guidelines influenced by personal experiences and informed by experts in the field, making it easier for caregivers and loved ones to help the persons with dementia. Based on those criteria, outputs will be produced that are suited to the requirements of various stakeholders and particular users.

The article *Dementia-friendly architecture: Environments that facilitate wayfinding in nursing homes* by Marquardt, G., & Schmieg, P is based in Germany in which data were collected from 30 different care homes in the country. Furthermore, an individual’s demands and capabilities evolve. Therefore, it is crucial to get their input before making any changes and to regularly check in to see how they are doing and what might be starting to bother them.

It was conducted to analyse spatial disorientation in different institutes using the autonomy of each resident by looking at their quality of life and also their ability to reach certain places in their nursing homes to understand their wayfinding abilities. The interior characteristics of the homes were then analysed to see how they impacted the results. The statistical test that was used was the Mann-Whitney U test[13]. As for the results, it is shown that people with advanced dementia are increasingly dependent on a more compensating environment that have a smaller number of residents and the best layout that was mentioned is the straight layout of the circulation system without any change in direction. The fewer people and more simple straightforward designs help lessen the confusion amongst the patients. These results were then used in architectural guidelines.

Straightforward designs are not the most luxurious way of a designer's choice, but it is proven in the article above that they will reduce confusion in finding spaces. Different wayfinding methods combined in a space that is stated in the articles above can create a more suitable environment for those with dementia, reducing confusion which leads to anxiety.

3.92 Designing for Dementia: Colour & Light

There is no "correct" or "wrong" colour when it comes to dementia, which is important to keep in mind while examining whether the colour affects someone who has the disease. There isn't a "Good" or "Bad" colour, technically. Humans naturally have a favourite colour or colours, and this trait does not necessarily change with dementia. However, as the disease worsens, so may a person's capacity to perceive colour accurately.

There is no concrete scientific evidence to support the idea that colours have any special effects on dementia patients' moods or how they affect them, but there have been accounts to the contrary which will be discussed in this section of the paper.

One's ability to perceive colour depends critically on the light. The pigment colours of the items and surfaces in our environment and the colours of the light that reflect off those same objects and surfaces together make up how we experience colour. Numerous changes that are brought on by ageing alter how people see and perceive colour. The lens's thickening and yellowing influence how colours are perceived. Older persons may thus encounter a decline in contrast perception capacity, resulting in a challenge in distinguishing between minute changes in the environment like carpets and steps. (Lenham, 2013)

Windows are the most obvious source of natural light. It is crucial to make the most of them. Positioned correctly, clear, bright lights can reflect light off of walls and increase the brightness of a room or area. Poor lighting and poorly placed illumination can produce glare, especially if they reflect off glossy surfaces like glossy walls, glossy doors, and highly polished floors (Bakker 2003). As crucial as ensuring that light may enter a room or area through a window is the quality of light in the centre of the space. Glare can be inconvenient or even hinder someone's mobility. According to estimates, elderly adults often need two to three times as much light as

[13] The Mann-Whitney U test is used to compare whether there is a difference in the dependent variable for two independent groups. It compares whether the distribution of the dependent variable is the same for the two groups and therefore from the same population.

younger ones (De Lepeleire et al 2007, Pollock et al 2008). However, van Someren et al. (1996) discovered that older adults with dementia were routinely exposed to lower levels of bright light. According to research by De Lepeleire et al. (2007), most nursing facilities rarely have enough light to suit the demands of elderly residents in terms of vision. The researchers concluded that residents, including those with dementia, may experience an increased risk of accidental falls when there is inadequate lighting.

Low interior lighting levels or interior lighting of the clear fluorescent variety left on for an extended period have an hurts daytime functioning as well as their ability to fall asleep (Bliwise 1994). Sloane et al. (2007) discovered that bright light treatment, or high-intensity ambient light, benefited 66 dementia patients' circadian cycles and sleeping habits in long-term care facilities and public areas of a mental hospital. Sloane et al. (2007) discovered that participants who received all-day light therapy experienced an increase in night-time sleep of roughly 60 minutes. Participants with severe or very severe dementia exhibited the greatest increase in night-time sleep.

Background noise impairs reading and face-to-face communication for elderly adults with visual impairment (Osborn et al 2000). The employment of colour in a space can enhance or diminish the effects of lighting. Clear, bright colours with deliberate colour contrasts in strategic locations can be beneficial. It is important to remember that the colour scheme we would choose for ourselves or in our own houses may not be the same as that which helps elderly individuals with dementia feel more centred. People with dementia frequently have trouble seeing effectively anywhere there is a lack of visual and colour contrast. (Dewing, 2009)

The edges of stairs should have a "strong hue and value contrast" to reduce falls, toilets need to contrast with the floor and surrounding walls to make them more apparent, and changes in floor colour should be avoided since they may be mistaken for steps. There is a lot to consider, but even though it may sound overwhelming, having these little details changed in a space can create a less stressful environment.

When it comes to making sure that anything crucial to the patient stands out, the colour difference is essential. It may also be utilized to keep residents away from places they are not permitted to be in. When handrails are marked with bright colours and contrasted with muted tones, they stand out and are less likely to be overlooked than a blue door against a blue background.

- A drop in the perceived colour saturation or vividness (chroma). Reds, for instance, begin to resemble pinks.
- A diminished capacity to distinguish blue colours.

Significant colour contrast can be utilized to draw attention to key elements and make the surroundings clear. Lack of contrast can be used to make objects appear farther away or to blend in with the background. For instance:

- Chair upholstery or finishes should contrast with the floor.

- Bathroom fixtures, such as sinks and toilets, should contrast with the bathroom wall and floor (not white toilets against white floors and walls)
- Doors can be made less obvious by painting the frames and door the same colour as the wall. Alternately, contrasting paint colours could be utilized to accent the door frame or door to bring attention to the door (such as a toilet door).

Using contrasting colours on the benchtops, walls, skirting boards, and flooring can help dementia patients distinguish between vertical and horizontal surfaces.

One must steer clear of employing floor coverings made of linoleum (or similar materials) that extend up a wall. Because of this, it might be challenging for someone with dementia to tell where the wall and the floor meet.

In general, one must make sure that all flooring for spaces that open into one another is the same colour so that it appears continuous. The colours should be the same or comparable even if different materials are used on the floor so that it appears to be a continuous, level surface. Using materials with highly contrasting colours could cause them to be misinterpreted as shadows or as a shift in floor level. (Lenham, 2013)

There are several ways to use colour and contrast to make life easier for someone with dementia:

- Highlighting important elements - Using strong contrasting colours to add clarity to the environment, for example, chairs should be in a colour that contrasts with the floor, sink and toilet should contrast with the walls, flooring and the table setting must contrast with the table or tablecloth.
- Reducing unwanted images - As dementia progresses and patients lose touch with their people, there is a real risk that they will wander off on their own and become lost.
- Using low-contrast colours and patterns to make the emergency exits more muted and subdued.
- Using colour to highlight risk - For someone with dementia, changes in colour and value can often be thought of as changes at a basic level.
- Avoid patterned carpeting, especially striped or patterned rugs, which can be perceived as holes in the floor. Instead, one can use a block colour to highlight ramps, steps, and more.
- Ensuring Non-Contrast Thresholds - If the floor in one room contrasts with the floor in the next room that can be considered a change in floor level.
- One must try to ensure that floors in rooms and joining areas are the same colour to be considered a continuous flat surface.

In addition to helping improve the environment for people with dementia, colour also has an impact on mood and emotions. Everyone has their favourite colours and specific colours evoke memories, but as a general rule, the following colours encourage these reactions:

- Blue: Cool colours like blue make a room feel larger and have a calming and relaxing effect. Therefore, they are often used for bedrooms and quiet areas.
- Green: This earthy colour is associated with growth and life, and is thought to reduce central nervous system activity and help people feel calmer.
- Red: This warm colour has the opposite effect of blue, making the room appear smaller. Therefore, it is often used in rooms with cool temperatures. It is also a very stimulating colour commonly used in active zones to increase brain wave activity and stimulate adrenaline production.
- Orange: Another warm colour with similar properties to red. Orange is also an earthy colour, so it is often used in natural settings.
- Yellow: This is another stimulating colour used in active regions to increase brainwave activity. Stimulating colours are great for patients with Alzheimer's disease because they can activate memory and cognitive function. (Lenham, 2013)

The information on how each colour is stated above is more of a general idea or concept of colour, these may not be linked to each specific culture, as some cultures perceive colours differently. Despite how crucial colour is for intercultural communication, there is no set formula. Because perceptions differ from place to place, a single hue may have several, even opposing, connotations in different parts of the world.

Stirling University Handbook Lighting: Light and lighting design for people with dementia

Through foreseeable circumstances, expensive or harmful medication is explored, additional constraints and staff time are utilized, or painful experiences occur at home. One can make it easier for the ageing eye and confused brain to see and understand by increasing the amount of light and concentrating it in specific areas. An increase in light can assist residents of a hospital or nursing home to adjust to their new surroundings, while at home it brings familiar objects back into focus. Even at its finest, living with dementia may be depressing and challenging. The handbook emphasises that merely adjusting artificial lighting or ensuring exposure to natural sunlight can greatly benefit dementia patients' well-being. This simple act can not only enhance their daily experience but also alleviate stress for caregivers. Since there is no "treatment" for dementia, it is crucial to look into any prospective advancements. By doing so, one can maximize their capacity for adaptation and impairment reduction. The person's overall local environment, which also includes nearby parks, retail establishments, public transportation, leisure activities, and community facilities like theatres, clubs, and coffee shops, is referred to as their "living environment."

The therapeutic design of environments plays a pivotal role in enhancing the quality of life for individuals with dementia. This approach is particularly vital for those with the greatest physical or mental challenges, as their environment can either magnify or mitigate these challenges. One critical component of this therapeutic design is high-quality lighting, which can significantly contribute to creating dementia-friendly spaces.

Elderly individuals, especially those residing in nursing homes, are subject to a high risk of falls. Statistics reveal that 60% of care home residents experience at least one fall annually, and half of these individuals suffer from multiple falls (Abdelhafiz and Austin, 2003). Various factors such as aging, physiological changes, visual impairments, and medication side effects constitute intrinsic risk factors for these falls (Black and Wood, 2005).

Extrinsic risk factors, such as environmental hazards, also play a significant role in increasing the risk of falls. Among these, poor lighting and uneven surfaces are prominent contributors. It's noteworthy that falls and resulting injuries, like hip fractures, have a strong correlation with visual impairment. Addressing this impairment through improved lighting, as part of a comprehensive fall prevention strategy, can potentially decrease falls by up to 14% (Day et al., 2002).

Lighting also significantly influences mental health. For instance, individuals suffering from seasonal affective disorder (SAD), a type of depression, often report feelings of exhaustion, lethargy, anxiety, and sadness. These symptoms typically intensify as daylight hours decrease during winter, highlighting the profound impact of light on emotional well-being, particularly for individuals with dementia. The mood, appetite, and energy levels of many people with SAD are affected when it is dark and gloomy, and they become less sociable and more lethargic. In the UK, up to one in eight persons have these less severe sub-syndromal SAD symptoms (sub-SAD). People frequently link higher latitudes with a predominance of SAD and sub-SAD. The research has discovered that climate, genetic susceptibility, and social-cultural environment are all significant components, therefore it does not fully support this link. Significant relationships between mood and the number of sunshine minutes, the length of daylight, and temperature have also been identified, along with a substantially positive link with cloudiness. People frequently link higher latitudes with a predominance of SAD and sub-SAD. The research has discovered that climate, genetic susceptibility, and social-cultural environment are all significant components, therefore it does not fully support this link. Significant relationships between mood and the number of sunshine minutes, the length of daylight, and temperature have also been identified, along with a substantially positive link with cloudiness. (McNair, 2008)

As this handbook offers all details on lighting design in a care home, it’s important to factor in that not all dementia patients suffer the same when it comes to the ageing eye. Each resident can have a preference when it comes to the lighting in their space, and although studies prove how effective light can be in certain situations, one must remember that each resident has their triggers and for some, a certain way of light in the room can be a bother to them. As this thesis focuses on how design is different for each person and certain elements can help one but be uncomfortable for another.

3.10 Exploring Perception and Experience: Designing for Dementia

In this thesis, phenomenology is referenced as an approach to better understand the meanings held by those living with dementia and how such insights can guide space design in domestic settings. While this research does not directly employ phenomenological methods, it reviews studies that have utilised this approach. Understanding individual experiences offers invaluable

insights for designers aiming to enhance the well-being of their clients. In *Phenomenology of Perception,* Ponty defines phenomenology as the study of the existence and essence of perception and consciousness. Phenology is a technique of "describing the nature of our perceptual contact with the world." He believes the mind and the body are connected but can somehow be separated and through one's experiences with life, each experience can change one's perception and how one sees the world which will guide every conscious action one does. In the space that one lives in, it is a field for perception, and the human's consciousness is what gives them meaning to their world. This way, one cannot separate their self and existence from their perceptions of the world.

Ponty explains that phenomenology places essences back with existence and it is not an abstract idea. To understand the lived world, one has to remove the subjective of the world and one will then get the objective. Everything in science is built on an experiencing subject, and the way one understands the world is by taking the foundation and the science and arranging them in a way to understand the relation between them and one does not look to understand why or how they are given and that is why phenomenology gets beneath what the science deals with. Reflective analysis works backwards from objective facts which is why Merleau-Ponty is looking at perception, as something experiential and grounded. This is the foundational way that one reflects on the world, the background in which all one's reflections take place. (Merleau-Ponty, 2011)

"The phenomenological reduction is at once a description and prescription of a technique that allows one to voluntarily sustain the awakening force of astonishment so that conceptual cognition can be carried throughout the intentional analysis, thus bringing the "knowing" of astonishment into our everyday experience." (Merleau-Ponty, 2011)

Through Merleau-Ponty's text, he explains that phenomenological reduction is an idea that a soul is put forward and its goal is to uncover how things are constituted for a conscious subject. The eidetic reduction is moving from the natural attitude is the assumption that there is an external world with external objects and one is looking gout at the objective world and focusing on the essence of what is in front of us. The transcendental reduction is bracketing the physical object into the transcendental object on how it becomes an object.

Merleau-Ponty states that we do not study the object themselves but we do study the phenomena and that is what the objects themselves are for us. They are not externally independent things from us but they hold meaning for us, the phenomena tell us the intentional constitution of things.

Because people are so thoroughly immersed in the world, the only way to catch themselves in the relationship is by suspending the world from within themselves because they are so tightly bound up in it. This is a complete reduction. It is an attempt for them to see who they are and how objects are structured in this phenomenological sense as long as they have in mind that they can never completely achieve this reduction and completely bracket off the world. (Merleau-Ponty, 2011)

Merleau-Ponty looks at phenomenology in a way that objects and science are similar in the way that they are perceived by the world, each person has his own experience when it comes to an object itself which explains how one would describe it. For example, a plant to one person can just be a decorative object, but to another, it could have great symbolic meaning because of their first-person experience with this plant and how it played a role in its life. Looking at people with dementia, when in a care home, they are surrounded by different objects that all have a specific meaning to them, they can recognize what different elements are but still have memory loss. The recognition they have for these objects is based on their past experiences even though they do not remember them. If one tried to bracket themselves from a world to lose a subjective point of view for an object, it is impossible because our subconscious mind will always linger in our thoughts and won't allow us to have complete reduction. (Merleau-Ponty, 2011)

Merleau-Ponty states that sensation isn't a pure impression of the pure quality that one has when describing an object. It is pre-objective and one's senses towards an object are based on their experiences and perspective. An apple is red because from what we know, apples are usually red, green, or yellow. Our senses allow us to know the colour of the apple. The objective stance does not help understand the sensation, because reflection arrives too late. Reflection is the furthest removed from the source so it is not as clear. It is the last step in the process of reflecting on what beings are sensing. (Merleau-Ponty, 2011)

Humans bring their own experiences into perception, partially viewing an item can allow one to know the scenery and what is happening behind this item because our mind creates the missing pieces through what we know about it from our live events. Merleau-Ponty uses the example of seeing a horse-shaped cloud, the only way our mind would think of a house would be because we do know the shape and sense of what a traditional horse would look like. (Merleau-Ponty, 2011) If one were not to know what a horse is, their first thought seeing that cloud would not be what it seems to be. People that suffer from dementia can differentiate between different items, and if not it reveals that their experience with the specific item has been in their life events.

In the article '*Exploring the lived experience of people with dementia through interpretative phenomenological analysis'* some of the participants explained that they had some difficulties with navigation and orientation when in a space they are not familiar with. (Johnson, 2016) Most places are not dementia friendly and they also have problems communicating. When speaking with someone, it's easier for some of the participants to explain themselves rather than understand when someone is trying to explain something to them or even giving them a list of things to do tends to bring up confusion.

The writer's aim of this study was to illuminate the lived experience of people diagnosed with moderate dementia. She wanted to look into how people that suffer from dementia communicate with her and tell her about their everyday lives, and their way of living, to give her a better understanding of what it's like to live with dementia. The phenomenological analysis of the interview prompted 5 different themes: awareness and understanding of dementia, clarity and confusion, social support, and relationships, living with dementia, and life lived.

