

# Societal Digital Demands and Needs in Healthcare Services: Viewing the Dignity of Adults Aged 75 Years and Older

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Moonika Raja

FACULTY OF NURSING AND HEALTH SCIENCES



Societal Digital Demands and  
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75 Years and Older

Moonika Raja

PhD in Science of Professions  
Faculty of Nursing and Health Sciences  
Nord University

Moonika Raja  
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Nord University  
N-8049 Bodø  
Tel: +47 75 51 72 00  
[www.nord.no](http://www.nord.no)

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# Part 1

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Moonika Raja

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## List of Abbreviations

The following abbreviations are used in this dissertation:

DSS	Norwegian Government Security and Service Organization
EPTA	European Parliamentary Technology Assessment
ESR	Early Stage Researcher
EU	European Union
CINAHL	Cumulative Index to Nursing and Allied Health
GDPR	General Data Protection Regulation
ICT	Information and communication technology
JBI	The Joanna Briggs Institute
KBNN	Business Cycle Barometer for Northern Norway
MEDLINE	Medical Literature Analysis and Retrieval System Online
MeSH	Medical Subject Headings
MHN	Mobile Health News
NMHCS	Norwegian Ministry of Health and Care Services
NEM	Norwegian National Committee for Medical and Health Research Ethics
NESH	Norwegian National Committee for Research Ethics in the Social Sciences and the Humanities
NSD	Social Science Data Service in Norway
OECD	Organization for Economic Co-operation and Development
OpenAIRE	Open Access Infrastructure for Research in Europe
PCC	Population, Concept and Context
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta- Analyses
RLR	Reflective Lifeworld Research
SARA	Danish National Museums' common system for registering and managing their collections
SARS-CoV-2	Coronavirus Severe Acute Respiratory Syndrome
WHO	World Health Organization
WP	Work package



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## Part 2

### List of Original Articles

This dissertation consists of three studies (Studies I-III), a synthesis, and the following four articles (Articles 1a, 1b, 2 and 3).

- 1a Raja M, Bjerkan J, Kymre IG, Galvin KT, Uhrenfeldt L. The digital development within society that persons of 75 years and older in European countries have been part of: A scoping review protocol. *Journal of Nursing Education and Practice*. 2021a;11(6):9-15. doi:10.5430/jnep.v11n6p9
- 1b Raja M, Bjerkan J, Kymre IG, Galvin KT, Uhrenfeldt L. Telehealth and digital developments in society that persons 75 years and older in European countries have been part of: a scoping review. *BMC Health Services Research*. 2021b;21:1157. doi:10.1186/s12913-021-07154-0
- 2 Raja M, Uhrenfeldt L, Galvin KT, Kymre IG. Older adults` sense of dignity in digitally led healthcare. *Nursing Ethics*. 2022;1-12. doi:10.1177/09697330221095140
- 3 Raja M, Kymre IG, Bjerkan J, Galvin KT, Uhrenfeldt L. National digital strategies and innovative eHealth policies concerning older adults` dignity: A document analysis in three Scandinavian countries. *BMC Health Services Research*. 2023;23:848. doi:10.1186/s12913-023-09867-w



## Abstract

Older adults who have not grown up with digital innovations are expected to keep up with technological shifts to the same extent that other age groups are, and this can be challenging for them. Digital technologies are steadily transforming our world, and health ministries are increasingly investing in digitalization. Digitalization has come to be seen as part of the solution for the provision of services adapted to the needs of older adults. Thus, learning to use new digital technologies is seen as a way for these adults to secure their needs. It is necessary to be aware of potential difficulties and impacts on these adults' sense of human dignity during this digital transformation.

The overall aim of this research is to address societal digital demands and needs in healthcare services in order to view the dignity of adults aged 75 years and older. Three subordinate aims are explored by three corresponding studies: (1) to map a body of literature in order to summarize and discuss research findings concerning historical digital development over the last 20 years involving adults of 75 years and older in European countries (Study I); (2) to clarify the phenomenon of sense of dignity experienced in older adults with regard to how their expectations and needs are met within the context of digitally-led healthcare in Norway (Study II); and (3) to provide knowledge about digital strategies and eHealth policies which concern older adults' dignity in three Scandinavian countries (Study III). These three sub-studies are integrated into a synthesis and discussed further. The three studies (Studies I-III) are disseminated as four scientific articles (Articles 1a, 1b, 2, and 3).

This research takes a qualitative methodological stance and is informed by the hermeneutical approach, as inspired by Gadamer. Article 2 has a phenomenological approach. The synthesis of the three studies (Studies I-III) emphasizes the circularity of understanding, whereby establishing a pre-understanding and moving both within the studies and back and forth between the studies and the synthesis as a whole helps to open up the possibility of forming new understandings. Study I is a scoping review with

an *a priori* published protocol, which follows the Joanna Briggs Institute framework for scoping reviews. Study II uses in-depth interviews and analysis informed by the phenomenological approach of Reflective Lifeworld Research. Study III is a document analysis informed by O' Leary's document analysis process and the Joanna Briggs Institute framework for the systematic review of text and opinion papers.

