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# Design for Health

Creating supportive environments for people living with Dementia

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**DLA Dissertation - Booklet**

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## **PREFACE**

The physical environment is a crucial factor in determining the well-being and quality of life of individuals. For people with dementia, this impact is even more significant, as they often experience a decline in cognitive abilities and become increasingly dependent on their surroundings. Despite the importance of the topic for our society, it is still a relatively neglected field of study.

This study aims to address this gap in the literature by exploring how the built environment can support the well-being and quality of life of people with dementia. Specifically, we will examine how various aspects of the physical environment, such as lighting, layout, and design, can be optimized to enhance autonomy and promote positive mental health outcomes.

It is expected that this study will contribute to the growing body of research on dementia care and provide insights that can be used by architects and designers. The overall goal is to improve the lives of people with dementia by creating environments that are supportive, engaging, and conducive to their overall well-being.

## **INTRODUCTION**

In recent decades, there have been significant changes in the demographic profile of the world, including the ageing of the population, with declining birth rates and increasing life expectancy. These changes have significant implications for the health and well-being of individuals and societies worldwide.

One of the most significant health challenges associated with demographic change is the growing prevalence of dementia. Dementia is a progressive and debilitating condition that affects memory, thinking, and behaviour. The risk of developing dementia increases with age, and as the world's population ages, the number of people affected by dementia is also expected to rise. It is estimated that approximately 50 million people worldwide live with dementia, and this number is projected to triple by 2050, reaching 152 million people.

The economic and social impact of dementia is significant. The cost of providing care for people with dementia is high, and it places a significant burden on

families and healthcare systems. As the number of people with dementia continues to rise, there is an urgent need for increased investment in research and healthcare infrastructure to address this global public health challenge.

## **STATEMENT OF THE PROBLEM**

As people age, they may face several physical and cognitive challenges that make it difficult to carry out everyday activities. Furthermore, people affected by dementia may also experience difficulties with memory, attention, and spatial awareness, which can make it challenging for them to navigate and use their environment.

Unfortunately, many buildings and public spaces are not designed with the needs of elderly people in mind. This can result in physical barriers and environmental challenges that make it even more difficult for people with dementia to function independently and safely. These buildings may have convoluted layouts, insufficient lighting, or features that are not accessible, such as stairs or narrow passageways.

This study addresses this issue by identifying and investigating aspects of the built environment that are particularly relevant for people with dementia. By doing so, the researchers hope to provide guidance for architects and designers who are creating buildings and public spaces that are more accommodating to the needs of elderly people with dementia and can even promote a better quality of living and autonomy.

## **RESEARCH OBJECTIVES**

The general objective of this study is to improve the lives of people with dementia by guiding designers and architects on creating/adapting environments that increase people with dementia's capacity to be more independent and self-confident in their daily lives.

Among the specific objectives are:

- Analysis of the current state of the art on the topic.

- Identification of symptoms of dementia that impacts the relationship with the environment.
- Identification and categorization of design principles and design aspects that should be adopted in the environment for people with dementia;
- Development of guidelines to support designers and architects to create and/or adapt spaces able to increase the people with dementia quality of life.
- Contribution to the growing body of research on dementia care and to dementia awareness, especially regarding the design of built environments.

## **THESIS STATEMENTS**

### **THESIS 1 – IMPACT OF THE ENVIRONMENT ON THE LIFE OF PEOPLE LIVING WITH DEMENTIA**

Everyone has a relationship with their environment. The environment in which we live and work profoundly influences our physical and psychological well-being (Waller & Masterson, 2015) and it is the same with people with dementia. In fact, the design of the physical environment is increasingly recognized as an important aid in caring for people with dementia (Day et al., 2000). The indications are that architecture does have an impact on the well-being of people with dementia, and this can be positive when space supports and enables activity or negative when it curtails or restricts (Torrington, 2006). People suffering from this illness are extremely limited in their daily competence and need increased support for their daily life (Marquardt & Viehweger, 2014).

*“Good design for dementia is good design for all” (Waller & Masterson, 2015).*

There is good evidence that minor aids and adaptations can improve a range of outcomes for older people in general, increasing the levels of confidence and autonomy (Evans et al., 2019). Thoughtful design or/and adaptation of the physical environment can reduce hospital admissions for avoidable conditions such as falls and urinary tract infections, which remain some of the most common reasons for hospital admissions among the elderly (Evans et al., 2019).