Companionship and social contact are important factors for people who suffer from dementia, they seem to need company and people around them which helps them get distracted and fills the void of loneliness. Designing a space in an elderly home is important to also be welcoming to visitors as well so they can prolong their stay in the home. Having different spaces for visitors and setting it up in a way that welcomes people to help ease the mind and loneliness of the residents.

There are many limitations when it comes to this kind of study because not all participants are willing to speak about what's going on, or even have clarity about it. A lot of people who suffer from dementia do not know they are diagnosed with it and these factors alter findings in research. It is important to understand that each experience a dementia patient goes through is different from another because of each's different past experiences.

In the book *Poetics of Space*, Bachelard interrogates the meaning of space which preoccupies poetry with intimate spaces such as a home, the furniture in it, and even the materials that are used in the space. He portrays the house as a phenomenological object in which personal experience teaches its essence. In a way, the house protects the people living in it and who have experienced memories and daydreams which is a way to help us understand our souls. These memories and experiences that happen in one's home bring different sensations depending on where one is located in a home. Bachelard mentions how opening a cabinet is revealing a world, the drawer entails a place of secrets and every habitual action that one does in space is opening an endless dimension of our existence. (Bachelard, 2017)

Through Bachelard's text, he suggests that one has a dream for their future home but the goal isn't to achieve that dream but to keep dreaming of it until one can no longer achieve it. If one tends to reach their goal of getting the house they always wanted, a house that is in no way similar to their childhood house, one will not feel satisfied and be filled with sad thoughts. Applying this to the idea of the ideal "home" for a person with dementia, one can see that it is a step to achieve this ideal environment but to make it the goal to progress to comfort. To keep learning and educating oneself to allow the space to be as comfortable as possible to reduce anxieties that come from the discomfort of your own home.

Bachelard interprets this creative activity to suggest that humans can never simply experience space as a space. Never is one confined to a space's bare physical boundaries. Because one brings them with themselves when entering—that is, when one inhabits it—experiences, memories, theories, and imaginative creations are always piled on top of it. "Human space exceeds geometric space" (Bachelard 2014, 82).

His phenomenological explanations lead to theorizing that one must create the space in a building or a room to suit the needs, desires, and memories of those who occupy it. It can allow one to look into how these methods could work better, especially for those with dementia, who do get a lot of memories from the past bought up in their current lives.

Intentions of Architecture – Christian Norberg – Shultz

The purpose of Norberg Shultz's book is to develop an integrated theory of architectural description and architectural intention. Through this literature, one can get a better understanding of how a designer creates a space from nothing based on a client's needs. Architects aim for the satisfaction of the clients who yet want extraordinary outputs but the architects themselves need to input their advice in the design which puts them in a tricky situation. Norberg states that when an architect faces no criticism for their work, it leads them to a lack of motivation from the client's comments can seem to be irrelevant and subjective but one should always consider it as their experience is different from the designer's. Understanding one's experiences or even trying to can result in better design outcomes. Clients tend to be critical based on their needs but they might not know what else is out there which can allow the architect or designer to use their knowledge to influence the opinion of the client.

People who suffer from dementia can use their experience in mild stages to help make suggestions for architects. An architect needs to know the user's experience, which in this case is the phenomenon of dementia to alter the design based on the client's needs. One can argue that modern architecture can contribute to problems in design for dementia but, each client has their interpretation of space and each experience is different. Architecture and design speak to the user's way of life which is why each space is unique to each individual.

According to the literature that is currently available, studies have primarily been done in care homes, with little done in other residential settings. There hasn't been much research done in hospitals or other healthcare settings, and there isn't much research done in people's homes, in public places, or the outdoors. The study of nursing homes emphasizes the significance of the care philosophy and the challenges in differentiating the influence of design elements from that of the mode of care delivery on care quality. The research reveals that without an adequate model of care, architectural alterations alone may not yield improvements for residents. In general, it seems that the more "homelike" a care facility appears to be, the better. Nevertheless, there are hints in the research on care facilities about how design modifications can influence persons with dementia, for example, by lowering agitation levels, improving opportunities for people to walk around purposefully, or promoting enhanced communication between residents and staff. (Bowes & Dawson, 2019)

Through the information presented in the literature, key aspects have been identified that play a huge factor in answering the research question. In one group of studies, one can understand how design elements such as lighting, wayfinding, and colours in a space can have pros and cons, listing what to avoid and what can work best, in a general way. There is no key audience but the dementia residents, but this allows further research into phenomenology to understand that the key audience, those with dementia, can be grouped into different categories based on their needs. There are the more obvious needs, which are based on the severity of dementia, but then there is also the past life that affects the person's way of living. Their experience can allow different design strategies to be manoeuvred to link to their past and allow for easier wayfinding yet a more sentimental living space.

Chapter 4: Case Studies

4.1 Introduction

The analytical focus of this study is on care homes. Through contrasting and analysing each care facility, this approach aims to uncover nuanced insights into dementia care practices across varied cultural landscapes. This chapter showcases care homes from both Western (European) and Middle Eastern regions, representing the benchmark of what care homes in these respective countries are perceived as ideal. The thesis section delves into three distinct case studies: two situated in the Western region and one in the Middle East. These institutions not only ensure the comfort of their residents but are also recognised as leading care home services within their respective regions. The exploration of these case studies is approached from a cultural vantage point, highlighting the profound influence of culture on the living conditions within these environments. By examining these three selected case studies, each from a different country, we aim to scrutinise the cultural contexts, differences, care traditions, as well as prevalent biases and assumptions (Fisher et al., 2018; DSDC, 2018).

The cultural backdrop within which a person with dementia resides significantly influences their dementia experience. It's paramount to understand that living with dementia is not a homogeneous experience for all. Every individual journey through dementia is distinct, largely shaped by the cultural milieu of the person affected. The sociocultural understanding of dementia symptoms varies across nations and cultures (Gramegna and Biamonti, 2017). While elderly individuals from diverse ethnic backgrounds are susceptible to developing dementia, it's imperative to comprehend the role of cultural factors in understanding ageing and dementia. In countries influenced by Western philosophical thought, there has been a pronounced emphasis on the cognitive domain over other mental facets (HM Government, 2015).

4.2 Shame in Different Regions

The sentiment of shame associated with admitting an elderly family member to a care home in the Middle East surfaces repeatedly throughout this study, underscoring the cultural variability in such perceptions. Notably, many Muslims are hesitant about placing their elderly relatives in care facilities, grounded in their religious and cultural values and influenced by the teachings of Islamic scholars (Abdelmoneium & Alharahsheh, 2016). This religious conviction, while deeply rooted, poses financial challenges. While medical insurance schemes often cover the costs of nursing home stays for the elderly and various family members, they may not extend the same financial support to those who opt for at-home care, leaving a gap in provisions for families that necessitate sustained care and attention.

The Quran, Islam's revered scripture, delineates explicit guidelines on the care of ageing parents (A. ‘Araf, 2015). Concurrently, the Sunnah (prophetic traditions or hadith) emphasises the imperative for offspring to tend to their elderly parents, mirroring the care they received during their infancy. This tenet has historically been interpreted by families and religious custodians as a mandate to care for parents within the familial home setting (A. ‘Araf, 2015).

On the other hand, in The Netherlands, care homes do have a good reputation mostly because of the Hogeweyk care home, as well as it being the main source of inspiration for a lot of new care homes developing in the Western world. The concept of shame is not bought up in any database of having a loved one placed in a Dutch care home. As for the UK, care homes too are not something that is frowned upon or deemed as shameful. On the contrary, it is quite common here even if the person entering the care home have family members living near them. Instead of living with them, they would be placed into a care home if they are incapable of caring for themselves. As there are free and paid care homes in the UK,

it is the free public ones that have residents that need it the most, and those that are financially capable, go to care homes that offer more and they do not need to be in a very critical condition.

The first case study is The Hogeweyk - Dementia Village in Weesp, The Netherlands was chosen as the main case study in care for dementia in this thesis because of its multiple services for the residents and its highly rated reviews from the press. Hogeweyk is an innovative Dutch concept for care for the elderly with severe dementia and is gaining international attention. (The Economist, 2018). The idea of caring is based on the idea that "context matters." The first senior care facility that provides residences tailored to particular lifestyles to care for elders with dementia is Hogeweyk's dementia village. The village was designed in a way to create a community for those with dementia who can walk freely around the space without fear of getting lost from the care home or being physically injured due to the detailing of safety that has been taken into consideration when creating the environment.

The inhabitants of Hogeweyk have the option of residing in one of seven "lifestyle" residences, which are classified as being either urban, artisan, Indonesian, homey, Goois (The Gooi is known in the Netherlands as the home of the rich and famous), cultural, or Christian. These lifestyles can be identified by the furnishings and design of the home, the interactions between the residents, and the regular activities that take place. (Sharp, 2019)

The hospital has no wards, lengthy halls, or corridors. With one or two caregivers, residents are housed in groups of six or seven. The facility’s most distinctive feature, possibly. Homes that are correct down to the tablecloths in the 1950s, 1970s, and 2000s because it makes occupants feel more at home. Only those with "severe cases of dementia or Alzheimer's disease" are allowed to become residents. (Planos, 2018) Given that a seat only becomes available when an existing resident passes away, there are rarely any openings, and the village has been nearly full since it first opened in 2009. (Planos, 2018)

Hogeweyk cost approximately 20 million pounds to construct, with the majority of the money coming from the Dutch government. The monthly cost of care is close to $8,000, but the residents—all of whom have individual rooms—receive varied degrees of subsidies from the Dutch government; the amount that each family is required to pay depends on their income but is never more than $3,600. (Planos, 2018)

The second case study, Harmonia Village, located in Dover, United Kingdom was chosen as it was inspired by The Hogewyk, Dementia Village. This is the first care home in the UK to be designed using Hogewyk as a precedent, which will allow care villages to grow in this region. This village is yet to officially open and welcome residents but based on research examined in this paper, the space seems to have a lot of elements that will allow the comfort of the residents. These features will be examined further in this chapter.

Harmonia Village and Hogewyk are the main case studies located in the Western region and are then compared to a care home located in Kuwait, The Farah Specialist Centre for the Care and Rehabilitation of the Elderly.

The Farah Specialist Centre for the Care and Rehabilitation of the Elderly is the third case study chosen to show how one of the richest countries in the MENA region establishes care for older people and how traditional and religious values are linked to care services. As mentioned earlier in Chapter 1, awareness of dementia is low to none in this region hence why different services such as home care are much more applicable for dementia users. This centre has minimal information presented through social media, articles, the internet, and brochures which also plays a part in why this particular case study was chosen. This is used to portray the lack of care homes facilitated in the MENA region due to the cultural notion of ‘shame’ that it holds about placing a loved one in a facility. It is not promoted in the region, and it is not

something that culture or religion supports for older persons in the family as it is associated with disrespect and abandoning loved ones.

The location of each case study plays a significant role in the way the person with dementia lives and their well-being in that environment. As dementia can be quite isolating, being located within a community can help the residents feel like they are still part of it and reduce the feeling of being secluded. There is also great importance in knowing that they are not placed in a random area and that they do have the option of going to nearby places if they wanted to. Each care home is located within walking distance from local amenities, this allows the residents to have the choice to be more independent if they can. This of course varies in the regulations of each care facility on residents leaving the care facility for their safety. Another important aspect of the location of these care spaces is that they are not secluded from society. This plays an emotionally substantial role in allowing the resident to feel like they are still part of a community and not placed somewhere far from society based on their conditions. This also makes it easier for visitors to visit and for volunteers to commute to these locations.

Kuwait's care home is located near a mosque, in which the Muslim residents need to hear the prayers being called out during prayer time, which can bring back memories for them that bring comfort, peace, and harmony. Harmonia Village is also located near a church, which can allow residents who may have religious backgrounds associated with that church to be within walking distance. Although the religious aspect is not of equal importance in the two different contexts as the residents in the care home in Kuwait, all follow the Islamic faith.

4.3 Different Types of Care for Those with Dementia

Different terms have been used for care environments of different types, depending on what services are provided for each. In this paper, the term "Care Home" is a broad term that describes care villages, nursing homes, and institutions for older people. Care homes provide housing and personal care for people with special needs in their daily lives. Services may include assistance with eating, washing, changing clothes, using the toilet, or taking medicine. Some homes also offer social activities such as day trips and field trips for their residents. Understanding the different types of care associated with the type of care home helps people with dementia make better decisions about their need for care. Each type can vary based on the individual's needs and the level of dementia that they suffer from. Being able to differentiate each type of care and understand it can allow for a decision on residency to be slightly easier.

Table 6. Different types of care homes

Type of Care	Care it Offers
Residential Care	Residential care provides older people with a supportive and compassionate environment for living as a member of the community. The residents usually have their room or studio apartment and enjoy the communal area to share with other residents.
Care Homes with Nursing	Care homes with nursing have registered nurses on site. This is a suitable solution for people with complex needs who regularly need grooming inventions. Care homes with nursing can be used where the level of care needs becomes too high

	for a care home, or where care is needed after a period of hospitalization. A combination of carers and nurses look after the care needs of the residents of a nursing home 24 hours a day.
Retirement Villages	Retirement villages are usually a group of homes and apartments designed specifically for older people. These properties are commonly purchased and have access to various community facilities such as cafes and shops. Accommodation can also provide care, but this care varies from location to location and should be carefully considered to ensure that the care provided is appropriate for the care needs of the resident.
Adult Day Care Centres	Some care homes offer daycare as one of the care facilities and care options. This is a convenient stepping stone for anyone considering moving into a care home. A specialized day-care centre is a good place for seniors to work and do activities during the day.
Home Care	Home care is when a caregiver comes to your home to provide additional care, support, and company. This can be a solution if the person with dementia does not want to leave the house but is beginning to suffer from some of the challenges of independent living.
Hospices	Hospices provide care for those who are dying or have life-limiting illnesses. Some hospices also give nurses and medical equipment to people who choose to die at home. Some hospices provide a safe environment for those who are nearing the end of their lives.

Source: (Types of care homes: Residential Care Homes for Elderly 2022)

These different types of care were sourced from St Phillips Care Home Group, the UK and these different types of care are all available in England, and the Netherlands as an example of what is provided in Western countries.

As each stage of dementia varies, there is more than one option of care that one can turn to in Western situations. As stated in Table, each stage can be associated with a specific type of service that unfortunately not all countries are fortunate to have. Since countries in the West do not link religious/cultural traditions to placing older people in the home, different types of services for older people can be designed using studies and guides to better the place for those choosing to reside there.

4.4 Review of Care in Case Studies

Case Study #1 Hogeweyk

Situated in the Netherlands, Hogeweyk represents a unique care model, accommodating over 150 dementia patients. At first glance, Hogeweyk seems embedded within a typical neighbourhood, boasting amenities like restaurants, supermarkets, and sports facilities, seamlessly integrating with the broader community. In essence, Hogeweyk is a self-contained village, with its residences, courtyards, streets, squares, and other essential facilities. While the village strives to provide a controlled environment emphasizing safety, it ensures that residents are not entirely cut off, allowing for interactions beyond the village's perimeter if desired.

Case Study #2 Harmonia Village

Drawing inspiration from Hogeweyk, Harmonia Village in Dover, Kent, stands as the UK's answer to specialized dementia care. Strategically positioned near Buckland Hospital, its location supports prompt medical access. Unlike traditional care homes, Harmonia is not an isolated entity but aligns closely with the surrounding community. Places of worship like churches are accessible, facilitating residents' religious activities. The village is well-connected, with public transportation nearby, promoting visits and community interactions. One distinct spatial element is its expansive landscaped space. While it's evident that there's a focus on nature and open spaces, clarity on the presence of internal amenities like shops or public spaces would lend more depth to the village's description.

Case Study #3 Farah Specialist Centre for Rehabilitation of the Elderly

Kuwait's foray into specialized elderly care is embodied in the Farah Specialist Centre, strategically located in Shuwaikh near the prominent Al Sabah Hospital. The facility's adjacency to one of Kuwait's largest hospitals implies easy medical access. Unlike the village models in previous case studies, the Farah Centre's proximity to residential areas is defined by a significant boundary - a main road. The audible prayers from nearby mosques infuse a sense of cultural and spiritual familiarity. While the centre organizes frequent field trips, its closeness to attractions like the Sulaibikhat Bay Nature Reserve not only offers therapeutic value but also exemplifies how care homes can leverage natural surroundings. However, the description leans towards promoting the centre, and a deeper investigation into its spatial configuration and how it addresses dementia care could add value.

Undertaking a critical analysis of spatial design in dementia care necessitates a grounded methodology, and the selection and evaluation of these case studies precisely serve this purpose. By juxtaposing Hogeweyk and Harmonia Village – both emblematic of Western design philosophies – with the Farah Specialist Centre, a representation of Middle Eastern care structures, we create a platform for bidirectional learning. The methodology adopted in this paper does not merely aim to apply Western concepts of care to the Middle East, but also to illustrate that Western approaches can greatly benefit from the traditions of Arab elderly care. In essence, this analytical dive into the chosen case studies provides both a lens to scrutinize their operational strengths and challenges, and a mirror reflecting broader socio-cultural insights. Such a critical, comparative approach is not just about best practice emulation, but about co-learning, facilitating a richer, more holistic understanding of the potential synergy between design, culture, and dementia care.