The synthesized results of the three studies suggest that when older adults need to use new technology and digital healthcare services, different aspects impact their dignity in both positive and negative ways. These technologies and services are making their lives both easier and, simultaneously, more difficult. The outstanding themes concerning older adults' dignity in digitally-led healthcare that emerge from the synthesis are the importance of human contact, the need for help and constant learning, concerns about privacy, and safety issues. This synthesis provides new knowledge about societal digital demands and needs in healthcare services and contributes perspectives on the dignity of adults aged 75 years or older. Older adults experience a sense of being lost in a digital world, and this impacts their perception of dignified ageing. Older adults have concerns about new technology violating their privacy. On the one hand, new digital technology makes older adults insecure and increases their sense of vulnerability, while on the other, digital technology in healthcare systems provides them with a sense of safety and opens up new opportunities for them. There are gaps between policies about digital solutions and eHealth systems, and older adults using these. Filling these gaps can be a challenging process as it involves political decisions at different levels regarding service providers, privacy, economy and training, while accounting governmental aims, traditions, context, users' digital literacy and needs. It is important to emphasize older adults' perspectives, to fill the gaps the way that older adults could benefit from digital solutions and eHealth systems. There must be a balance between digital technology's potential benefits and the effort required for its use within a framework that older adults perceive dignified. As users, their involvement plays an important role in this process.



## Norsk sammendrag

Eldre mennesker som ikke har vokst opp med digital innovasjon, forventes å følge med på teknologiske endringer like mye som andre aldersgrupper og dette kan være utfordrende. Digitale teknologier endrer stadig vår verden, og helsemyndigheter investerer stadig mer i digitalisering. Digitalisering har blitt sett på som en del av løsningen for å tilby tjenester tilpasset eldre menneskers behov. Dermed er det å lære seg å anvende ny teknologi sett på som en måte den eldre aldersgruppen av voksne kan sikre sine behov. Det synes nødvendig å se etter mulige utfordringer og konsekvenser for deres fornemmelse av menneskelig verdighet i den digitale transformasjonen.

Det overordnede målet med denne studien er å adressere samfunnets digitale krav og behov i helsetjenester ved å belyse verdighet hos voksne som er 75 år eller eldre. Tre underordnede mål utforskes av tre korresponderende studier: (1) å kartlegge litteratur, for å oppsummere og diskutere forskningsresultater om digital historisk utvikling som voksne 75 år og eldre i europeiske land har vært en del av de siste 20 årene (studie I); (2) å beskrive fenomenet eldre menneskers fornemmelse av verdighet i hvordan deres forventninger og behov ivaretas innen digitalt ledete helsetjenester i Norge (studie II); og (3) å bidra med kunnskap om digitale strategier og e-helsepolitikk i tre Skandinaviske land, som omhandler eldre voksnes verdighet (studie III). Disse tre delstudiene er i denne avhandlingen integrert og diskutert i en syntese. De tre studiene (studie I-III) er fordelt på fire vitenskapelige artikler (artikkel 1a, 1b, 2 og 3).

Metodologisk ståsted er kvalitativt og er informert av hermeneutisk tilnærming som inspirert av Gadamer. Artikkel 2 har en fenomenologisk tilnærming. Syntesen av de tre studiene (studie I-III) vektlegger sekulariteten i forståelsen. Forforståelse og bevegelse i studiene, frem og tilbake mellom studiene og helheten bidrar til å åpne muligheten for nye forståelser. Studie I er en scoping review med publisert protokoll, som følger Joanna Briggs Institutes rammeverk for litteraturstudier. Studie II bruker

dybdeintervjuer og fenomenologisk analyse informert Reflective Lifeworld Research design. Studie III er en dokumentanalyse basert på O`Learys dokumentanalyseprosess og Joanna Briggs Institutes rammeverk for systematiske review over av tekst og meningsartikler.

De syntetiserte resultatene fra de tre studiene viser at når eldre mennesker trenger å bruke ny teknologi og digitale helsetjenester, er det aspekter som påvirker deres verdighet på både positive og negative måter. Eldre mennesker har erfart at teknologi og nye digitale helsetjenester både har gjort livet enklere og samtidig det motsatte. De temaer som omhandler eldre menneskers verdighet i digitalt ledete helsetjenester er bekymringer om personvern, behov for hjelp ved bruk av teknologi, viktigheten av menneskelig kontakt og trygghet. Denne syntesen gir ny kunnskap om verdighet når voksne 75 år og eldre er stilt overfor samfunnets digitale krav som skal imøtekomme deres behov. Eldre mennesker føler seg fortapt i den digitale verden, og dette påvirker deres oppfatning av verdig aldring. På den ene siden gjør ny digital teknologi eldre mennesker usikre og øker sårbarheten. På den annen side gir digital teknologi i helsevesenet et følelse av trygghet for eldre mennesker og åpner for nye muligheter. Det er en diskrepans mellom policy for digitale løsninger og e-helsesystemer, og eldre mennesker som bruker disse. Det er utfordrende å utjevne denne diskrepansen, etter som det innebærer ulike nivå av politiske bestemmelser om tjenester, personvern, økonomi og erfaring med hensyn til nasjonale føringer, tradisjon, kontekst og brukeres digitale forståelse. Det er viktig å løfte fram eldre menneskers perspektiv hvis diskrepansen skal utjevnes sånn at eldre mennesker kan dra nytte av digitale løsninger og e-helsesystemer. Det må være en balanse mellom ønskede fordeler med nye digitale løsninger og den innsats som kreves for at eldre mennesker kan ta dem i bruk innen rammer som oppleves som verdige. Som brukere spiller deres involvering en viktig rolle i denne prosessen.