## **THESIS 2 – STATE OF THE ART REGARDING THE TOPIC DESIGN FOR DEMENTIA**

Compared with many other fields, designing for people with dementia does not have a large knowledge base (Fleming et al., 2020). Pulling together a global description of the state of the art on this topic was not a simple task. Although design for dementia has been a relatively neglected topic in the past years, during the course of this study - which started in 2018 - several new scientific articles and projects in the field were often published which required an up-to-date approach.

The countries with more accessible English published information regarding research in the design and dementia field, were found in studies from Australia, United Kingdom, United States of America, Netherlands, Canada, Germany, and Belgium. Among the institutions and groups, the works of the University of Stirling - Dementia Services Development Centre (DSDC), Alzheimer's Disease International (ADI), Dementia Lab research and MinD - Designing for People with Dementia project, should be emphasized.

## **THESIS 3 – SYMPTOMS OF DEMENTIA THAT CAN AFFECT PEOPLE'S RELATIONSHIP WITH THE PHYSICAL ENVIRONMENT**





For people living with dementia, the symptoms they experience can have a significant impact on their confidence and ability to continue to lead an independent and fulfilled life (Evans et al., 2019). When designing or adapting spaces for people with dementia, it is important to understand the symptoms generated by the disease and how it affects the person and their interaction with the physical environment. It is essential to be aware of the limitations of the main occupant to create and/or adapt environments that support the needs, well-being, and quality of life of those living with dementia. Through careful design solutions, designers would be able to reduce some of the issues of the disease, supporting people suffering from dementia to be more independent and to feel comfortable in the environment in which they live.

Age-related issues and impairment can cause a range of symptoms, in consonance with the literature review findings, among the most common symptoms of dementia that can affect their relationship with the surrounding physical environment are: Spatial disorientation (Liu, Gauthier & Gauthier, 1991;

Marquardt, 2011; Wiener & Pazzaglia, 2021), memory loss (Torrington, 2006; Digby and Bloomer, 2014; Godwin, 2014; van Hoof et al., 2015; Hung et al., 2017) and behavioral disturbances (van Hoof et al., 2015; Hung et al., 2017). Visual impairment is also among the most common symptoms, although it is also caused by ageing. According to the World Health Organization (2012), these symptoms can be shown even in the early stages of the disease.

#### THESIS 4 – DESIGN PRINCIPLES OF DESIGNING FOR DEMENTIA

Design principles are concepts that guide the design process. Through the literature review and the case study analysis it was possible to identify design principles – taking into consideration the main symptoms of dementia – and design aspects as solutions for these issues. Six key design principles were developed, which are respectively: Familiarity, Safety and Privacy, Accessibility, Spatial-time Orientation.

				
<b>FAMILIARITY</b>	✓		✓	
<b>SAFETY AND PRIVACY</b>	✓		✓	✓
<b>ACCESSIBILITY</b>			✓	✓
<b>SPATIAL ORIENTATION</b>		✓	✓	
<b>TIME ORIENTATION</b>	✓		✓	✓

## THESIS 5 – PHYSICAL DESIGN ASPECTS OF DESIGNING FOR DEMENTIA

Deriving from the design principles, physical design aspects were also developed and placed into pre-design and post-design aspects. The right pre-design and post-design choices can significantly reduce stress, confusion, and disturbance while simultaneously improving safety and reducing accidents. This approach applies whether the individuals are residing in care homes or their own homes.

<b>DESIGN PRINCIPLE</b>	<b>FAMILIARITY</b>	<b>SAFETY AND PRIVACY</b>	<b>ACCESSIBILITY</b>	<b>SPATIAL ORIENTATION</b>	<b>TIME ORIENTATION</b>
<b>DESIGN ASPECT</b>	ELEMENTS	ELEMENTS	ELEMENTS	COLORS AND CONTRAST	COLORS AND CONTRAST
	COLORS AND CONTRAST	COLORS AND CONTRAST	COLORS AND CONTRAST	WAYFINDING	LIGHTENING
	LIGHTENING	LIGHTENING	LIGHTENING	TYPOLOGY, LAYOUT	
	TYPOLOGY, LAYOUT	FINISHES AND MATERIALS	WAYFINDING		
		TYPOLOGY, LAYOUT	TYPOLOGY, LAYOUT		