Figure 3. Site Map of Hogewyk Dementia Village, the Netherlands

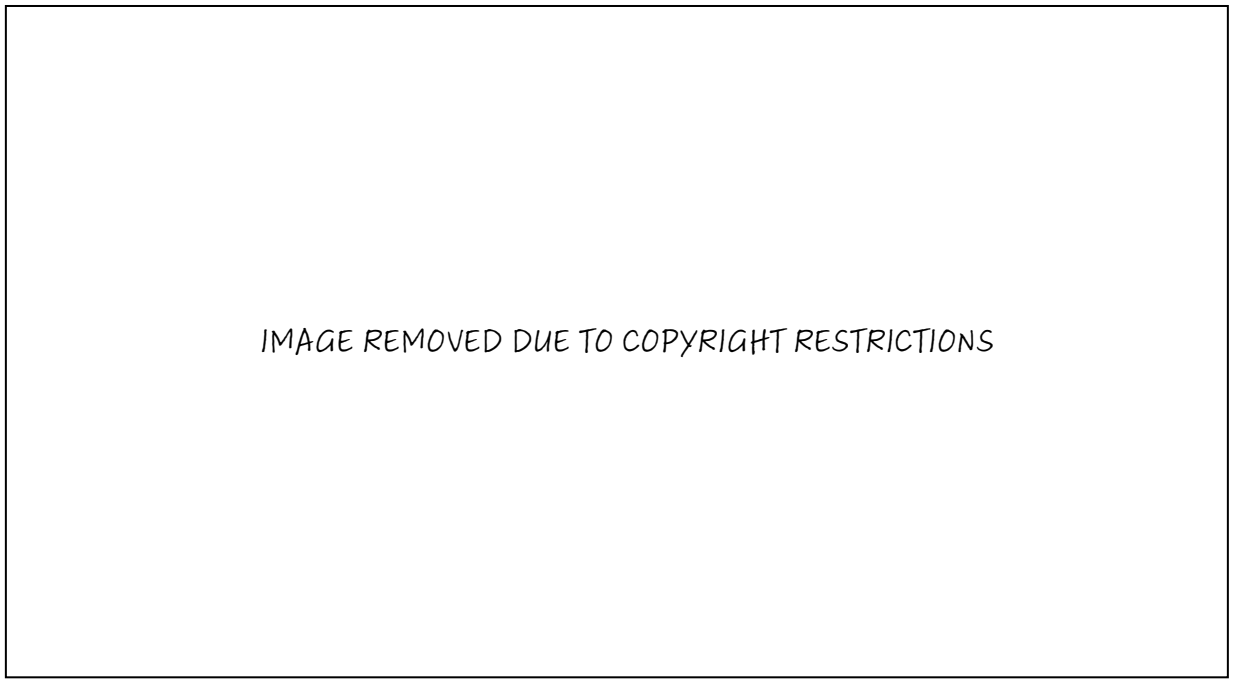


Figure 4. Hogewyk Activity Map

Activities	Assessment Rating	Description
 Strolling	High	In this village, the spaces have a high percentage of green walking space, which allow residents to stroll freely within the parameters of the care home. Doing daily tasks in this village also helps promote walking and daily activity.
 Field Trips	Low	Most, if not all activities done in this village are done within the walls of the home, in which residents do not leave the space unless organized by external members.
 Sedentary	High	Coffee shops and restaurants allow residents to leave their rooms but also have resting spaces. There are also seating areas within the green spaces.
 Miscellaneous	Medium	Activities such as going to the supermarket, bar, or even visiting one another allow social interaction within the space, and do something that does not allow the residents to just sit in one place.

Figure 5. Site Map of Harmonia Village, Dover, United Kingdom

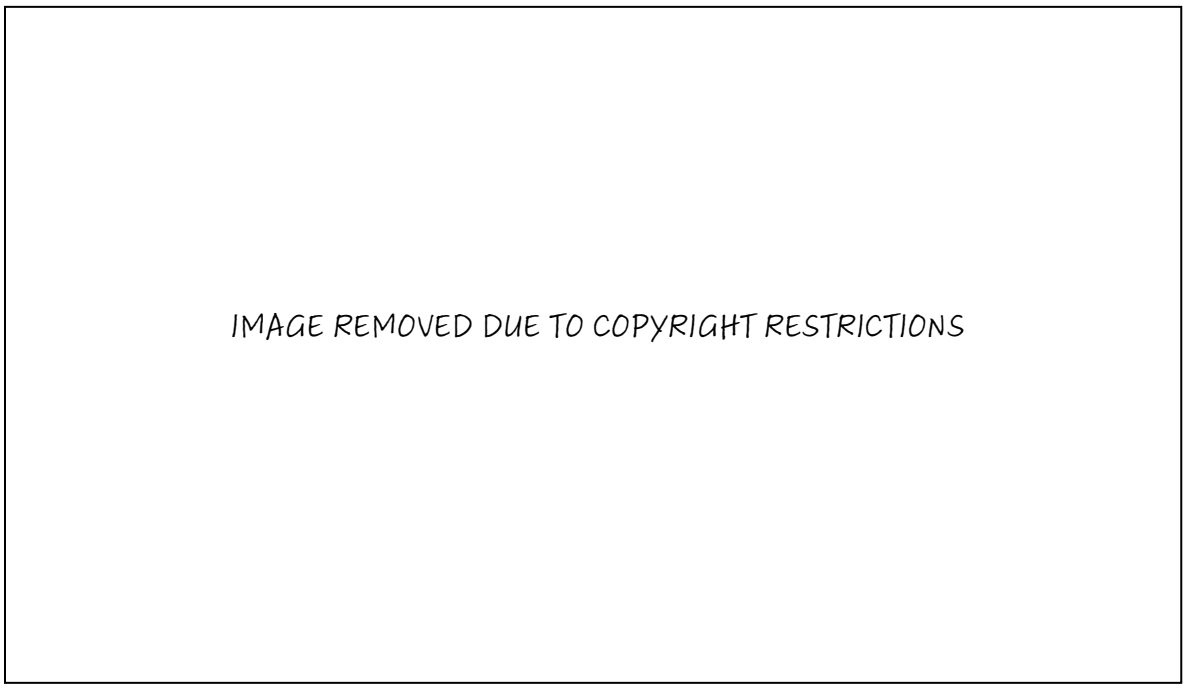


Figure 6. Harmonia Village Activity Map

Activities	Assessment Rating	Description
 Strolling	Medium	Residents can walk to the hub area and have guests come over, which allows for more movement to be done by the residents. There are also walking areas within the vicinity.
 Field Trips	Low	Residents have not had any trips planned so far, there is little to no information about this.
 Sedentary	High	Comfort is very important for this care home, with ergonomically friendly furniture and lots of seating spaces for residents. There are even seating areas in the hallways.
 Miscellaneous	High	Volunteer work is welcomed, in which volunteers organize different activities for the residents.

Figure 7. Site Map of Farah Specialist Centre, Kuwait

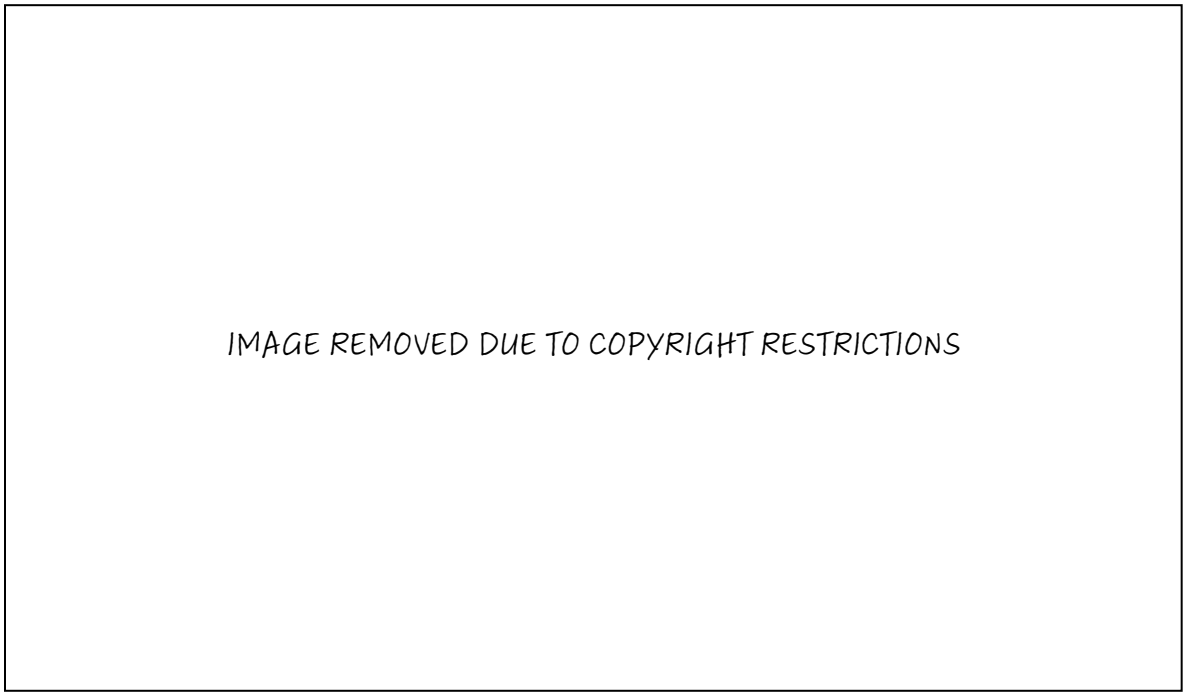


Figure 8. Farah Specialist Centre Activity Map

Activities	Assessment Rating	Description
 Strolling	Low	As Kuwait is a very hot country, walking in outdoor spaces is not common, and the residents in this care home are quite vulnerable and in wheelchairs, so moving around is not common.
 Field Trips	High	Residents have lots of organized field trips in nearby areas. It is quite important in this care home to have residents go out and feel like they are still part of Kuwait's society.
 Sedentary	High	Comfort is key for residents in this care home, and there are lots of seating areas within the space, as well as residents having 24-hour care in which they don't have to do anything for themselves unless they wanted to.
 Miscellaneous	Medium	Volunteers are always welcome in this care home, in which activities are promoted to the residents. A lot of children from different schools visit this care home to be able to bring more social interaction within the space.

The two main case studies in this paper are the care homes that are used in the North Western region, which are in the Netherlands, and the United Kingdom.

Figure. 9 Site Analysis Hogeweyk

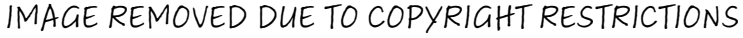
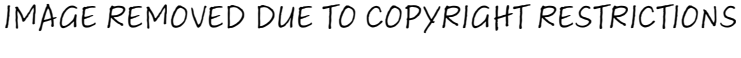


Figure 10. Site Analysis Harmonia



These two practices do include many attributes in design and care that are needed to be transposed to care homes/home care services in the MENA region. Farah Care Home is used as an example to show how care homes in the MENA region do not have much information about them, including floor plans and updated maps of their location which plays a factor in the emphasis of lack of design information in the Arab region. Below are Figure 11 and Figure 12's Site analysis of what is nearby each care facility, and how it's located within a community.

This is not to show what care services in the MENA lack, but what they could gain from adapting to new regulations that can allow growth within a community, and comfort for people with dementia and older people that are unable to fend for themselves.

Table. 7 Spatial Diagrams

Figure 11 Hogeweyk Spatial Analysis	IMAGE REMOVED DUE TO COPYRIGHT RESTRICTIONS
Figure 12 Harmonia Village Spatial Analysis	IMAGE REMOVED DUE TO COPYRIGHT RESTRICTIONS

The diagrams above are existing spaces that are divided thoroughly for the use of residents with dementia. Every form of circulation is calculated for the comfort of the resident, as these care homes' purpose is to ensure comfort for older people that have dementia. These are both two different examples in the same North Western region part of the world, that have design attributes such as easy dementia-friendly wayfinding These care homes are model ideas for proposals that can be introduced in the MENA region, to raise design for dementia awareness in Arab countries that do not differentiate old age and dementia.

4.5 Care in the Middle East/North Africa Region

According to an increasing body of literature, culture and ethnicity can have a big impact on how caregiving is done (Aranda and Knight, 1997; English et al., 2014). In most Arab societies, the family serves as the main source of support for elderly people who need ongoing care, a commitment established in long-standing communal values and obligations for family or relations (Abdul-Haq, 2008). Individuals in intergenerational families are expected to actively engage with and support one another, especially older family members, and they frequently live near one another or shared housing. This traditional extended family structure's innate hierarchical structure of power and kinship relationships affects how crucial decisions are made, such as those regarding the care of elderly family members, which are normally determined by the eldest male family member. Therefore, seeking professional care or choosing to institutionalize a family member with dementia is frequently seen as a breach of familial obligation and is met with stigma and shame by the larger community (Liu et al., 2008; Hanssen and Tran, 2019).

Informal care providers, such as unpaid family members, and formal care providers, such as nursing aides, home care assistants, and other paid care workers, are the two main (often simultaneous) systems of long-term care for the elderly in the Arab region. In the Arab world, the majority of care for older people, persons with disabilities, and individuals with long-term care requirements are provided by family members, mostly women, or other informal carers such as housemaids who do not acquire a nursing license. (Hoodfar 1997; Rugh 1984, 1997; Sibai et al. 2012; Yount and Rashad 2008). Long-term care is almost often given by family, owing to deeply ingrained religious and cultural conventions that emphasize younger generations' responsibilities to their elders, as well as a significant shortage of formal care options (as might be provided by the public policy systems or the private sector). Indeed, if private care is provided, such as through a private nursing home or a non-governmental organization that specializes in social care, the thought of elderly relatives being placed in such nursing homes is fraught with societal stigma.

For at least the past two to three decades, extended hospitalizations and the admission of frail, older people to care facilities have occurred in many Arab countries; these were usually attributed to the combined effects of longevity and a lack of other suitable formal care provisions that are home or community-based (Rugh 1981; Rugh 1984; Sibai et al. 2009; Sinunu et al. 2009). There are signs that people are using formal care more frequently, especially in cities. Despite long-standing family care practices, research in Egypt (Boggatz and Dassen 2005; Sinunu et al. 2009) reveals that numerous variables are leading family caregivers in Cairo to hire formal (medical professionals, i.e home nurses) or paid care workers to look after their elderly relatives. In the Middle East/ Arab countries, older people are increasingly supported by professional care settings in their own spaces which are investigated further when looking at home care vs care home services in the Middle East.

Additionally, in line with research on the primarily gendered nature of caregiving in collectivist cultures (Fast et al., 2001; Chadiha et al., 2004; Stewart et al., 2006), socially constructed and locally accepted beliefs (also held by women) that providing care is a woman's natural role and a

general expectation that children will look after their elderly parents. (Hooyman, 1990; Al-Ghanim, 2017)

The population of Arab countries is expected to age rapidly in the coming decades compared to how it was in the past due to modern medicine causing them to live longer. (Hussein and Ismail, 2016) However, current evidence bases show that many countries in the region are not paying attention to this demographic phenomenon. (Hussein and Ismail, 2016) This is of particular concern as longevity is often associated with long-standing illnesses and disabilities, and most countries in the region continue to rely on families as the primary source of care for the elderly. Families, especially women, are expected to provide support for a longer period but face various socio-demographic changes that can affect their ability to provide such care. The care they provide to loved ones with dementia can cause great distress in one's mental well-being which will lead to the burden of the illness. In addition, and often, the diagnosis of Alzheimer's or other dementia is accompanied by some stigma and can create social barriers. Unfortunately, many people with Alzheimer's disease/dementia are isolated from society, excluded from socializing with extended family and friends, and prevented from participating in social activities. The associated sense of isolation increases the physical and psychological burden on the person and can put additional strain on the family and caregivers. Many governments in MENA countries have developed an infrastructure that can provide more complete support for Alzheimer's patients and their families, assuming that care for the elderly, including those with Alzheimer's disease, is the sole responsibility of the family. This usually includes some financial support, advice, and help for families that have a member that suffers from a form of dementia. (Al-Olama & Tarazi , 2017) However, due to the rapid increase in dementia cases and the increasing socioeconomic burden of families caring for people with Alzheimer's disease, legislative changes are underway to improve the care of the elderly, including those with Alzheimer's disease. Nonetheless, ensure that appropriate funding is allocated to support and improve services for patients with Alzheimer's disease and the general elderly, including integrating these services into future government budgets. Therefore, further changes are needed. (Al-Olama & Tarazi, 2017)

In the context of Arab and Muslim cultures, little is known about the experiences of informal family caregiving for people with Alzheimer's disease and related dementias. According to some studies such as '*Dementia caregiving in the Middle East and North Africa: A scoping review'* (explained in the literature review on page 21) family members are ill-prepared for the difficulties involved in providing care for someone with ADRD, an "unplanned and unanticipated" experience (Aneshensel, 1995). 2 Although this job is seen as an extension of family responsibilities towards elderly family members among Arab cultures (El-Islam, 2008; Hamdan, 2009), it does not make them any more capable of performing it. Family caregivers' experiences within the framework of Arab-Muslim sociocultural norms consequently tend to be an implicit expectation, which explains in part why it is still understudied. (Hammad et al., 2022)

Some Middle Eastern/North African cultural beliefs stigmatize mental and cognitive illness, which in turn affects societal attitudes and help-seeking behaviours, as much of the literature in Arab Islamic contexts as well as other contexts has demonstrated (Al-Subaie and Alhamad,

2000; Gearing et al., 2015; Kevahyan et al., 2020). In contrast to the biomedical and prevalence lenses used in dementia research, a closer examination of the ways that the socio-cultural context of dementia caregiving influences attitudes and practices is required in the MENA region (Lyman, 1989; Harding and Palfrey, 1997; Down, 2000; Hammad et al., 2019; Kane et al., 2021).