## Dissertation Outline

This dissertation consists of two parts. Part 1 comprises Studies I-III and the synthesis of these three studies, and consists of seven chapters. Part 2 includes four original articles (Articles 1a, 1b, 2 and 3).

*Chapter 1* describes the knowledgebase for understanding digital demands and needs for older adults, and introduces the structure of the dissertation. *Chapter 2* presents the background, previous research and knowledge gap that instigated this study.

*Chapter 3* introduces the aims of this study, the research questions it is intended to answer, and the design of the dissertation. *Chapter 4* describes the methodology used, in addition to providing an overview and rationale for Studies I-III and their synthesis. This chapter presents the study designs, data collection procedures, participants, settings and data analysis used in this dissertation, and also discusses the relevant ethical considerations.

*Chapter 5* presents the results of the three studies and their synthesis. These results concern older adults' experiences with telehealth and digital technology (Study I), older adults' sense of dignity when engaged in digitally-led healthcare in Norway (Study II), and a review of national digital strategies and eHealth policies concerning older adults' dignity in Scandinavian countries (Study III). The synthesis of these results covers four main themes: (1) *the importance of human contact*, (2) *the need for help and constant learning when using technology*, (3) *concerns about privacy*, and (4) *safety issues*.

*Chapter 6* is a discussion of the synthesis from the theoretical perspective of previous research. The chapter also includes a discussion of methodology. Part 1 of this dissertation concludes with *Chapter 7*, which discusses the implications of this study and provides recommendations for future research.



## Part 1

Societal Digital Demands and Needs in Healthcare Services:  
Viewing the Dignity of Adults Aged 75 Years and Older



# 1 Introduction

Today, each Scandinavian country has their own eHealth strategy according to which they are operating (Ministry of Health and Social Affairs, 2016; Healthcare Denmark, 2018; Norwegian Directorate of eHealth, 2021). Norway's digitalization strategy between 2017 and 2022 has aimed to provide all citizens with safe and easy access to healthcare services (Nordic Innovation, 2018). The European Commission (2020a) has underlined that when shaping Europe's digital future it is important that every citizen benefits from digitized society. Dignity has become a central value in care for older adults in all three Scandinavian countries (Norwegian Ministry of Health and Care Services (NMHCS), 2010; Ministry of Social Affairs, 2012; Healthcare Denmark, 2019). It is important to preserve patient's dignity and autonomy when using digital systems in healthcare (Skär and Söderberg, 2017). The generation of older adults that have not grown up with digital innovations must make an effort to learn new strategies to keep up with demanding innovations, and this may impact their sense of dignity (Boz and Karatas, 2015).

This dissertation is a part of the INNOVATEDIGNITY project (INNOVATEDIGNITY, 2019). INNOVATEDIGNITY is a trans-national research network financed by the European Commission, and involves experts in nursing from across Denmark, Greece, Norway, Sweden and England. Fifteen early stage researchers (ESRs), with multidisciplinary higher education backgrounds, are hosted at the beneficiary institutions as PhD students. Two PhD students are hosted in Norway at Nord University, one of which is the author of this dissertation. In addition to PhD students, experienced researchers and non-academic project partners are involved in the project. Non-academic project partners include nationally-leading care organizations, professional bodies, advocacy charities and technological development enterprises.

The INNOVATEDIGNITY project is a response to the necessity of providing sustainable and dignified care for older adults in Europe. INNOVATEDIGNITY aims to research new

ways of engaging with older adults in order to shape digital developments. It examines new kinds of care delivery, including long-term residential care, rapid transition from acute hospital care to home care, gender imbalances, and workforce sustainability to create new forms of care activities in response to the growing lack of sustainability in older adults' care and evidence of current care failings. It examines older adults' perspectives on care systems (Uhrenfeldt and Terp Høybye, 2015), focuses on dignity (Galvin and Todres, 2015), investigates the potential for person-centred digital innovation (McCormack et al., 2017) and explores gender issues in care to provide information that can be used to support older adults to live well. The different studies within the INNOVATEDIGNITY project critically evaluate existing care systems and provide analyses that make use of older persons' insights. They examine and offer a range of conceptual, empirical and methodological conditions for the development of new innovations that offer dignity in care. Several studies in the INNOVATEDIGNITY project investigate the potential for person-centred innovation, but person-centred has not been in focus in this dissertation. The INNOVATEDIGNITY project examines the impacts of gender on care delivery, on the leadership of caring and science careers, and on the care workforce in order to produce insights which support sustainability. It provides an analysis of the impacts of new care models on the well-being of older adults.