This study seeks to advocate for an evolution in the approach to dementia care, one that is carefully tailored to accommodate individuals from varied backgrounds. A comparative examination of dementia awareness in the Western world and its potential application in the Middle East and North Africa (MENA) region could represent a significant leap towards this evolution. The design environment can incorporate local cultural and traditional aesthetics, yet the application would benefit from insights gathered from Western dementia design research. Examples of such resources include the guidelines offered by Stirling University's Design Dementia Services Development Centre. The integration of these perspectives could result in a dementia care approach that harmoniously combines cultural sensitivity with research-backed design practices, thereby enhancing the quality-of-care provision.

In light of the presented exploration, the multifaceted dimensions of dementia care in the Middle East and North Africa (MENA) region manifest themselves profoundly through cultural, societal, and familial lenses. The juxtaposition of entrenched traditions, driven by deep-seated religious and societal values, against a backdrop of rapidly changing demographic realities, underscores the urgency of re-envisioning care models. While the Western model, exemplified by the guidelines from Stirling University's Dementia Services Development Centre, provides a blueprint for dementia-specific design, it cannot be adopted wholesale in the MENA region without risking cultural incongruity. For dementia care to be efficacious in this region, it is paramount to synthesise the insights from Western research with the indigenous cultural nuances of the MENA societies. Bridging this divide could lead not only to an enhanced quality of care but also to a paradigm that respects and resonates with the identities of those it seeks to serve.

Table 8. Case Studies

	Hogeweyk, Dementia Village	Harmonia Village, The UK	The Farah Specialist Centre for the Elderly, Kuwait
Location	The Netherlands	United Kingdom, Dover	Shuwaikh, Kuwait
Date of Opening	2009	2019	Not available
Facilities	24-hour care Café-restaurant Beauty salon Physiotherapy Theatre Pub	24-hour care Activities Volunteers activities Painting Program of Daily activities	24-hour care Psychological care Volunteers activities

Type of Home	Care Village	Care village – smaller scale	Nursing Home
Home Care Services	No	No	Yes
Outer Surrounding spaces	Supermarket Gyms Parks	Hospital Kiosks Council houses	Hospital Supermarket Park Beach Residential area
Number of Residents	152	30	20 in-home and 3600 for home care services
Overnight Visitation	No	Yes	No
Age Entry	Any	Any	65
Field Trips for Residents	No	No	Yes
Private or Public	Public	Public	Public
Practising Religion	No	No	Yes
Transportation	No	Yes	Yes
Disease-Specific	Yes	Yes	No
Independence in everyday tasks	Yes	Yes	No

Table 8 serves as an introductory snapshot, outlining the key attributes of the three selected case studies: Hogeweyk Dementia Village, Harmonia Village, and The Farah Specialist Centre for the Elderly. It collates essential information such as the opening dates, available facilities, and resident capacities. This concise overview offers a preliminary understanding of each case study, setting the stage for a deeper exploration of their individual characteristics and their contributions to the field of dementia care.

4.6 Hogewyk, the Netherlands

Dementia Village Hogeweyk is a concept originally developed in the Netherlands on the outskirts of Amsterdam. This village is an alternative nursing home with all the features of a traditional nursing home, including a 24-hour medical professional, dining room, kitchen, bedroom, and living room, but it looks and functions differently than a small village. The concept is that the patient or user lives in a small apartment with people of the same background as themselves and lives a "normal life" within the safe limits of the village. Medical staff, including doctors and nurses, work in the village to help them live the same life they had before they were diagnosed with dementia. In addition to buying and cooking food on their own, patients live in separate homes in groups with people of the same background. These factors may appear minor and less important, depending on how most people live. (Haraldseid, 2018)

The Village is designed especially for older people with dementia that have 24-hour care from doctors, nurses, and specialists for the 152 residents living there. It has 23 houses that are differentiated by the different severity of dementia that they suffer from and the residents

manage their households with the help of the staff members. Residents can safely roam around the village through the streets, squares, gardens, and parks. It also includes different facilities such as restaurants, bars, and a theatre that are dementia-friendly. All staff members in this village are dementia trained, as they are working different jobs in the village, i.e. working on the supermarket tills, the bar, or even the restaurant, and providing the services to the residents but are educated in handling dementia users. (Edge, 2018)

Hogeweyk's approach is to divide users into lifestyle groups where residents have similar cultural or social backgrounds. This is because dementia is a condition in which a part of the brain has deteriorated and patients tend to forget what they have in their recent memory. These factors make it easier for patients to live with people of similar backgrounds after adolescence and promote a healthy social life in the village. However, the importance of individual autonomy to manage one's day and life is important for good mental health. The purpose is for users to lead a normal life as much as possible. (Haraldseid, 2018)

Older people, especially those with dementia and Alzheimer's disease, are prone to depression. One way to deal with depression is with medication. This is probably the most common treatment for the elderly and those in need of care. However, studies show that there is a more efficient way to deal with depression: physical activity. (Kraus 2006) According to a study conducted by psychologist Mirka Kraus, physical activity that combines drug therapy and social activity has good results for people with depression in the presence of behavioural and psychological symptoms. In addition, studies show that this treatment may be even more effective when physical activity is combined with social and group activities to enhance the patient's subjective experience of quality of life and self-esteem. (Kraus 2006)

This supports recent studies and has also shown that increased physical activity reduces the need for medication and improves the physical and mental health of patients. At Hogeweyk, they focus on normal life and carry out activities such as daily habits and activities. This keeps the patient moving all day long. Premature institutionalization of the patient and too rapid dementia development must be avoided to protect both physical and mental health. Depression and dementia are two illnesses that frequently coexist. (Bystad et al. 2014) A strategy to prevent this is to protect a person's autonomy and give the users the chance to live as normally as possible while interacting with others.

Hogeweyk exposes how society categorizes people as having dementia or not, which is a culturally rooted practice. Hogeweyk appears to imply that there isn't such a significant difference, deep down—just different needs—by treating residents like normal individuals. The occupants avoid the dehumanization that long-term medical care may unwittingly bring about by planning a city that is specific to those special needs. (Sharp, 2019) This may be a case where cultural practices should be avoided, as linking cultural beliefs of treating a person differently based on their condition is what makes their own lives harder. As mentioned before, this illness does not have a cure, but there are multiple ways to manoeuvre the burden that comes with it, and that change can be altered by social interaction. The way a space is designed can allow for better social interaction between the person with dementia and their family member, care worker, or even with each other. Allowing spaces to be modified to their needs can allow them to live in

a friendlier environment that does not need much alteration when the dementia stage gets more severe.

The problem with traditional nursing homes is that they may not be able to provide a good, easy-to-use, quality outdoor space. Studies show that older people who spend more time outdoors are less stressed and happy. Therefore, a high-quality green environment is essential for the best care of the patient in the care facility which is an important feature in Hogeweyk, designed by landscape architect Niek Roozen of Niek Roozen Tuinen Landschapsarchitecten. (Bengtsson 2015)

People with dementia not only improve their physical health by being active but reduce the need for sleep medication by using their bodies in a physical activity instead of sitting in a chair indoors. In Hogeweyk, the creation of outdoor areas was very important. Hogeweyk users are free to move around and stay within the safe limits of the village. The space between the buildings is carefully designed to meet different needs. Some are for entertainment and activities, while others are for hiking and pure relaxation and recreation.

As studies have shown, the green environment has a relaxing effect and tends to reduce mental fatigue (Krisch 2014), and the characteristics of Hogeweyk are widely discussed. People with dementia generally feel confused. Therefore, it is important to create a quiet and readable environment to avoid dead ends when practising their lifestyle in the village. Hogeweyk has created an environment that will not get lost during operation. An important feature to consider when designing a care garden for people with dementia is accessibility, including physical, social, and visual accessibility. (Zeisel & Tyson 1999)

According to the Dutch architects Molenaar & Bol & VanDillen (now Buro Kade Architects), the place aims to use architecture to evoke memory. They wanted to create a safe and comfortable healing environment for those who are suffering from dementia and/or Alzheimer's disease. The buildings in this village are a variety of residential, commercial, and "public" structures. There are no buildings designed dedicated to health or medicine. A variety of home types, as in many other villages, connect to different eras and socioeconomic classes (for instance, 1950s suburbia, urban apartments, and Soviet-era housing). Dementia villages are evidence of two historically significant architectural phenomena. To begin with, the growth of the dementia village demonstrates the "village" trope's continued power as a caring setting. Dementia-village architecture is inspired by pre-industrial small-town imagery, such as pedestrian-friendly circulation, family-centred housing, and shared community spaces. The 24-hour professional care and support are barely visible to the visitor to the village. This care home organization is done behind the scenes as much as possible to minimize disruption to normal life. Like a real village, a dementia village is a combination of residential, commercial, and "public" buildings. In particular, there are no buildings specializing in health or medical care. Like many dementia villages, different home types correspond to different times and social classes. The village of dementia has witnessed two important phenomena in architectural history. First, the rise of dementia villages shows the lasting power of the "village" metaphor as a compassionate

environment. The same precedent influenced New Urbanist architects[14]. The idyllic new town of New Urbanism represents a dreamlike and happy place. Furthermore, the village of dementia has shown a willingness to camouflage serious illnesses by creating a healthcare environment that looks like something else.

Second, the dementia village exemplifies a desire to disguise serious sickness by creating places that appear to be something else as there are no buildings dedicated to health or medicine. The creation of this village juxtaposes a traditional nursing home as it is created as a sort of independent concept that counterparts to what other care homes/villages have. This community is deliberately anti-medical. In other words, medical care is concealed. The workers in this village are professional nurses disguised as cashiers for example, but in a traditional care setting, the care workers stand out dressed in white. This is similar to the concept of hospital designs resonating in hotels, shopping malls, and even airports. (Chivers et al., 2021)

The Dutch care home is even nicknamed the Truman Show, after Peter Weir's 1998 film *The Truman Show* (Peter Weir, 1998) about a man who lives his entire life in a television show but does not realize it. The Dutch care village is nicknamed after the Truman Show because while everything seems real to the residents, it's all artificial, and the people from the outside world are the ones who know it. (Edge, 2018) In this situation, the artificially manipulated village is actually for the benefit of the residents, rather than the outside community, as the show was for the entertainment of the public. All staff members in the Dementia Village community are qualified to care for the residents and if one looks at it from a subjective point of view, it may seem like a world in which the residents are trapped in there rather than being in a care home.

There is a diverse range of responses to this care home. One of the intentions of this research is to demonstrate a thorough investigation into other facilities, analysing interviews with healthcare practitioners and observations of design details to form a critical evaluation of each. This is one of the most developed care home facilities because they have created a community for residents that need assistance in caring for themselves, but the assistance is not in a hospital-like setting. As it is the same price to enter as other care homes in the Netherlands, this shows the ability for change in the care home systems and that allowing a sense of normality can make their quality of life less difficult.

When older people need care, they frequently lose their autonomy and the ability to make decisions about their daily lives, which is a problem that our project first identified. Hogeweyk's design is an innovation since it gives patients the freedom to manage their schedules and abandons the conventional care home paradigm, in which residents frequently spend the majority of the day seated.

[14] New Urbanism is an urban design movement which promotes environmentally friendly habits by creating walkable neighbourhoods containing a wide range of housing and job types. It is exemplified by Seaside, Florida, designed by Andres Duany and Elizabeth Plater-Zyberk in the 1980s and used as location for the film, The Truman Show (Peter Weir, 1988).

Hogeweyk's Interior Design

Figure 13. Drawing by Niek Roozen, Weesp

Molenaar & Bol & VanDillen designed Hogeweyk, which debuted in December 2009. On four acres of land, it was constructed. The Dutch government provided €17.8 million, the majority of the €19.3 million construction cost, along with €1.5 million in funding and sponsorship from local organizations. With a monthly cost per resident of around €5,000, it is comparable to more conventional nursing facilities. (Twistedsifter, 2015)

The villagers can safely stroll around in the village's streets, squares, gardens, and parks. Figure 1 shows the green spaces located around the village in all of the communal areas, as it plays a huge factor in the way the residents feel when walking around the buildings. The ability to connect with nature all around the space can be very therapeutic. There is also access to walking paths from each building, to allow residents to be able to go on walks wherever they are in this village. The village promotes strolls throughout its design as exercise has numerous recognized advantages for both physical and mental health, such as lowering the risk of diabetes and heart disease, building stronger bones, and relieving stress.

Additionally, regular exercise is good for the brain. According to studies, those who are physically active have a lower risk of having Alzheimer's disease and experiencing a decline in their mental function. (Algase et al., 2010) One of the established, controllable risk factors for dementia is physical exercise. Furthermore, frequent exercise can reduce other risk factors for Alzheimer's disease, like depression and obesity.

Natural resources are used in natural therapy to treat sensory impairment. Research has shown that sensory exercises help patients with dementia feel less agitated and anxious, improve their sleep patterns, and reduce stress in the caregivers' families. Exercise and access to fresh air are beneficial for everyone's health, including those with dementia. There is evidence to support the idea that frequent exercise lowers the risk of dementia. (Graff-Radford, 2021) These natural resources are included in Hogeweyk as a way of encouraging the residents to include them in their daily lives without it being enforced on them.

IMAGE REMOVED DUE TO COPYRIGHT RESTRICTIONS

Figure 14. The various interiors of the Hogeweyk houses, Photograph by KopArt Amstelveen

Table 9. Stirling University Guidelines VS Hogewyk House Interior

Good practice in the design of homes and living spaces by the University of Stirling DSDC Guidelines	Various interiors in Hogeweyk Houses
Contrasting key features	The photos displayed show contrasting features but have lots of patterns which can allow confusion and limit the contrast between the two items such as the top left photo in Figure 10
Choice of colour and contrast	Lots of bright colours to differentiate items
Maximization of natural light	Light from windows is visible
No usage of rugs and mats	No rugs in the photos displayed
Visibility of entrances and exits	The doors are contrasted with the walls so they are visible
Accessibility of outdoor spaces and path design	Lots of open places and space to freely roam around without the risk of leaving the home
Points for reflection and further consideration	Patterns used in wallpaper can allow residents to perceive them as actual objects which can be confusing.

The Netherlands' Policies on Care Homes

The Netherlands' approach to care homes reflects a progressive and inclusive vision, as demonstrated in the policies described on the Dutch Government's official website. The system is rooted in a commitment that every individual in need of constant care or supervision — whether due to severe physical or mental conditions, or age-related vulnerabilities — deserves a rightful place in a residential care facility (Dutch Central Government, n.d.).

Far from being mere accommodation, these Dutch facilities are crafted with meticulous detail, ensuring that residents have access to continual care, are closely monitored, and live within a protected environment. This emphasis on safety, health, and tailored care showcases the nation's dedication to maintaining the dignity and well-being of its elderly and vulnerable citizens. The regulations and institutional structures underpinning this care network make it a beacon for long-term and elderly care globally.

Analytically, the Netherlands' approach serves as a testament to how policy, when integrated with empathetic care, can shape a nation's approach to its most vulnerable. Their model underscores the fact that progressive care isn't just about infrastructure or resources but about a holistic vision of well-being, where every individual's needs are both acknowledged and addressed. This perspective is crucial for countries re-evaluating their care strategies, as it

highlights the balance between individual rights, societal values, and practical healthcare delivery.

4.7 Harmonia Village

Harmonia Village is a block of council houses located in Dover, Kent. Harmonia Village was inspired by The Dementia Village in Hogeweyk and contains residents with dementia that are encouraged to live their lives there as independently as possible. It is located near a hospital. The block of six houses consists of five bedrooms for all the residents which all have en-suite bathrooms. The two-story houses each contain lifts and are dementia friendly so the wayfinding for residents can be hassle-free. For the convenience of the residents' nurses and carers are available 24 hours a day. The main building contains a hub with a café as well as regular activities for the residents and the wider community. This hub also includes six bedrooms to accommodate visiting relatives of the residents. (Lennon, 2020)

The strategic positioning of the site showcases deliberate and thoughtful planning. Nestled within a suburban locale and flanked by other council houses, the village is not only in proximity to essential medical infrastructure, such as the hospital to the west, but it also situates residents within the broader community fabric. This is particularly salient for those with dementia. The nature of the illness often engenders feelings of isolation and a profound sense of being 'othered' from the wider community. By integrating Harmonia Village amidst other council houses, the design effectively challenges the conventional paradigms of care homes that often segregate individuals with dementia. Instead, this thoughtful placement underscores the notion that those with dementia, despite their cognitive challenges, are still integral members of the community and deserve to live in an environment that neither isolates nor stigmatizes them. This exemplifies a progressive approach to dementia care, foregrounding the emotional and social well-being of its residents as much as their physical health.

Harmonia Village Interior Design, Observations using DSDC Guidelines

Figure 15 Harmonia Village Bedroom

Figure 16 Harmonia Village Hallway

IMAGE REMOVED DUE TO COPYRIGHT RESTRICTIONS

Note: Images sourced from Architects Journal website, by Gordon Young.

Images sourced from Architects Journal website, by Gordon Young.

In both images shown in Figures 15 and 16, the spaces at first glance look dementia friendly. There are contrasts between adjacent walls, wall to ceiling, and no patterned wallpaper. These elements can ease a lot of anxiety in a space that is avoided in the interior elements. The flooring is timber with no rugs that might create an illusion of a hole in the ground, or to avoid tripping. There are also no carpets shown with any patterns which are also quite important for avoiding confusion. Through observation of these photos, one can also see that the contrast between the furniture and the floor is visible, and also allows for wayfinding and navigating their way easily. In Figure 16, the staircase's wall is painted in a dark red colour that allows for the silver railings to be seen and highlighted, which will remind the residents to hold onto it when climbing the stairs.

Given that the UK experiences varying daylight conditions due to its geographical position, the design of the building effectively incorporates large windows in the hallway and ensures ample light entering the bedroom. Spotlights are also shown in the ceiling of Figure 15 as well as a wall light but the light seems to have frosted glass which will avoid the gleams of light that can distress the eyes of the residents. Elements like these are crucial in a home, as they can avoid a lot of unnecessary distress to the residents, and it also designed in a way that does not make it look like a hospital room or an old-fashioned care facility. As the rooms are quite simple, this allows residents to bring in their belongings and to be able to design the space in a way that links them to their own home, which is quite important for difficult days when they do not remember where they are.

Further examination of the design underscores the significance of allowing spaces to be tailored to individual residents. Familiar items play a pivotal role for dementia patients, serving as an anchor to treasured memories. It becomes paramount to discern if there are built-in shelves, cabinets, or specific niches where residents can display personal photos, cherished keepsakes, or favoured literature. Such personal touches are instrumental in creating an atmosphere that mirrors home. Additionally, it would be prudent to ascertain whether residents are encouraged to introduce their own furniture pieces. The presence of a recognisable chair or bedside table can greatly mitigate the challenges of disorientation, bridging the gap between practicality and attending to the emotional well-being of the residents.

4.71 UK Policies on Care Homes

In the United Kingdom, the Care Quality Commission (CQC) operates under the financial support of the Department of Health, in addition to the fees paid by care providers (Care Quality Commission, 2016). As stipulated by governmental policy, the CQC is mandated to fully recover the expenses related to overseeing adult social care and healthcare services within England.

The CQC's primary objective is to ensure that care services across England, encompassing hospitals, care homes, general and dental practices, provide safe, effective, and high-quality care to individuals. Moreover, it seeks to guide these establishments in making necessary improvements (Care Quality Commission, 2016). This goal is achieved through the execution of inspections, part of the mandatory registration process for new care services, and continual monitoring of various data sources that could potentially indicate service issues.

The presence and proactive approach of the CQC highlight the UK's dedication to not only maintaining but continuously elevating the standards of care for its citizens. In an evolving landscape of healthcare needs and an aging population, a dedicated body like the CQC becomes instrumental in ensuring accountability and responsiveness. While the regulatory framework mandates strict adherence to benchmarks, it is also essential to recognise that the role of the CQC transcends traditional oversight. By offering guidance for improvements and adopting a data-driven approach, the CQC exemplifies a forward-thinking stance, weaving adaptability into the fabric of care provision. As a result, this ensures that the care system in the UK is not static but rather fluid and geared towards continuous advancement in response to the ever-changing dynamics of healthcare challenges.

4.8 Farah Specialist Centre for the Care and Rehabilitation of the Elderly, Kuwait

Located in Shuwaikh, a residential sector of Kuwait, the Public Care Centre for the elderly sits strategically near its affiliated hospital, ensuring quick medical attention when needed (Al-Qabas, 2018). One distinguishing feature of this facility is its commitment to upholding cultural and religious values. The limited online exposure of the facility isn't just a marketing stance but a testament to the region's deep respect for individual privacy, especially concerning the elderly—a sentiment echoed across many care centres in the Arab world (Ahmed & Elsharkawy, 2019).

The integration of religion into the facility's operational rhythm is evident. Since all residents are Kuwaiti Muslims, the centre has gender-segregated sections in alignment with Islamic precepts (Kuwait Times, 2017). Staff, attuned to these religious norms, adjust their routines to Islamic prayer times and participate in religious festivities. A variety of activities, both indoor and outdoor, ensures residents stay engaged and active. Additionally, field trips are organized for those residents whose health permits (Al-Rai, 2019).

The centre's commitment to holistic care is further emphasized by its dedicated team of social workers and psychological specialists. As per the Elderly Law of Kuwait, residents must be Kuwaiti and either lack a caregiver or are incapable of self-care to be considered for admission (Memorandum of Law 18, 2016). The centre also provides valuable home care services.

In summary, the limited online information about this centre is indicative of a larger trend in the MENA region. The emphasis on preserving the dignity and privacy of the elderly, especially in the digital realm, exemplifies the deep-rooted values of the Arab world (Ahmed & Elsharkawy, 2019).

Explanatory Memorandum of Law No. (18) Of the Year 2016 Regarding Social Welfare of Elderly People

In 2016, the Kuwaiti government promulgated Law No. 18, delineating provisions for the social welfare of elderly individuals (Kuwait Law No. 18, 2016). Under this law, individuals aged 65 and above are formally classified as 'elderly'. Notably, the legislation distinguishes between the general elderly population and the "less fortunate elderly", a crucial differentiation that accounts for those older individuals who, due to financial, physical, mental, or psychological constraints,

cannot meet the basic standards of life that an average person can. This nuanced categorization allows the government to extend special privileges to this vulnerable demographic, ensuring their basic life needs are met, especially when their financial conditions pose challenges.

The law elaborates on the fundamental rights of the elderly, detailing provisions such as access to medical treatment overseas, entitlement to monthly allowances, allowances for servants or nurses, and the guarantee of free public transportation. Additionally, the legislation underscores the State's obligations towards its elderly citizens. It mandates the creation of public and private care homes, sports, cultural, and recreational clubs, and centres. The establishment of these institutions aims to integrate elderly individuals into societal folds actively. Furthermore, the law emphasizes support for families catering to elderly members and ensures that seniors benefit from public services.

Furthermore, the law establishes guidelines for identifying caregivers for the elderly and outlines the financial implications of such care. It emphasizes maintaining the existing rights under public aid laws, rights of persons with disabilities, and personal statuses. To ensure the provisions of the law are adhered to, penalties have been stipulated for violations. Though the specifics of these penalties are not detailed here, the language of the law strongly suggests a stringent approach with little room for leniency (Kuwait Law No. 18, 2016).

From a broader cultural perspective, such legislative actions hold immense significance in the Middle Eastern/North African context. The region places paramount importance on revering and caring for its elderly, as they symbolize the epitome of love, respect, and accumulated wisdom within familial structures. The enactment of such laws reflects an intertwining of cultural values with legal frameworks, ensuring the well-being and dignity of a population segment held in high regard.

An article written in the *Aljarida*, a Kuwaiti newspaper, translated to "... in the home for the elderly ... when the conscience of the children falls asleep!" was issued in 2008 talking about their experience when visiting the Farah Care home. (Al-Enzi et al., 2008) To shed light on this group, their suffering, pain, and needs, the newspaper was eager to visit care homes, in particular the home for the elderly, to greet the elderly and elderly women on Mother's Day. While there, they met with the residents of the home as well as a group of officials and specialists. They claimed that as soon as they entered the house, a sense of loneliness overcame them, which in turn was a reaction to the excitement they had felt before meeting the older women there. These women are in wheelchairs and the author poetically states in Arabic, that the sturdiness of the wheelchair is as hard as the women's hearts, who have been abandoned by their loved ones, who have consistently rejected them and their kindness. They "dwell in the remoteness and loneliness of this home, shut off from their roots," according to the story. Given their dire situation, they have no option but to stay in the care home as it is the only place that can offer them safety and comfortable life. (Al-Enzi et al., 2008)

In this article, the author seems to be biased toward the fact that this care home existed, as she shames the children of the older people for not being able to care for their parents. She mentions how the older people had no one, and the care home shouldn't be a place for anyone. It describes

the home as a somewhat jailed space where residents go to spend the remainder of their lives in a miserable state. This view of one reporter does not compare to what a lot of people in the MENA region think when it comes to caring facilities for older people. It is considered to be the last resort when looking for the ideal solution for having one's elders in a home. This thesis shows how care homes work in other countries in the West (England and the Netherlands) with characteristics that make the care home a safe, dementia-friendly space which is to show how the Middle East can accomplish this in their own care homes. The issue here is to be able to bypass the idea of "shame" that is associated with care/residential homes for older people.

4.81 Kuwait Policies on Older People Care

The Constitution of the State of Kuwait has translated this in Article (11) which stipulates:

"The State guarantees aid to citizens in cases of old age, illness, or inability to work. It also provides them the services of social security, social aid, and health care." (*Kuwait 1962 (reinst. 1992) constitution* 1992)

Older people are an important segment of Kuwaiti society, and emanating from the State's belief in the importance of all segments of the society and their effective role in increasing development, it has become essential to devise legislation related to older people in Kuwait. (*Kuwait 1962 (reinst. 1992) Constitution* 1992) Noting that although they do not live the regular lifestyle they did previously, this does not mean they need to live an incompetent life.

As a result of the development in today's society, and the change in social problems and their complications, whereby the older person amongst the family member does not find anyone to dedicate himself to or ensure his/her comfort, it has become necessary to have institutions specialized in caring for them and to consider that the problem is not only addressed by providing them housing, clothing, and food, but rather, care should extend to include the appreciation and sympathy of others for the elderly and the formation of friendships in the community, thus growing hope for survival and life in the society and providing them with satisfaction and psychological stability.

The elderly are an important segment of Kuwaiti society. Thus emanating from the State's belief in the importance of all segments of society and their effective role in increasing development, it has become essential to devise legislation related to the elderly. Noting that although the elderly left the practical life, this is not evidence of their incompetence. They still enjoy long experience and wisdom as they worked for a long time, and this constitutes a substantial asset that must be taken into account.

Accordingly, with the changes in social issues and their complications (such as the advancement of women being able to work in the MENA region) and the fact that the elderly among family members no longer have anyone to devote themselves to or ensure their comfort. It has become necessary to have institutions that are focused on caring for the elderly, and to recognise that the issue is not only addressed by giving them a place to live, clothes to wear, and food; rather, care should also extend to include other people's appreciation and sympathy for the elderly. This will

increase their hope for survival and life in society, as well as their sense of fulfilment and psychological stability.

Elderly individuals, due to their unique health, social, psychological, and economic needs, necessitate collaborative support from a plethora of institutions and sectors. In Kuwait, this collaboration is evident among health institutions, the Ministry of Social Affairs, Youth and Sports bodies, Public Welfare associations, national financing institutions, and others. The joint efforts of these entities aim to provide the elderly with a conducive environment that promotes their health, psychological well-being, and continued societal engagement, shielding them from diverse risks. This commitment to elderly welfare is enshrined in the Constitution of the State of Kuwait, Article (11), which asserts: "The State guarantees aid to citizens in cases of old age, illness, or inability to work. It also provides them with services of social security, social aid, and health care." (Kuwait 1962 (reinst. 1992) constitution 1992)

In a progressive move to enhance elderly care, Law No. (11) of 2007 was succeeded by a more detailed and advantageous legal framework. This legislation meticulously defines an 'elderly' individual as anyone aged sixty-five or above and further differentiates between 'elderly' and 'impoverished elderly'—a distinction rooted in their capability to meet life's necessities given their financial, physical, mental, or psychological conditions. This critical distinction facilitates the allocation of specific privileges to economically challenged elderly individuals, enabling them to meet their essential needs.

The law delves into the rights of the elderly, addressing issues ranging from medical treatment abroad, monthly allowances, and provisions for servants or nurses. Furthermore, it underscores their right to exemption from public transportation fees. Central to this legislation is the State's responsibilities, emphasizing societal integration through the establishment of care homes, clubs, and recreational centers. These provisions are bolstered by support for families caring for the elderly and ensuring that senior citizens can access public services. The law also delineates the mechanism for financing elderly care and establishes the Family Court's jurisdiction over related matters (Explanatory Memorandum of Law No. 18, 2016).

Kuwait's specialized legislation for its senior citizens epitomizes the profound respect Middle Eastern cultures accord to the elderly. While the Western world may house more care facilities, Middle Eastern countries like Kuwait prioritize legislations that integrate the elderly seamlessly into society while ensuring they're financially supported, illustrating a distinct yet effective approach to elderly care.

4.82 Home Care in Kuwait

Kuwait is a traditional society that is rapidly changing with time. The extended family system, which had been the cornerstone of Kuwaiti society, is progressively giving way to Westernized patterns of existence as a result of the socioeconomic impact of the oil boom over the last two decades. Due to the sophistication of medical care and the impact of socioeconomic development, the older population is growing in absolute terms, which is providing significant challenges for their care. (Bustan, 1986)

The article “A Study of the Social and institutional circumstances of the Residents of the old people's Home in Kuwait” was written in 1986 on how Kuwait is westernizing and progressing. However, 35 years later care homes are still viewed as taboo, and the progression in society and socioeconomic changes still does not change the fact that nursing homes for older people are a shame to one’s family. (Bustan, 1986)

Nevertheless, home care services in Kuwait have been flourishing with exceptional care for residents. The type of care that is offered to residents in the comfort of their own homes has improved or increased.

Having home care services in one’s home can be quite convenient in the MENA region for those with dementia. Sometimes these services include medical tests that can be done so at home. This avoids waiting times and being exposed to obstacles that may cause anxiety and stress for those with dementia. It is also ideal to be in a familiar space when suffering from dementia, rather than being put into a whole new environment that needs to be modified to your needs. Not only will the resident go through a change in their environment, but also having medical elements added to their personal space can feel quite invasive. (Bustan, 1986)

Home care in this region suits those who have family members in the same country, as they can have visitors and guests at any given time of the day. This is culturally quite important for the grandparent or parent to have their children visit them and still give them the respect that they are accustomed to. Having common traditions in their everyday tasks can be quite comforting in distressing times. To be reminded that their traditions are still being met may be the only constant in the chaos that has invaded their life and so is essential to reduce anxiety and increase well-being. (Bustan, 1986)

4.9 Using Western Advances as an Innovative Proposal to the MENA Region

As the MENA region evolves and gravitates towards paradigms seen in Western civilisations, there's a need to draw inspiration from Western practices. At the same time, it's vital to infuse these practices with the religious and cultural sensitivities intrinsic to the Middle East, especially in relation to the elderly.

Historically in the MENA region, women predominantly assumed the roles of caregivers, often aligned with their traditional roles as housewives or mothers. Cultural and religious beliefs underscored these roles, suggesting that women should be the primary caregivers for family members who couldn't care for themselves (Sharaf, 2022). However, recent societal shifts have seen a surge in the number of women entering the workforce, championing equal rights alongside men. Although increased female employment could bolster GDP by 57% in the MENA region, it presents a juxtaposition: the cultural expectation of women as primary caregivers versus their evolving roles in professional spheres. Notably, the unemployment rate for women in the Arab world has surged from 18% in 2000 to nearly 22% in 2020, a trajectory further exacerbated by the economic upheavals from the COVID-19 pandemic (Sharaf, 2022).

While societal views are shifting, there remains a stigma attached to placing elderly family members in care homes, perceived by many as an abdication of familial responsibilities. This cultural sentiment has somewhat hindered advancements in care home facilities in the region.

Yet, there are lessons that Western nations can draw from the MENA region. The emphasis on home care, deeply rooted in MENA cultures, can be transposed to the West, offering an alternative model that champions familial ties and community connections.

Exploring Western models, such as those exemplified by Hogewyk and Harmonia, could serve as innovative blueprints for the MENA region. By blending practices from these pioneering care homes with the unique cultural and traditional nuances of the Middle East, there's potential for a transformative impact. Enhancements don't necessarily require drastic measures. Strategic design choices, like furniture placement and colour coordination, can improve the quality of life for residents whilst respecting cultural and religious norms.