There are three main research work packages (WP) in the INNOVATEDIGNITY project: *Dignity within Digital Applications*, *Living Well in Care Systems*, and *Gender and Sustainable Care*. This dissertation is part of first WP, *Dignity within Digital Applications*. This WP seeks to understand contextual issues that may impede or enhance the uptake of technological innovation in the care of older adults. I have been doing research in WP one together with three other INNOVATEDIGNITY ESRs and supervisors from Nord University and University of Brighton. In addition to my PhD study, we have been examining non-governmental organizations' role in engaging with older adults at a national level to scope future older adults perspectives, issues and needs with the digitalization in healthcare context. An additional paper on non-



governmental organizations` digital engagement in providing services for older adults is in manus and soon to be submitted, co-authored by four ESRs and our supervisors.

Being an ESR in INNOVATEDIGNITY project has positively influenced my maturation as a researcher and my PhD education in general. During the project years, I have participated in several international training events for PhD students: Interdisciplinary network events, Advanced research seminars, Advanced spring courses, Public engagement events and exhibitions, Integrated project workshops and a final Intersectoral conference. Through the INNOVATEDIGNITY program I learned about additional research methods, writing academical reports and had several presentation about my study leading to inspirational conversations and feedback about dignity. These events have been led by nine universities across Europe (Denmark, Greece, Norway, Sweden, the United Kingdom) and leading scientists from our project and beyond.

Furthermore, my PhD secondment was at the Professional Department of the Danish Nurses Organization concerning their political work and impact. This helped me to learn how to involve team members in the process and helped me to develop leadership skills. Same skills were strengthened by having possibility to prepare and co-ordinate a public research exhibition entitled *When We Get Old* at the Museum of Nursing History in Kolding, Denmark (opening in February 2023 and ended in May 2023). The exhibition invited people into a conversation about growing old and ageing and the meaning of that. Older adults` voices were featured throughout the exhibition and research data was conveyed via images, poems, audio clips, videos and interactive exhibits. It covered three subject areas to focus on the various perspectives: voices from the nursing home, caring for each other and digital horizons. More information about the exhibition and invitation to the opening can be found in Appendix A.

This dissertation is also a result of participating in Nord University at the PhD program Professional Praxis and all the local PhD courses were carried out in accordance with the program. According to university`s policies, there was a transition from

Professional Praxis program to a new PhD program Science of Professions. Both PhD programs underline importance to raise awareness of experience-based knowledge. Science of Professions is an empirical science that is understood as interdisciplinary area of knowledge (Nord University, 2022). Science of Professions relates closely to the lived experiences and the research should provide a scientific understanding of experience-based knowledge relating to language, relationship and action. The three thematic areas are understood as human activity in which the participants share an understanding of the practice (Nord University, 2022). From its starting point in Science of Professions, the experience-based data gathered as part of this dissertation delivers valuable knowledge to this research.

In order to investigate the potential for digital innovation and how it affects older adults' sense of dignity, it is important to look into the meaning of dignity, care and use of digital technology in healthcare. A closer examination of these themes is provided in the background chapter of this dissertation.

## **1.1 Knowledgebase for Understanding Digital Demands and Needs for Older Adults**

Knowledge is justified through several subjectivities and through intersubjectivity. The process of gaining understanding relates to how my intersubjective interaction provides access to my culturally embedded pre-understanding (Habermas, 1987). My pre-understanding is shaped by cultural, social, and personal traditions. Understanding takes place from within a historically and linguistically structured pre-understanding that function as a condition of the possibility of understanding (Gadamer, 1999).

For most of my working life, my interest has been in the quality of care of older adults. My pre-understanding of this research field is mainly based on my professional experience but also on my social and cultural background. My professional pre-understanding builds on my education: I have a Master's degree in speech therapy from the University of Tartu, Estonia. I have seven years of experience working in a

hospital in Department of Neurology, in both stationary and outpatient settings. I have worked with a wide range of patients with aphasia, dysarthria, stuttering and swallowing disorders. I have more than ten years of experience in working with older adults in institutional and outpatient settings in Estonia and Norway. I have seen how demanding it can be for older adults to learn how to use new technologies provided by healthcare systems, and also how beneficial the results can be. Altogether, these experiences have provided direction for my interests as a researcher.

Gadamer (1999) points out that putting one's own pre-understanding at stake means maintaining a conscious relationship with one's pre-understanding in order to then open up opportunities for new understandings. As we all have different pre-understandings, we thus all have different ways of understanding the world. In this dissertation, I have maintained a conscious attitude to my own pre-understanding in order to remain open to new understandings. Understanding one's own knowledge of pre-understanding can shape the attention of what is to be studied. One's intuition, insight and awareness of one's pre-understanding are essential for the matter itself to emerge (Gadamer, 2006). This is where context and experience come into play (Hanson, 1958). Being aware of the importance of challenging the pre-understanding can help to gain a deeper insight and lead to new knowledge (Ekebergh, 2007). The pre-understanding we bring with us may be disturbing if it does not correspond to reality, and we are constantly trying to make new knowledge fit into a form that it may not fit into (Wadel, 1991). To avoid this, I have remained open to new understandings when conducting this study.