Given the societal reservations towards full-time care homes, introducing day-care services for the elderly might serve as a palatable compromise. Such facilities could offer seniors an opportunity for social engagement and a break from their routine environments without the stigma of 'abandonment'. These day-care centres could act as a bridge, reshaping perceptions and illustrating that progression in elderly care doesn't equate to the abandonment of cherished traditions or neglect of loved ones.

Ultimately, the objective is to afford those battling ailments like dementia the dignity of choice. Whilst no service can fully alleviate the challenges of such conditions, the goal should be to optimise comfort and minimise restrictions in their living situations, thus enhancing their quality of life.

The discourse around care homes versus home care is riddled with complexities and contradictions. Decisions surrounding the care of individuals with dementia are particularly challenging, given the nature of the illness and its impact on cognition. Indeed, while dementia can cloud the affected individual's ability to make sound choices, cultural factors further complicate the decision-making process. While some cultures may lean towards care homes as suitable environments for advanced stages of dementia, others might prioritise the comfort and familiarity of home care.

However, it's paramount to remember that dementia is a spectrum, and care requirements can fluctuate significantly across its progression. While home care might be apt for initial stages, offering a comforting environment and continuity, care homes could provide the structured support needed as the condition advances. Yet, there's no universal solution; what works for one individual might not for another.

A significant determinant in this decision-making is societal perception. The reputation of care homes in a particular region or the efficacy, affordability, and accessibility of home care services can sway choices. The crux lies in striking a balance — understanding the nuanced needs of each individual with dementia, gauging the cultural expectations, and ensuring the chosen mode of care aligns with both.

Providing appropriate care for individuals with dementia isn't a matter of simple selection. Rather, it involves careful consideration of several intertwined elements. While one might wish for a more straightforward process, the reality necessitates the thoughtful involvement of caregivers, family members, and healthcare professionals to ensure the most beneficial care plan.

The task at hand is far more complex than merely ticking boxes on a checklist. Hence, the current research explores various factors including cultural context, design aspects of care environments, and individual lived experiences to determine the fundamental elements of successful dementia care.

This research delves into instances of care that effectively incorporate considerations of culture, architectural design, and residents' personal experiences in their dementia care strategies. Through this, the aim is to get insights that can better assist those grappling with the challenges of dementia, be it the individuals themselves or their loved ones.

CHAPTER 5: THE EXPERIENCE OF DEMENTIA

5.1 Introduction

> Doors and windows are elements we encounter daily, yet they play a profound role in our lives. They guide our movements and influence our feelings. We pass through doors to get to our jobs and to enter our homes, places of safety and comfort. Gaston Bachelard captures this sentiment: *"How concrete everything becomes in the world of the spirit when an object, a mere door, can give images of hesitation, temptation, desire, security, welcome, and respect. If one were to give an account of all the doors one has closed and opened, of all the doors one would like to re-open, one would have to tell the story of one's entire life."*
> *(Bachelard, 2017)*

This chapter digs deeper into how people with dementia feel and see the world, especially when it comes to simple things like doors. Bachelard talks about the many meanings a door can have, whether it's in our minds or in real life. For someone with dementia, a door can feel like a way out, or it might seem like a barrier that keeps them away from the world they know. So, while Bachelard sees doors as symbols of life's journey, for someone with dementia, they can mean something very different. We need to think about this when designing spaces for them. Bachelard's thoughtful words remind us to think about how different people might see and feel about everyday objects in their own ways.The role of the door in the architectural framework transcends its mere functional use, especially when contemplated through the lens of dementia. Its materiality, the very tangible essence of the door, speaks volumes. The texture, whether sleek and cold or warm and worn, can invoke memories or emotions. The weight of a door can either be a reassuring heft or an impediment; too heavy, and it becomes a barrier, too light, and it might seem inconsequential. The handle or knob's ergonomics isn't merely about ease of use; it's about familiarity and intuitiveness. Does the door handle remind an individual with dementia of a past home, sparking a moment of clarity? Or is it an alien design, inciting confusion?

The door's hue and the contrast it forms with the walls can either be a beacon, guiding one's path, or a bewildering element. Does a deep mahogany door remind them of the rich wooden doors of their youth? Or does a brightly painted door serve as a marker, a clear sign of an entrance or exit? The pragmatic design aspects are undeniably crucial, but the emotional and psychological effects they may elicit, especially for individuals with dementia, should not be underestimated.

In creating designs with an understanding of dementia, it's imperative to discern the balance between practicality and emotional resonance. The design should be more than just about preventing risks or aiding functionality. The spaces and elements within, like doors, should foster connection, evoke memories, and cultivate a sense of belonging, which in turn, can alleviate feelings of anxiety prevalent among individuals in the initial stages of dementia (Greasley-Adams et al., 2012).

It is not only the design in the space itself that creates better well-being for those with dementia, but it's the sense that one feels when interacting within the space. Although designs have been created to help reduce a person with ADRD from getting lost or wandering, this does not mean

that they are still not feeling lost. People with dementia suffer from so much confusion and not being able to have someone understand it, or even understand it themselves alone which can cause immense loneliness. Most design guidelines for dementia are created to help reduce safety risks in one's home and make life easier for those with dementia and also their carers and loved ones. (Greasley-Adams et al., 2012) However, having their well-being considered in the process of designing can also help those with dementia to not get lost in their head from their thoughts and misconceptions. Creating environments that can alleviate the senses but also link them to memories, may improve well-being and make people with dementia feel connected to space and society again. By doing that, it can also reduce the feelings of anxiety which people with dementia suffer from in the earlier stages of this illness. (Greasley-Adams et al., 2012)

Currently, studies are dominated by biomedical models that view dementia disorders as pathological entities caused solely by neuronal and neurotransmitter loss and place a singular emphasis on the individual without taking sociocultural context into account. (Cipriani & Borin, 2014) Because of this, Cipriani and Borin urge more researchers and medical practitioners to look into the psychological effect of how space can reduce anxiety by doing different experiments under medical surveillance. They argue that medical practitioners that are qualified to test out and create studies on different theories for those with dementia. They can use different design hypothesis such as those proposed in this paper, such as sensory rooms, and then apply it to the lifestyle of those with dementia to create solutions for reducing anxiety within a space.

Dementia is an illness that affects no age, race, or gender, but mortality within dementia does affect different people based on which country they are living in. This is not due to where they are from, but how dementia is being taken care of in that specific country. There are of course some countries that do have more facilities to cater to dementia such as the US and the UK due to their GDP, but others are lacking for reasons beyond money. This includes a lack of awareness and education about dementia, which is linked to the inability to truly understand the needs of those who suffer from the illness.

People with dementia may experience different symptoms throughout the day, and it can be quite difficult for them to explain how it is they're feeling because it's confusing for them too. It is quite challenging to comprehend what someone with dementia is going through, especially when trying to understand what they want in their designed space. (Alzheimer's Society, 2019) Because of this, the designer needs to be able to get a bit of knowledge on their background which is linked to their culture. To understand how they grew up, the location, and the activities that they did in their younger age. These can be asked of the person with dementia if they are capable of answering these questions, or to a loved one that can articulate the missing pieces in the puzzle. (Johnson, 2016)

5.2 Dementia Virtual Reality Tour Bus

It is now feasible to get a great deal of insight into the subjective world of dementia in light of recent research. Each person's particular experience, which is influenced by their personality and defence mechanisms, must always be taken into consideration.

Different technologies such as using VR allow people the chance to experience what life can be through someone's eyes. It is never the same as the actual condition, but being able to see what difficulties people with dementia go through can allow one to be able to understand more. In this section of the thesis, the role of design will be looked into in the conclusion of the studies and guides that have been published to ease anxieties in a space. Different design methods ease the mind of family members when putting their loved ones in a home, so they may not physically get lost or get injured, but what people with dementia go through in their minds may tell a different story. Feeling lost in a space does not mean getting lost because of orientation and wayfinding, it's the confusion that comes with an unfamiliar space when one is already going through various changes happening in their life. A person that grows up in a certain way can define that as their culture, a phenomenological way one can look at this is that one's culture of the past is always linked to their memories of a home and this can be a breakthrough for designers when creating the space of comfort. (Park et al., 2019)

5.3 Personal Experience on the Dementia Virtual Reality Tour Bus

Virtual reality (VR) is described as a computer-generated simulation, such as a collection of sights and sounds that depicts a genuine location or circumstance.

The person using the VR equipment interacts with these sites and sounds in a manner that appears real or physical. Through a headset, it can transmit visual, aural, and other experiences to users to give them the impression that they are in a virtual or imagined environment. (Park et al., 2019)

The Dementia Virtual Reality Tour Bus is a simulator that allows someone with a healthy brain to experience what dementia might be like. Participants in the event were assigned tasks to complete inside the bus, however, these tasks were significantly more challenging due to the environment's effect on our skills. (*Virtual dementia tour - training 2 Care UK Ltd*)

An individual can begin to comprehend the problems that a person with dementia faces on a daily by putting themselves in their shoes. They will encounter feelings of confusion, isolation, feeling loss, intimidation, vulnerability, and much more. As a result, one will comprehend what needs to be changed to enhance the quality of care.

As a researcher in Dementia, I needed to be able to attend a tour like this to able have first-hand experience to understand the research from a different perspective. As I attended Dementia, Care, & Nursing expo in Birmingham, United Kingdom (B2B, 2021, https://www.ukcareweek.com/news/dementia-care-and-nursing-home-expo-returned-to-the-nec-birmingham-15th-16th-of-september-2021), it was an opportunity for me to book a visit on this tour bus. The experience may be short, but one leaves it feeling a certain type of way.

> *While I was waiting for my turn to enter the tour bus, I saw a woman leave her tour in tears, completely shaken, I was not sure what to expect. The person in charge of preparing us to enter gave us these soles to put in our shoes that were covered in little plastic pins, large headphones, glasses, and really large uncomfortable mittens. As a*

person with dementia suffers from cognitive impairments, all their senses are obstructed negatively.

Once I was told to enter the bus, the first thing I experienced was the loud noise, of yelling, banging, police sirens, and more. I wasn't sure what I was supposed to focus on, there was no task at hand as I was just told to enter the bus. The first thought I had was, is this what dementia patients go through all day? I couldn't stand it and I was barely a minute into the experience. This alone was already confusing all my senses.

The room was very dark, all the curtains were shut and the glasses that I was wearing dimmed all the colours I was seeing, it was dark but also I could see different colours of strobe lights around the room.

I was confused about what to do next, but a man then approached me and said something to my ear, I wasn't sure what he said, I tried to think about what he said but I knew it was a task with the word bed and fold. I tried to add up what he said but the pins on my foot were starting to hurt at this point and I was feeling overwhelmed with anxiety.

I didn't want to be there anymore but I knew that I had to do this task, I felt if I didn't then I wouldn't be able to get out of that place.

I was then walking around the space I realized that this was designed as a domestic space because of the little kitchenette that I saw on the corner of the bus. I looked around and finally saw the bed with clothes on top. It all started to make sense! I was told to fold the clothes on the bed, and I thought yes I can do that!

I had completely forgotten that I was wearing these bulky gloves which made folding the clothes difficult, but as I was doing it, I heard the man yell something at me, he told me to do something useful which made me feel panicky and I just felt like I was disappointing him. I thought I was doing the right tasks but maybe I was wrong, I didn't know what I was supposed to do anymore and just wanted to leave that place. The seven minutes were finally up, which felt much longer than that, and the lights were turned on. I found myself in a little room that looked like a studio flat, everything went back to normal and I was shocked to realize that I didn't expect the place to look like that at all once I'd gone back to my senses.

Leaving the bus, I felt a wave of relief but great sadness at the same time, is this what they feel like every day? The fact that so many people suffer from this, from feeling lost and alone and no one can understand them made me rethink everything that I've learned about dementia. It gave me the drive as a designer to want to recreate a space that can allow some of these anxieties that they feel to be avoided.

As mentioned in the literature review, awareness of dementia is lacking in the MENA region and the drive for creating spaces that are dementia friendly can be pushed by having awareness like this.

It’s not easy to understand what a person goes through if they don’t have the same illness, especially with dementia. If an individual does not understand how dementia can negatively impact a person, using the VR tour bus can be used as an effective tool to raise awareness about it. It is also quite important for this tour bus to travel through different parts of the world, i.e. the MENA region. This can now be used to inspire people that have abilities to make a change, to make them use their resources. For example, a designer that does not know much about dementia can take this tour bus, and use what they have learned from it to create different design guidelines in their practice when designing for older people.

5.4 Proposals to Alleviate Anxiety of Dementia User’s Experiences in Domestic Situations

Certain alterations to home design should be taken into account when developing a dementia-friendly architecture for people with Alzheimer's disease or related dementia (ADRD). Numerous studies have linked healing environments to things like hospital recovery times, stress reduction, longevity, pain alleviation, and even how the brain interprets audio signals. As present designs are generally based solely on medical needs, and patient waiting rooms in hospitals and primary care centres, there should be room for improvement in designing based on well-being as well. (Watts et al., 2016) Many studies have revealed that the majority of clinical/medical environments contain some level of anxiety. When environmental demands and human resources are not balanced, stress results. With its crowdedness, noise, lack of privacy, and glare—especially when combined with dreadful interior colour schemes—the environment may increase this stress. All of these stressors might have a detrimental impact on the healing process.

Persons with dementia perceive their homes differently than other older adults do. A dementia-friendly home design calls for certain adjustments because these individuals frequently experience memory loss, confusion, agitation, balance problems, anxiety, and disorientation. Lighting, colours and contrast, safety adjustments, reminders, and signage are the five crucial aspects to take into consideration while building a dementia-friendly house. These components should be included in addition to what is already required for residences for senior citizens. (Lenham, 2013)

For example, lever handles instead of door knobs to prevent twisting and turning the wrist; adjustable beds to promote sleep and manage concerns that affect cardiovascular health, and other universal design elements are helpful to all older persons. Avoiding furniture with sharp, hard edges in favour of curved tables, counters, chairs, and couches; installing non-slip rugs, bathmats, walk-in tubs, and no-step entry showers to prevent falls at home (80% of which occur in the bathroom); providing good lighting around task areas, such as the kitchen or reading areas, since older eyes (age 60 and over) need two to three times the illumination of a 20-year-eyes. (Snelling et al., 2021)

One must keep in mind that too much change too quickly is not ideal while attempting to make these well-suited home design improvements for someone with dementia. It can confuse people with dementia, and they might not even realize it's their house. To maintain a connection to the past and make the changes more gradual, something from the past must always remain.

5.5 The Role of Design & Architecture for Those with Dementia

Designers and architects can have a great impact on the lives of people with dementia not only through the components described above but also in the layout of the space. The space is designed to choreograph the movements of the user, which they'll either find comfort in or find more difficult. There have been several studies indicating how design elements can be changed or replaced to create a safer, more comfortable space for those with dementia in domestic environments. Specifically the study by Burke, R.L. and Veliz-Reyes, A. (2021) "Socio-spatial relationships in the design of residential care homes for people living with dementia diagnoses: A grounded theory approach," *Architectural Science Review*, pp. 1–15 as well as the DSDC handbook on designing for dementia.

As mentioned in the literature review in section 2.9 Designing for dementia, The research by Burke et al (2018) used structural-spatial configurations to frame support for residents' well-being and used pre-established environmental audit techniques to investigate the floorplans of current residential care institutions to identify consistent supportive attributes. Increased open plans with fewer walls and accessibility between different areas of the house are important, according to the analysis, with access to outdoor space and sufficient daylighting receiving special attention. These evaluations are based on audit criteria rather than resident opinions, although they nevertheless fall within the scope of the floor plan. In addition, rather than helping residents reach their full potential or find fulfilment, well-being support is described as "support for cognitive impairment." (Burke & Veliz-Reyes, 2021)

Studies such as the one stated above, can be used as evidence to show how spatial design can significantly change the experience of the person with dementia. An increase in the area of open plans and fewer walls, more windows which can also lead to more daylight, are attributes that can be used in care homes, or even home care facilities by creating a more comfortable atmosphere for those with dementia.

When it comes to designing specifically for dementia, most designs have been modified for the needs of the user, but this has made these spaces look more like a hospital rather than a home. The majority of building design guidance from educational bodies (DSDC 2018, 2013, 2011; HM Government 2015) and academic research (e.g. (Fisher et al. 2018; Fleming and Bennett 2015) view the physical environment as a treatment to counter behavioural and mechanical difficulties brought on by the symptoms of living with dementia. Person-centred care models are generally normalized in residential care practice (Day, Carreon, and Stump 2000; Gramegna and Biamonti 2017). Studies from this perspective, however, frequently problematize resident difficulties and look for mechanical and ergonomic solutions to symptomatic problems, which restricts their ability to investigate the relationship between more structural architectural concepts in the spatial design of care environments (such as thresholds, space sequencing, and scale) and residents' wellbeing.