My pre-understanding is part of how I understand the experiences of the participants in this study, and what I have noticed. Simultaneously, my pre-understanding has changed during the course of my research and my life, because it is not constant. Simultaneously, informants' backgrounds have shaped their pre-understanding. The horizon of my understanding was expanded during this research. I have actively tried

to maintain scientific curiosity and openness in order to be able to spot new information and knowledge in my research field.

European countries apply innovative digital technologies used in different care settings. I have seen how this puts older adults into difficult situations, as they need to cope with the new digital realities of everyday life. Here are a few examples, taken from the many I have encountered in my daily practice, that illustrate how technologies have a significant impact on older adults:

*An old woman is nervously waiting for her blood test results. I see her getting a phone call to tell her that the blood test results are ready. She is trying to log in to her account but fails to do so, because the numbers on the device are too small for her tired eyes.*

The document about the blood test results is ready, and formally it may even have been received, but in reality the woman is still without the necessary information. In this situation a system has been designed to facilitate the flow of information between healthcare providers and patients, but in practice the outcome has not been as it was initially planned.

*An old man is lying on his bed in the hospital. He would like to manoeuvre his bed into a better position. He is holding the remote control, but fails to use it because he has forgotten the instructions and is scared to try in case he makes things worse.*

The old man has been admitted to the hospital because of his health conditions. His medical situation limits his ability to move his own legs. He has been given a modern, high-quality hospital bed to make him feel more comfortable. The height of the entire bed is adjustable, as is the position of the head and the feet; the side rails are adjustable, and an electronic remote control allows the patient to operate both the bed and other nearby electronic devices. This high-quality technologically advanced bed might give the patient extra comfort if he only knew how to use it. He is in an uncomfortable situation, maybe even in pain, and would like to move his bed to a better position. He has been shown how to use the remote control to manoeuvre his

bed, but for one reason or another he has forgotten how to operate it. In this case technology has had a notable impact on the patient: he is having trouble manoeuvring his bed and the benefits of the new technology are hidden. He could use a manually adjustable bed, but now he is stuck with this bed that he cannot adjust.

These and other similar situations may impact human dignity. Human dignity and well-being have always been important for me, due to my beliefs as a Christian and my education as a healthcare provider. When working as a speech and language therapist, I have kept these values with me, and they have led me to strive to improve patients' individual well-being. This study is a part of the cross-national project INNOVATEDIGNITY. This bears the mark that different cultures and also the basis of religion, will be able to give and shape the pre-understanding of human dignity and give it a multicultural face in an European context. In Christianity, which bear the major influence on cultural beliefs in Scandinavia (Uhrenfeldt et al., 2018), human dignity is based on the Biblical paradigm of *imago Dei* that is the understanding of the human being as created in the image (Hebrew: *selem*) and likeness (Hebrew: *demut*) of God (Genesis 1:26-27; Holy Bible, 1973). According to Biblical scholars, this have as interpretative background the process of coming understanding that human beings should not make any representations of God, but are God's representative on earth (Müller, 2020). This establishes the intrinsic difference from other creatures because nothing else can represent God, it confers the high position to all human beings, and it brings understanding of human dignity to the fore (Müller, 2020). My belief in these values led me to apply to be part of the INNOVATEDIGNITY project, as it focuses on human dignity and the care of older adults. My work for the INNOVATEDIGNITY project is at the same time the beginning of a deepening of my own knowledge of what dignity and technology in older adults' care involves.

## 1.2 Structure of This Dissertation

This dissertation is article-based and includes two parts. Part 1 connects and contextualizes the different elements of the study and is made up of seven chapters.

Part 2 consists of four original articles: Articles 1a and 1b (Study I), Article 2 (Study II) and Article 3 (Study III). Table 1 provides the titles of the three studies along with their individual aims and descriptions of the data used in each of them.

**Table 1.** Titles, Aims, Data of Studies I-III and Publications

	Title	Aim	Data material	Publications
Study I	Telehealth and digital developments in society that persons 75 years and older in European countries have been part of	To map a body of literature and summarize and discuss research findings concerning historical digital developments over the last 20 years that adults 75 years and older in European countries have been part of	Primary articles, theses and reports	1a. The digital development within society that persons of 75 years and older in European countries have been part of: A scoping review protocol  1b. Telehealth and digital developments in society that persons 75 years and older in European countries have been part of: A scoping review
Study II	Older adults' sense of dignity in digitally-led healthcare	To clarify the phenomenon of sense of dignity experienced in older adults concerning how their expectations and needs are met within the context of digitally-led healthcare in Norway	Interviews with older adults	2. Older adults' sense of dignity in digitally led healthcare
Study III	National digital strategies and innovative eHealth policies in three Scandinavian countries which concern older adults' dignity	To provide knowledge about digital strategies and eHealth policies concerning older adults and their dignity in three Scandinavian countries: Norway, Sweden and Denmark	Documents and reports	3. National digital strategies and innovative eHealth policies concerning older adults' dignity: A document analysis in three Scandinavian countries

The dissertation begins by giving an insight into the European Union (EU) funded project INNOVATEDIGNITY, which this dissertation is a part of (INNOVATEDIGNITY, 2019). This is followed by an overview of my motivation for conducting the study and the horizon of my pre-understanding. *Chapter 2* begins by clarifying the concept of dignity, as older adults' sense of dignity in digitally-led healthcare is central to this dissertation. An overview of the meaning of dignity in Scandinavian healthcare systems is then provided. This is followed by a discussion of the process of demographic ageing and how this process is transforming society and presenting challenges for healthcare systems. The use of technology in healthcare systems is then discussed. *Chapter 2* ends with an overview of previous research, identification of a knowledge gap, and reasoning for conducting this study. *Chapter 3* describes the study's aims, the research questions it is intended to answer, and the design of the dissertation. *Chapter 4* provides insights into the methodological foundation for this dissertation. An overview of the different study designs used in Studies I-III is provided along with justification for the selection of these designs, and a discussion of the methods used for data collection and analysis. The chapter includes discussion of ethical considerations undertaken during this research. *Chapter 5* provides brief presentations of the findings of each of the three studies (Studies I-III), followed by a synthesis of the results addressing societal digital demands and needs in healthcare services in order to view the dignity of adults aged 75 years and older. *Chapter 6* presents the overall findings of the dissertation and discusses them from a theoretical perspective and in the light of relevant research. A methodological discussion, including strengths and limitations of the whole study, concludes the chapter. *Chapter 7* completes Part 1 of the dissertation by presenting conclusions, implications and suggestions for further research.





## 2 Background

This chapter presents the themes and concepts that are the core of this dissertation. It begins with a discussion of the concept of dignity and its meaning in healthcare systems in three Scandinavian countries (Norway, Sweden and Denmark). This is followed by an overview of the process of demographic ageing and how demographic changes are transforming society and presenting challenges for healthcare systems. Insights into technological developments and the use of new technologies in healthcare systems are then presented, along with an overview of national eHealth policies and the impact of Coronavirus Severe Acute Respiratory Syndrome (SARS-CoV-2) on eHealth. The chapter ends with information about previous relevant research and the reasoning for conducting this study.

### 2.1 Dignity

#### *Dignity as the Foundation of All Human Rights*

The Universal Declaration of Human Rights (United Nations, 1948/2022) and the European Union's Charter of Fundamental Rights (2012) place dignity as the foundation of all human rights. It applies to every person born into 'the human family' and requires only birth- not granting or conferral of dignity by someone with greater dignity. Dignity emphasizes the fundamental value and equality of all members of society (May and Daly, 2020). The Sustainable Development Goals of the United Nations for 2030 target dignity as providing a global blueprint for it for now and in the future for the world to be a better place (United Nations, 2023).

#### *Dignity and Ageing*

Erikson et al. (1986) suggested that dignity is important for successful ageing. Dignity in old age is related to concepts as quality of life and positive ageing (Kisvetrova et al., 2021b). In recent years many scholars have claimed an important link between positive ageing and notions of dignity (Solomon et al., 2016; Kisvetrova et al., 2021a; Kisvetrova et al., 2021b; Liu et al., 2021). Liu et al. (2021) found that self-perceived

dignity is associated to a significant degree with age and the meaning of life, and therefore it is a psychological factor that affects significantly the life of an older adult. Kvisetrova et al. (2021a) found that lack of social invisibility and recognition are threat to older adults sense of dignity. Solomon et al. (2016) claims that loss of dignity raises greater concern among older patients. Even older adults with health problems can still feel positive about their own ageing but a sense of dignity is an important factor when predicting attitudes to ageing for home-dwelling older adults, inpatients and older adults in the area of psychological losses (Clancy et al., 2021; Kvisetrova et al., 2021b).

### ***The Origin of Dignity***

The term 'dignity' comes from the Latin word *dignitas*, which first appeared in the writings of the Roman Stoics Cicero (106-43 BC) and Lucius Annaeus Seneca (4 BC -65 AD) and refers to human worthiness and honour, which are values associated with being human (Haak, 2012). The term dignity has evolved over years. Originally, dignity aligned closer with someone's having a high status not person's inherent value (Soken-Huberty, 2023). As notions of citizenship expanded and with it notions of humanity, philosophers began to consider that dignity inhered in the human person and did not have to be granted by the will of another person (May and Daly, 2020). A more recent account on dignity comes from Immanuel Kant (1724 – 1804), who argued that some things are beyond price and cannot be exchanged (Gallagher et al., 2008). The human rights framework from 1948 states that dignity is not something to earn because of their race, class, status or another advantage, by being human, each individual deserves respect and human rights spring from that dignity (United Nations, 1948/2022). Dignity, as known today, is inviolable and must be respected and protected (European Union's Charter of Fundamental Rights, 2012).