5.6 Cultural Background's Impact on Those with Dementia

As described in 'Culture' section 2.2 in the literature review Bachelard's *Poetic of Space*, investigates how the imagination imbues a place with soul and significance, and conversely, how

the place stimulates emotion, recollection, and fantasy in its resident. Empiricism, in his opinion, was a subpar approach to comprehending the subjective emotional experience. (Bachelard, 2017)

An assortment of associations, recollections, and synesthetic pictures can be sparked by a single sensory experience. But even the faintest odour, according to Bachelard (2014), "may build a whole habitat in the realm of the imagination" (p. 189). Consciousness itself is creative and fruitful of being because observation piques the imagination: "being as incessant birthing of newness through images" (Bachelard, 2017)

Culture can be defined not only as traditional food, outfits, dances, etc. but it can be defined as a way of life. Re-creating that culture into a space that has never been lived in before, such as moving into a care home can remind the resident that the past can still be within reach and may recreate the feeling of comfort that they felt at that time. Focusing on the five senses (eyesight, hearing, taste, touch and smell) when designing a space, memory can be linked to even a smell of the past which will bring a form of serenity to the resident.

5.7 A Sensory Room for Dementia

Sensory rooms are unique spaces where persons with dementia and Alzheimer's disease can safely explore and engage all five senses. Depending on a loved one's needs, either peaceful or stimulating activities can be done in the rooms.

A sensory room is a specially created space that combines a variety of stimuli to support and engage a person's senses. These can be used in a secure environment to let the user explore and interact without risk. They can also include lighting, colours, sounds, sensory soft play items, and fragrances. A sensory room can help people with learning disabilities, developmental disabilities, or sensory processing disorders learn to interact with the world around them in a secure setting that increases their confidence and ability. The user receives an unrestricted, welcoming place to explore at their leisure. This freedom enables their instructor, therapist, or caregiver to see what rouses them, what soothes them, and what they enjoy or find objectionable. (Jones, 2022)

As this is a method usually used on younger people, it is now introduced for those with dementia/AD and is proven to be beneficial. Those with dementia already have their core values instilled in them, even if they don’t remember certain memories, the designer can use this sensory room by also combing memories from their past and senses that remind them of certain things to help create this therapeutic space for them. (C Tonelli, 2019)

Sensory rooms, which blend soft light, movement, music, and tactile objects intended to either comfort or stimulate people, are one of the newest developments in memory care. Sensory rooms: “Can enhance feelings of comfort and well-being, relieve stress and pain, and maximize a person’s potential to focus, all of which help improve communication and memory.” (Sauer, 2017) although these places are normally designed for younger individuals with physical or learning challenges, persons with dementia and Alzheimer's disease can also benefit from them. (C Tonelli, 2019)These places are normally designed for younger individuals with physical or learning challenges, persons with dementia and Alzheimer's disease can also benefit from them.

Learning to live with dementia is a challenging task as it requires being re-introduced to obstacles in life that the individual has already faced previously. Reliving experiences that one's body knows but the mind does not, can be quite challenging, but through sensory rooms, the sensor can get quite familiar with a feeling that they have already felt before, and it can allow the person with dementia to search for elements that bring them comfort. Through sensory feelings, elements that bring comfort can allow them to be reintroduced into the design of their house, so they can allow their space to only bring them comfort and feelings of familiarity, rather than having new elements that are completely foreign to the mind and body.

The five types of sensory memories, which are linked to the five human senses are iconic memory (visual), echoic memory (auditory), hepatic memory (touch), olfactory memory (smell), and gustatory memory (taste). Each of these memories can be used by sensory stimulation.

The brief moment when sensory information enters the brain is known as sensory memory. One can sense their environment and comprehend the context of occurrences thanks to their sensory organs. For example, hearing a bird sing is an auditory or echoic sensory memory. In another instant, observing the stop sign is an example of a sensory memory that is visual or iconic. Sense of taste or gustatory memory is taking a bite of a pizza and tasting the pesto. Olfactory memory or the sense of smell for example smelling fresh flowers. Touching a dog's velvety fur can trigger a touch sensory memory or hepatic sensory memory. (Gossett-Webb, 2022)

People with dementia benefit from sensory stimulation therapy because common things can evoke pleasant feelings and memories. Seniors with dementia who have lost the ability to connect with their environment may be able to recall feelings and memories by being exposed to commonplace objects that activate the senses. Strategic use of this sensory stimulation can awaken one or more of the five senses (hearing, sight, smell, taste, and touch) and produce pleasant emotions. They may feel more secure and at ease as a result, which can enhance their mood, self-esteem, and general well-being. (C Tonelli, 2019)

Therefore, sensory stimulation can be an effective tool to understand the way the person feels through their actions by seeing what makes them happy and what makes them upset. Once the person with dementia can be understood a bit better, whether it's by loved ones or care workers, this can allow them to feel more at ease and less alone. Being able to understand these attributes will allow them in creating a space that can avoid triggers and also add items in their space that they enjoy and love, which ultimately will reduce anxiety, which is the goal.

The ability of an elderly person to speak and carry out daily tasks decreases as Alzheimer's disease worsens. Giving older people a way to communicate when they are unable to do so verbally might make them feel secure and at ease. Their well-being, self-worth, and mood can all be enhanced by this.

Additionally, sensory stimulation increases memories and responses in senior people with Alzheimer's disease by calling attention to a specific item. For example, for senior citizens who are unable to communicate, art or photographs might evoke feelings and memories. A senior who has been silent for weeks or months can suddenly grin or decide they wish to doodle with a pencil. The seniors may later use that creative form as a medium of communication, either

through original artwork or just by discussing their experiences. The user receives an unrestricted, welcoming place to explore at their leisure. This freedom enables their instructor, therapist, or caregiver to see what rouses them, what soothes them, and what they enjoy or find objectionable. (Wegerer, 2017)

This paper aims to propose different methods when evaluating how a person with dementia will live. As they do not have much control of their own lives because of cognitive impairment and memory loss, there needs to be a way that can help ensure their happiness despite their lack of cognitive abilities. Their lives are put in the hands of designers, care workers, medical professionals, and family members, which despite their capabilities, will not be able to understand the phenomenon of dementia unless they go through it themselves.

Once an individual understands how seniors with dementia's senses react to specific environments, such as their triggers in their home design, this can allow for items to be eliminated from the design and can allow the individual who is helping the senior to have a chance to reduce anxieties in their home.

Chapter 6: Discussion

6.1 Introduction

This chapter delves deeper into the intricate relationship between design and cultural contexts when addressing the needs of individuals with dementia. The literature review highlighted the profound influence of culture on design, drawing from traditions, personal narratives, and habitual patterns. Spaces, more than just physical entities, become canvases narrating daily rituals, subtly tailored to resonate with the psyche of its users.

Upon dissecting the case studies, the focus transcended beyond tangible elements like interiors and geographical locales. The emphasis was on extrapolating the nuanced methodologies employed in each region regarding dementia care. This approach provided a lens to interpret the socio-cultural dynamics that shape care strategies.

This chapter doesn't merely collate observations. It critically evaluates the derived data, challenging established norms and positing thought-provoking queries for design professionals. By juxtaposing examples from Western and MENA landscapes within their respective cultural backdrops, pivotal learnings emerge. These insights extend beyond standard design guidelines; they represent transformative strategies adaptable across diverse cultural backgrounds.

The overarching aim is to equip architects with a nuanced understanding of how design and culture intertwine in dementia care settings. This enriched perspective enables the crafting of spaces that aren’t solely functional but resonate with the cultural identities of those inhabiting them. Such a design approach ensures every decision is rooted in empathy and cultural sensitivity.

Introducing care homes in the Middle East raises important questions about cultural acceptability and the potential lessons that can be learned from Western care models. When considering the implementation of care homes in the region, several key lessons emerge. Firstly, it is crucial to prioritise cultural sensitivity and adaptability in the design and operation of care homes. This includes incorporating elements of Middle Eastern culture, traditions, and values to ensure that the care home environment feels familiar and comforting to residents. Cultural considerations extend beyond the physical design of the space to include staff training, food preferences, religious practices, and language support. By embracing cultural nuances, care homes can create a more inclusive and person-centred approach to dementia care in the Middle East.

However, if care homes are not culturally acceptable in the Middle East, there are still valuable innovations from Western care models that can be transferable. One such innovation is the concept of "age-in-place" design, which emphasises creating supportive environments within individuals' own homes. This approach focuses on modifying existing homes to enhance safety, accessibility, and comfort for individuals with dementia. By incorporating design features such as dementia-friendly signage, clear pathways, adaptive lighting, and assistive technology, individuals can age in a familiar and supportive environment. This approach aligns with Middle Eastern values of family support and multi-generational living, allowing individuals with dementia to remain connected to their loved ones while receiving necessary care and support.

While many Western care innovations can be transferable to the Middle East, some may not align with cultural norms and preferences. For example, the concept of care homes with shared living spaces and communal dining may not be culturally suitable in the Middle Eastern context, where privacy and individual autonomy are highly valued. Alternative design strategies that respect cultural norms, such as incorporating private rooms and spaces for personal reflection, should be considered. The goal is to strike a balance between Western best practices and cultural appropriateness, ensuring that the design of dementia care environments in the Middle East is respectful, inclusive, and tailored to local needs.

The discussion of transferability is not one-sided, as there is potential for learning and knowledge exchange from the Middle East back to Western Europe. The MENA region has a strong tradition of home care services, which prioritise the care of individuals within their own homes. Western care models can benefit from incorporating aspects of home care practices, such as personalised and flexible care plans, family involvement, and community support networks. By embracing the holistic approach to care prevalent in the Middle East, Western care homes can enhance the overall well-being and quality of life for residents with dementia.

Diving deeper into the idea of learning from different care models, we need to look at the heart of what makes the MENA region's care approach special. At the core, Middle Eastern societies put a lot of importance on family bonds and working together as a community. While Western care often separates the roles of doctors, nurses, and family, in the Middle East, everyone works together. It's not just about following a process; it's about a community coming together to support its members.

For Western care methods to really improve, it's not just about copying what the Middle East does. It's about understanding and bringing in values like community support and the role of family into their own systems. The real goal is to mix the best of both worlds to create a care system that works well and feels right for dementia patients.

In the pursuit of optimal care, understanding and integrating the cultural nuances of the Middle East is paramount. Embracing Middle Eastern values while innovating in care home designs can pave the way for environments that genuinely resonate with residents. The idea isn’t merely about instituting Western care homes in the region, but refining them with age-in-place design principles and other local caregiving traditions.

It's essential to view dementia care within the Arab world through a cultural and social lens, recognising that these aspects significantly determine the success of care models. This isn't solely about adopting practices that have worked elsewhere; it's about moulding them to fit a particular context, taking the region's unique cultural footprint into account.

Moreover, research that's grounded in the local context can illuminate the paths that resonate best with the MENA region’s demographic. The findings can serve as a blueprint for offering care that's both effective and culturally relevant.

While the MENA region's cultural backdrop heavily shapes its current dementia care, these cultural attitudes are fluid. As societies evolve – driven by shifts in economics, societal

structures, and global influence – so too will their perspectives on care. This doesn't necessarily suggest a complete alignment with European models, but rather a convergence of the best practices tailored to the region's ever-evolving ethos.

Homecare provision in the MENA region, particularly in early-stage dementia, offers valuable lessons for other regions, including the UK. The emphasis on family-based care, a long-standing tradition in MENA societies, allows dementia patients to stay within familiar environments for longer. Despite the societal stigma attached to institutional care, it is recognised that there are situations where home care may not provide the necessary support for advanced stages of dementia. In these circumstances, care homes or home care services may become essential.

It's important to note that the transition to institutional care does not signify a dereliction of familial duties but an adaptation to changing care needs. The key lies in facilitating this transition empathetically, emphasising the creation of 'extended homes' rather than impersonal care facilities. This stance reflects an appreciation of the emotional complexities associated with dementia care, emphasising the need for culturally sensitive, person-centred solutions.

6.2 Guideline Proposals

The research underscores the pivotal role that interior design plays in enhancing the well-being of individuals with dementia, shedding light on how strategic alterations in residential environments can significantly uplift their quality of life. Key challenges, such as effective circulation and wayfinding, have been addressed, given their direct implications for reducing the feelings of anxiety and confusion often observed among those with dementia. The environment, thus, is more than a backdrop; it's an active participant in mediating the experiences and challenges that dementia patients face daily.

Shifting the lens to the Middle Eastern context, this study identifies a pressing need: a paradigm shift in understanding and addressing dementia. The focus should move beyond the prevalent medical-centric viewpoint. The region's cultural hesitancy towards institutionalised care makes it imperative to approach design with a deeper sensitivity. While Western guidelines provide a foundation, the aspiration here is to culturally contextualise these principles, ensuring they resonate with local sentiments and practices. This is not just about aesthetics; it's about embedding cultural values, traditions, and practices into the very fabric of care environments.

Literature highlights the benefits of intimate group settings for dementia patients. They aid in orientation, bolster mental well-being, and play a crucial role in managing agitation. The importance of optimal lighting conditions, for instance, cannot be overstated, given its role in regulating behavioural disturbances and influencing sleep quality. Reference frameworks, like the Dementia Services Development Centre (DSDC) guidelines, echo these insights.

A distinct characteristic of the MENA region is the proclivity for in-home care. Many dementia patients remain surrounded by family, and the home becomes a sanctuary that needs careful recalibration. The guidelines proposed in Table 10 are more than modifications; they're interventions, aimed at making these homes dementia-friendly while providing much-needed relief to carers. Meanwhile, Table 11 recognises the challenges and opportunities that come with

institutional care in this context, emphasising the need to design for frequent family interactions and late-stage admissions.

Table. 10 Protocols for Home Care

	Protocol	Description
1	Increased light – artificial light	Since residents may stay in their homes for longer, adequate adjustments would help. The bulbs can be changed for stronger light. Led bulbs are preferable, as they are more economical, environmentally friendly and do not overheat, which can lead to burns if the patient accidentally touches them. Additionally, the colour temperature (Kelvin) should be adjusted to simulate the older bulbs the patient used.
2	Increased light – natural light	Since it is desirable to expose the residents to as little change as possible, the curtains should remain the same, but it should be made easy for the patients to open them and close them. Obstacles that limit this should be removed, and the rail mechanism might need to be adjusted or improved/ replaced.
3	Reflective floors	Reflective floor surfaces can create glare but also disorient the patients due to the strong contracts of reflections or shadows. At the same time, big changes should be avoided. Hence, simple matt carpets, or carpets with a non-disorienting familiar pattern could be used, for the particular areas of the floor where this problem is observed.
4	Handrails added	As mobility decreases, a handrail might be useful around the house. The contrast and materiality need to be considered carefully. As the patient is familiar with their environment, the handrail, in this instance, does not need to be of a very different colour; it assists their movement, not their orientation. By avoiding a heavy colour, we also avoid altering the character of their familiar environment.
5	Bathroom area adjustments	Bathroom modifications are paramount for dementia patients. Installing handrails near showers, toilets, and sinks enhances safety. Moreover, utilising colour contrast, such as having a toilet seat in a different shade than the toilet, facilitates better visual recognition. Drawing from the revealed inclinations of dementia patients to associate with their childhood homes, incorporating design elements from the time when residents were younger can be beneficial. This approach might aid in reducing confusion by

		evoking familiar settings from their earlier years (Smith et al., 2019).
6	Circulation between spaces	Make the circulation between the indoor areas of the house and the outdoor areas (balconies/ gardens) step-free, with ramps, where possible, and if not, adjust them to make them safer. Signage can be used in large letters to help in navigation.
7	Avoiding patterned surfaces	Patterned surfaces on bedspreads, soft furnishings such as couches and cushions, as well as carpets or floors should be avoided. Arabic designs such as rugs and calligraphy designs on walls should be used at a minimum, not as a major part of the room. No rugs on the floor. However, in cases where an individual has a deep-rooted association with patterns, it may be beneficial to introduce them subtly to maintain familiarity, ensuring they don't overwhelm or confuse the space.

Note: Derived from a variety of sources, these protocols aim to ensure a safe, familiar and comfortable home environment for dementia patients living in the MENA region.

Table 11. Protocols for Care Homes

	Protocol	Description
1	Room Layout	The layout of the room and its relationship to the bathroom and exit are equivalent to their prior home. Care homes in the MENA region will be welcoming people often at a later stage of the disease. Hence it would be desirable if there were provisions for rooms of different typologies, different sizes, and different relationships between the door, the window, and the bed. In this way, the room can be easily selected and further adjusted to simulate the resident's older room (in their home). This will help the patient, and will also put the family members at ease, as the environment will feel very similar in terms of layout to the resident's former home. The inhabitants will be following similar body-movement like they used to in their previous home. In this way, it will be almost as if 'muscle memory' helps them orient themselves and follow familiar routes and movements in their personal space.
2	Personal objects	This applies both to the West scenarios and to the MENA regions as bringing a familiar object into a new space can reduce how different the new change can be. The design of the interior should allow for this to happen and can include shelves and/or display

		cabinets with flexible dimensions and arrangements to accommodate a range of different everyday objects.
3	The usage of signs	Using signs is quite important within a space to help navigate where each room is, especially in care homes as the place is unfamiliar and not lived in for a long period. Signage needs to be considered based on the languages that the residents speak, for example, if it's someone from the MENA region, it would be in Arabic which is written from right to left.
4	Avoiding dead ends	Dead ends in the building should be avoided as they cause frustration. Corridors with no means of egress should be avoided. Domestic environments in the MENA region tend to be larger which is why it's important to have seating areas in dead-end larger spaces.
5	Contrasting furniture	The contrast between furniture, walls, doors, and ceiling. The colour of the walls and ceiling should be contrasted so that they are read as separate planes. Doors should also be a contrasting colour so that they are read as a separate element. In Arabic designs, monochromatic colours are quite common, so it is important to ensure that there is a visible contrast between objects.
6	Fences and other physical barriers	Fences and other physical barriers in gardens and outdoor places help individuals avoid unintentionally leaving safe zones and becoming exposed to risks. This applies to all regions. It is more common for care homes in the MENA region to be situated on ground level, which is why this point is crucial.