### ***The Concept of Dignity Goes Beyond Human Rights***

The concept of human dignity is not limited to human rights but also religions around the world have recognized a form of human dignity. It is important, as the cultural diversity in European countries has expanded during the last decades (Schneider and

Heath, 2020). Immigrants and Norwegian-born immigrants from over 220 different countries and autonomous regions account for more than 19 percent in Norway in 2023 (Statistics Norway, 2023). Numerous qualitative analysis suggest that the concept of human dignity does appear in a wide range of cultures (Düwell et al., 2014). Analysis reveal that there are subtle but important differences in how the concept of human dignity interpreted within different cultures (Barrett, 2022).

Christianity and Judaism dignity rests in the fact that people are made in the image of God as written in Genesis 1:27 and dignity restores in God's likeness (Holy Bible, 1973). In the Islamic teaching, a distinctive dignity was given to all children of Adam (May and Daly, 2020). The Catholic Church proclaims that human life is sacred and that the dignity of the human person is the foundation of a moral vision for society (United States Conference of Catholic Bishops, 2023). Hinduism teaches that all living beings, not solely human beings, are thought to possess inherent dignity, but at simultaneously in the social realm dignity appears in degrees (Düwell et al., 2014). In Buddhism, dignity is inherent because humans are on a universal journey to happiness and humans have capacity to awaken to the wisdom and compassion inherent in all life (Kawada, 2014). Human dignity and cultural diversity are interlinked (Barrett, 2022).

### ***Dignity in the Context of This Dissertation***

There are different approaches to understanding dignity, it can be thought about critically and philosophically, by asking or observed people to identify what they understand by dignity or look to the humanities and consider accounts in arts (Gallagher et al., 2008). Scholars have referred to dignity as a subjective experience which is related to autonomy and identity, and as a core value underlying medical practice (Nordenfelt, 2004; Hofmann, 2020). Dignity in terms of the inviolability of the individual is also central to my professional background as speech and language therapist (Body, 2009).

People refer to dignity in multiple variations and situations. In the context of this dissertation, dignity is understood as having many resonances in human life. The rights and duties which emerge from an understanding of dignity belong to each individual (Haak, 2012). The experience of dignity is closely linked to an understanding of what makes people feel human. It goes beyond respect for individual persons or their autonomy (Hofmann, 2020). It is the affirmation of something valuable in oneself or another; it is in its variations a gathering of both common values and vulnerability (Galvin and Todres, 2015). Dignity has many possible variations and nuances that human beings refer to in a meaningful way: it is to be experienced and considered within relational situations (Galvin and Todres, 2015).

Dignity can be lost through vulnerability, and the loss of dignity is especially noticeable in its rupture (Galvin and Todres, 2015). When dignity is taken away, one's sense of personhood is diminished (Todres, Galvin and Holloway, 2009). Dignity is an affirmation that can be ruptured, but can also be restored through interaction with others (Galvin and Todres, 2015). What makes us human is that we carry an individual view of how we should live our lives inside ourselves, and our sense of feeling, mood and emotions is the lens by which our worlds are coloured. If these dimension are neglected, then something important is missing when responding to human needs (Todres, Galvin and Holloway, 2009). The situations which lead to dehumanization and therefore loss of dignity need to be understood and acted upon in a meaningful way (Galvin and Todres, 2015). The preservation of their dignity is highly valued by patients (Walsh and Kowanko, 2002). The maintenance of dignity has become an important goal in healthcare and the nursing of older adults (Gallagher et al., 2008).

Despite its ancient roots in philosophical traditions, dignity is steeped in tradition, shaped by atrocity, formed by legal principles of the inhabited world and reflected throughout the human rights enterprise (May and Daly, 2020). The authorities of European countries are bound to comply with the Charter of fundamental rights when

implementing law and therefore is dignity used as an overall perspective in this study (European Commission, 2023).

### ***Previous Critics of the Concept of Dignity***

Focusing on the concept of dignity in research has its advantages and weaknesses. World's inequality is more visible than ever, and focusing on maintaining important resources for people to stay in live keeps little or no place to focus on citizen's dignity and well-being (Møller, 2021). For example, over 2 billion people live in water-stressed countries, which is expected to be exacerbated and this is one of the main priorities for these countries (WHO, 2022c). More focus on dignity can be in countries that are not struggling for essentials for life.

Furthermore, the concept of dignity has been internationally heavily criticized because it lacks clarity, has religious overtones, is redundant as a moral idea, and because of its speciesism (Waldron, 2014). Macklin (2003) declared dignity as a useless concept and being no more than a capacity for rational thought and action which is well covered by the principle of respect for autonomy. Pinker (2008) has been concerned about dignity pressurizing and perverting public agenda. Leget (2013) claims that the concept of dignity is notoriously vague. On the other hand, as answer to Macklin's (2003) claim, many scholars pointed out that dignity covered ground that respect for persons or autonomy could not cover and no other words cover better situations in practice (Multiple authors, 2003). In particular, dignity seems to have a wide range of protective functions as well as having reciprocal, relational and social aspects (Hofmann, 2020). Dignity is base for human rights and human rights apply equally and in equal manner to all human beings (United Nations 1948/2022; Hoffmann, 2014).