Note: This table outlines protocols intended to facilitate a smooth transition for dementia patients from home care to care homes in the MENA region, incorporating cultural and linguistic considerations.

The data presented in Tables 10 and 11 were compiled from a variety of sources. The dementia home care protocols in Table 10 draw from research on the effects of light, color, and patterns on dementia patients (Marquardt, Bueter, & Motzek, 2014), as well as studies on the efficacy of environmental modifications for dementia patients (Calkins, 2009; Fleming & Purandare, 2010). For Table 11, protocols related to care home settings, the sources include research on the design and operation of dementia-friendly environments (Day, Carreon, & Stump, 2000), and specifically studies exploring care home environments in the MENA region (Amer & Deneulin, 2011).

Recognising the unique socio-cultural dynamics of the MENA region is of paramount importance when designing spaces tailored for dementia patients. While Table 10 and Table 11

lay the groundwork for basic care home principles, they do not inherently capture the region-specific intricacies and traditions.

Transitioning from personal homes to care facilities often presents a unique set of challenges in the MENA context. Within these traditions and cultural frameworks, the concept of home, memory, and belonging have deeply rooted meanings. The introduction of the 'Culturally-Adjusted Design Principles for Dementia-Friendly Spaces in the MENA Region' (Table 12) is not just an addition; it's a necessity. Drawing inspiration from the Environments for Ageing and Dementia Design Assessment Tool (EADDAT12) from the University of Stirling, Table 12 juxtaposes universally accepted design practices with MENA's authentic cultural sensitivities.

The critical distinction lies in the balance of functional design with regional sentiments. This tailored guideline tool doesn't just account for spatial design; it delves deep into the heart of the region's societal norms, bridging the gap between the essential needs of dementia patients and the cultural norms that surround them. By anchoring designs in local traditions, customs, and societal expectations, it ensures the resultant spaces resonate familiarity, comfort, and safety – vital components to enhance the well-being of the elderly and those living with dementia.

Table 12. Culturally-Adjusted Design Principles for Dementia-Friendly Spaces in the MENA Region

Design Element	**General Guideline**	**Cultural Aspect**	**Justification**	**Anxiety Reduction**	**Incorporating Safety Features**
Personal Space	Private space for individual use	Space should accommodate cultural habits such as traditional prayers	Islamic tradition is predominant in the MENA region	Familiar activities can provide comfort and reduce anxiety	Consider adding non-slip prayer mats and handrails
Natural Light	Plenty of natural light is preferred	Balance between natural light and effective shading	The MENA region typically has a hot and sunny climate	Controlled natural light can reduce disorientation and maintain sleep cycle	UV-protective windows and automated shading systems
Colour Use	Use colour for wayfinding and to stimulate senses	Use culturally familiar and soothing colours	Studies show colour preferences can be culturally influenced	Familiar and soothing colours can create a calming environment	Use contrasting colours for safety features like grab bars, stair edges

Communal Spaces	Spaces should be provided for social interactions	Separate communal spaces for men and women may be needed	Gender separation in public spaces is often practiced in MENA culture	Providing culturally familiar spaces can reduce social anxiety	Ensure clear, unobstructed paths and appropriate seating
Wayfinding	Clear and understandable cues for navigating space	Use local symbols and designs as wayfinding cues	Familiar symbols can aid memory and orientation	Clear navigation reduces confusion and disorientation	Incorporate safety signages in a culturally sensitive manner
Art and Decoration	Artwork to stimulate senses and invoke memories	Use local art, patterns and decorations. Incorporate elements of Islamic Art where appropriate	Art from one's own culture can stimulate more personal memories	Familiar and personal art can invoke positive memories and reduce stress	Ensure art installations are secure and not a tripping hazard
Furniture	Comfortable, sturdy, and easy-to-use	Should consider traditional seating options such as floor cushions and divans	Traditional seating is common in many MENA homes	Familiar furniture can provide comfort and security	Use furniture with higher seat heights and sturdy armrests for easy standing/sitting
Access to Outdoor Spaces	Provide safe and easy access to outdoor spaces	Include elements such as shaded courtyards and water features for cooler outdoor environments	Courtyards and water features are traditional design elements in the MENA region that provide cooling in hot climates	Access to calm, culturally familiar outdoor spaces can provide relaxation	Secure railings and ramps, non-slip surfaces, and adequate lighting
Cultural Practices	Spaces should accommodate	Space for prayer,	These practices are	Routine and culturally	Ensure safety in spaces for

	personal and cultural practices	communal dining, and family visits	important in MENA culture and can contribute to well-being	significant practices can provide a sense of belonging and reduce anxiety	cultural practices (non-slip floors, good lighting, easy access)
Acoustics	Reduce noise levels	Consider spaces for call to prayer, traditional music, or storytelling	Sound can be a strong memory trigger and is a significant part of MENA culture	Familiar sounds can soothe and provide a sense of security	Use sound-absorbing materials to limit noise levels
Safety Features	Install safety features like handrails, non-slip flooring	Use locally inspired designs to make safety features less clinical and more familiar	Making the environment feel less institutional can improve well-being	Familiar and non-clinical surroundings can reduce anxiety associated with hospital-like environments	Integrating safety features with cultural elements (patterned non-slip mats, ornate handrails)

Note: This Table has been designed as a hypothetical tool for cultural sensitivity in the design of dementia-friendly environments in the Middle East and North Africa (MENA) region. Each of these elements should be considered in conjunction with the specific local cultural context, the individual needs of the patients, and the current best practices in dementia care. This model advocates a person-centred approach that takes into account individual differences and respects the cultural backgrounds of residents.

Creating spaces that cater to the various needs of a growing population of elderly people with dementia is a significant challenge. We need to find a balance between the general principles that can improve the lives of people with dementia and the unique experiences of each individual. This is where a 'responsive rulebook' comes in, aiming to achieve this balance while still being culturally appropriate.

The 'responsive rulebook' is a flexible set of guidelines that helps design dementia-friendly spaces to meet individual needs, considering their cultural background, personal tastes, and specific dementia symptoms. This ensures that the spaces can evolve as we deepen our understanding of dementia and cultural factors.

It's essential to understand that concerns related to residential care—such as reservations about entrusting elderly relatives to these facilities and regional attitudes toward them—are universal,

transcending beyond just one area. Such barriers exist across continents, often hindering the progress of dementia care models.

Nevertheless, the dynamic nature of care is evident in the shifting perceptions of residential care across Europe and worldwide. The momentum is veering towards a more human-centric approach over mere efficiency. This progressive attitude in care serves as a contextual backdrop for our examination of the MENA region. Observing the MENA region from this lens, it aligns with the worldwide transition toward a more individual-centric care approach.

In the MENA context, a 'responsive rulebook' can blend traditional cultural elements with dementia-friendly designs, offering a sense of familiarity while instigating positive change in dementia care. This tool isn't stagnant; it evolves with emerging research, insights, and the dynamic needs of dementia patients. It emphasizes the amalgamation of individual experiences with overarching regional culture.

Central to this strategy is 'salutogenesis[15]', which highlights health-promotion over disease-centric approaches. By fostering environments that are intuitive and meaningful, we can elevate well-being even amidst cognitive impairments. Therefore, the 'responsive rulebook' stands as a beacon for cultivating spaces that not only cater to individual needs within a cultural framework but also amplify health outcomes.

In essence, the 'responsive rulebook' aspires to craft spaces that uphold the safety and functionality for dementia patients, while cherishing their cultural ethos and individual nuances. This approach signifies an evolved, inclusive strategy for nurturing environments tailored for dementia care.

6.3 Unexpected Findings

The initial intention behind this research was to examine how Western advancements in dementia care could be tailored and integrated into the MENA region. However, during the exploration of pertinent literature and case studies within the Arab region, the research took an enlightening detour.

One notable transformation evident from statistical data is the shifting role of Arab women. Traditionally occupying the role of primary caregivers, many Arab women are now participating in the workforce, diverging from their conventional responsibilities. This shift has precipitated the rise of home care services in the MENA region. While home care services provide an immediate solution, they aren't universally suitable due to the potential for increased feelings of isolation among the elderly. This emphasized the need for a diverse range of care options.

The prevailing cultural reservations towards care homes in the MENA region highlighted a potential avenue for introducing daytime care facilities. These would offer elderly individuals the chance to engage and socialize during the day, while returning to their homes at night, addressing prevalent cultural concerns.

[15] Salutogenesis is the study of the origins of health and focuses on factors that support human health and well-being, rather than on factors that cause disease.

Surprisingly, it became evident that the MENA region's focus on home care, anchored in cultural and societal norms, could offer valuable insights for Western dementia care models. Rather than simply transposing Western methods to the MENA region, the nuances of Arab home care have potential applications in the West. This form of care, emphasizing familial involvement and community networks, can introduce a more holistic and individualized care approach to Western societies.

Cultural nuances significantly influence perceptions in the Arab world. The prevalent negative connotation linked to care homes often associates them with neglect or abandonment. By introducing care options that align with cultural sensitivities, these stigmas can be mitigated. Yet, the overarching revelation from this research is the potential for a reciprocal exchange of knowledge. Instead of a unilateral transfer from West to East, there's an opportunity for mutual learning and adaptation, broadening the horizons of dementia care globally.

6.4 Limitations

This research faced several hurdles, predominantly rooted in ethical concerns and the unprecedented challenges of the COVID-19 pandemic.

1. **Primary Research Constraints**: The chapter on the 'Experience of Dementia' would have benefited significantly from primary research. Ideally, I would have personally visited care home case studies, providing a first-hand analysis and enriching the findings. However, the pandemic rendered visits and volunteering in care homes impossible for the entire research duration.

2. **Cultural Interpretation and Adoption**: While care homes are prevalent in Europe, they have garnered negative reputations in the MENA region. Conversely, home care is a strength of the Middle Eastern & North African cultures. This research suggests that both regions can learn from one another: the MENA region could adopt European care home standards and practices, whereas Western cultures could take cues from MENA's home care practices to potentially alleviate the strain on public care homes and expedite patient care.

3. **Phenomenological Limitations**: The initial intent of this research was to incorporate phenomenology as a foundational methodological approach. The depth and richness of insights this approach can provide—by deeply exploring the lived experiences of those with dementia—made it an attractive choice. Phenomenology offers a unique perspective, allowing researchers to step into the shoes of individuals with dementia, potentially unlocking profound insights into their day-to-day experiences, challenges, and perceptions. However, the practical implementation of this methodology posed ethical dilemmas, especially concerning the potential emotional distress interviews might cause to the participants. Furthermore, the accuracy of the data gleaned from these interviews could be compromised due to the cognitive challenges faced by the dementia patients. These concerns eventually led to the decision to sidestep phenomenology, resulting in the research missing out on some of the personal narratives and deep experiential insights that only phenomenological studies can provide.

CONCLUSION

A New Approach to Dementia Care

The approach taken in this thesis highlights the complex challenge of designing culturally sensitive environments for the elderly and dementia patients in the MENA region. Responding to this challenge, a strategic solution that focuses on the foundational qualities of space has been proposed, rather than attempting to solve the problem strictly through design. The aim is not to create a one-size-fits-all solution but to provide a framework that can accommodate the diverse needs and preferences of the individuals and communities involved.

This proposal appreciates the universal necessities for supportive spaces while emphasising the importance of 'veneering' or customising these spaces. The concept of veneering refers to the ability to modify and personalise an environment to instil a sense of security, identity, and comfort for dementia patients. By allowing for individual personalisation within a universally supportive environment, it encourages a sense of familiarity and belonging, which can significantly contribute to reducing anxiety and enhancing wellbeing.

Furthermore, the proposed strategy addresses the cultural sensitivity surrounding the concept of 'handing over' relatives in the MENA region, a process which can be emotionally challenging for both the patient and their families. By proposing an environment that can be interpreted as an extended 'home' rather than an impersonal care facility, the process of transition is made more palatable. The vision is to create an environment that can facilitate a sense of continuity and normality in the life of the patient, by merging the borders between home and care facility. This approach aligns with the goal of maintaining the dignity and respect for the individual, while enabling the highest possible quality of life.

This thesis demonstrated how interior design for people with dementia differs depending on each unique user. Some standards have been scientifically verified on the optimal lighting, colours to use, and what to avoid. They will be taken into account, but the user's experience with dementia and its philosophical underpinnings can direct the designer or architect in coming up with more comfortable living arrangements for the user.

In comparing the outcomes of this thesis with the extensive body of work done at the Dementia Services Development Centre at the University of Stirling, several parallels and divergences emerge. Just as the DSDC emphasises the importance of tailoring environments to support individuals living with dementia, this study reiterates this concept, specifically highlighting the need for culturally sensitive design adaptations within the MENA region.

The findings from this thesis extend the work of the DSDC by examining the influence of cultural factors on dementia-friendly design. While the DSDC has contributed significantly to the understanding of effective dementia-friendly design principles, their focus has largely been within a Western context. This thesis contributes to this area of study by presenting novel insights into how these principles may be adapted and applied within the unique cultural and architectural contexts of the MENA region.

Similarly, the tools developed at the DSDC such as the Environments for Ageing and Dementia Design Assessment Tool (EADDAT12) have been used as an inspiration for creating a new culturally sensitive design guideline proposed in this thesis. While the principles of EADDAT12 provide a universal baseline, the tool in this thesis is guidelines that were created to introduce additional layers of cultural sensitivity, thereby making it applicable in a culturally diverse context like the MENA region.

Overall, the research carried out within this thesis both aligns with and extends the work conducted by the DSDC, pushing the boundaries of our understanding of how to create truly inclusive, culturally sensitive environments for individuals living with dementia across a broader global context."

Shift Towards Culturally Sensitive Models

The insights derived from the various case studies examined in this research may hold transformative implications for dementia care provision models in the Middle East and North Africa (MENA) region. These findings encourage the need to shift away from merely borrowing and implementing Western models. Instead, it is crucial to focus on adaptations that truly appreciate the unique cultural characteristics and societal intricacies present within this region.

The emphasis on cultural compatibility should guide the evolution of dementia care models. By using the observations drawn from case studies, strategies can be formulated to offer a service that fits comfortably within the sociocultural fabric of the MENA region. It means approaching dementia care provision with a fresh perspective – one that is deeply rooted in understanding and respecting the unique aspects of the local culture, traditions, and values.

Importantly, the goal is not merely to make dementia care culturally sensitive, but also to shape an environment where dementia care becomes a positive, enriching experience for individuals living with the condition. It involves taking into account the perspectives of patients, families, and caregivers, along with a broader understanding of societal norms and expectations in this region.

Critical Reflection:

Whilst this thesis offers extensive insights into dementia care within the MENA region, it's essential to recognise its inherent limitations. The research largely centred on particular case studies, which, though valuable, may not encompass the complete spectrum of experiences across the entirety of the MENA region. Furthermore, whilst stressing cultural sensitivity is paramount, there's an underlying challenge of ensuring these culturally tailored practices align with universally accepted standards of care.

A potential critique could posit that adapting Western models extensively for the MENA context might diminish the core efficacy of the original care principles. Yet, the fundamental proposition of this work isn't mere replication but a nuanced adaptation, harmonising both global best practices and regional specificities.

There remains an expanse of untapped potential for further research. Subsequent studies could probe deeper into individual experiences of dementia patients in MENA territories less explored within this thesis. Moreover, there exists a compelling avenue to scrutinise how a MENA-centric approach could reciprocally enrich dementia care practices in Western settings, especially in cosmopolitan contexts.

Conclusion: A Novel Approach for the MENA Region

In summary, this thesis has highlighted a novel, culturally-sensitive approach to dementia care in the MENA region. By integrating the universal principles of dementia-friendly design with local cultural sensitivities, we can create environments that instil a sense of security and identity in dementia patients. This approach does not merely replicate Western models but adapts them to local contexts, considering the unique societal norms, values, and traditions of the MENA region.

Going forward, continuous commitment to understanding, evaluation, and adaptation is crucial. The insights provided herein contribute to a broader discourse in dementia care and can be adopted in different regional contexts, enhancing the quality of life for all individuals living with dementia globally. This study has opened a path, and future research should continue to tread it, fostering a dynamic and responsive dementia care model, deeply grounded in cultural respect and understanding.

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