### ***Dignity and Healthcare Systems in Scandinavian Countries***

Dignity has become a central value in care for older adults in all three Scandinavian countries. In the 1990s debates were already taking place about dignity in the care of older adults in Scandinavian countries (Hastrup, 1991; WHO 1999; NMHCS, 1999). In January 2011 a new policy, 'The guarantee of dignity', was legislated in Norway and

Sweden to protect older adults' rights to dignified care and well-being (NMHCS, 2010; Ministry of Social Affairs, 2012). The aim of these regulations is to ensure that care for older adults, whether homecare or institutionally-based care, is organized in a way that contributes to dignified, meaningful and secure ageing in accordance with individual needs. The Norwegian law underlines the importance of taking care of self-determination, self-worth and medical needs as part of dignified care (NMHCS, 2010). The Swedish law addresses older adults' opportunities to live in safe conditions and have a meaningful existence in their communities (Ministry of Social Affairs, 2012). In Denmark, the preservation of older adults' dignity in care is focused on involving and empowering every citizen according their individual needs in order to maintain their independence and allow them to gain control of their own lives (Langer and Lind, 2001; Healthcare Denmark, 2019). These laws in three Scandinavian countries are complying with the Charter of fundamental rights and highlight the importance of dignity (NMHCS, 2010; Ministry of Social Affairs, 2012; Healthcare Denmark, 2019). A recent meta-synthesis on care in Scandinavian countries claims that healthcare providers are educated to meet the needs of older adults but that legislation on dignity does not ensure respectful care if it is not implemented as a value in healthcare settings (Clancy et al., 2020).

Analyses conducted on EU citizens' show that if people are more informed about technologies and endowed with necessary digital skills they primarily treat digitalization as an opportunity (Vasilescu et al., 2020). There is a need for a strong focus on information and support for older adults in Scandinavian countries when dealing with digital demands and telemedicine (Nymberg et al., 2019). When shaping Europe's digital future, it is important that every citizen benefits from digitized society (European Commission, 2020a). Ideally, technology should recede into the background to allow us to focus on what it is we are doing (communicating, accessing test results, or searching for information). Digital services are not available to people that do not have access to the necessary devices or do not know how to use them. The generation of older adults that have not grown up with digital innovations must make an effort to

learn new strategies to keep up with demanding innovations, and this may impact their sense of dignity.

## 2.2 Process of Demographic Ageing

Population ageing has become a global phenomenon: the proportion of older adults in the world is growing faster than any other age group. Population ageing is a long-term development that has been apparent for several decades (Eurostat, 2020). From 1990 to 2017 the number of people aged 65 years or older increased globally by 105 % (Cheng et al., 2020). Today, virtually every country in the world has an ageing population (United Nations, 2020). It is expected that between 2019 and 2050 the number of persons aged 80 years or over will triple (United Nations, 2017). The increase in human longevity associated with this demographic transition has been seen as the engine of global population growth (United Nations, 2020). Not only is the proportion of older adults in the population increasing, but older individuals are expected to live increasingly long lives (Eurostat, 2020). Global life expectancy at birth has reached 72.3 years, with men living five years less than women on average (United Nations, 2020).

Demographic changes, which are long-term developments, are also leading to an ageing population in Europe. By 2050 the number of citizens aged 75 years and older in European countries is projected to expand by 60.5% (Eurostat, 2020). The Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) were among the first to experience rapid population ageing, which resulted in government commissions on pensions being formed (Sundstrom, 2009). The demographic ageing process has been driven by increasing life expectancy and historically low fertility rates (Eurostat, 2020). The overall fertility rate should be around 2.1 in order to prevent populations from declining in the long term (Statistics Norway, 2021). Birth rates have fallen in almost all Nordic countries over the last decade. Between 2010 and 2020 the fertility rate has notably declined in Norway from 1.95 down to 1.48, in Sweden from 1.98 to 1.66, and in Denmark from 1.9 to 1.67 (Statista, 2021a; 2021b; 2021c).

Today, in Norway, over one in nine people are aged 70 years or older. Prognoses based on average fertility, life expectancy and net migration levels presume that roughly every fifth person in Norway will be over 70 years of age by 2060 (Statistics Norway, 2021). In Sweden, the largest demographic population increase is expected among older adults (Statistics Sweden, 2018). In Denmark, there were around 230,000 citizens aged 80 years or older in 2011; as of 2021, there are over 280,000 (Statista, 2021d). Bremberg (2020) found that mortality rates in Finland, Norway and Sweden were consistently higher in less densely-populated municipalities and that this disparity has increased over time. In recent decades population ageing has been one of the main demographic trends in the Scandinavian countries, and this trend is projected to continue (Grunfelder et al., 2020).

### ***Ageing Populations are Transforming Societies***

These demographic changes can be considered a success story. In addition to a long-term fall in fertility and increase in life-expectancy, other factors have also had an impact on ageing populations, including reductions in child mortality, increased awareness of the benefits linked to a healthy lifestyle, improved life conditions, and advances in public health and medical technologies (Eurostat, 2019). The growing number of older adults within society is posing a range of challenges by creating a significant impact on the socio-economic structure and providing a stimulus for developing services and goods that are adapted to the needs of the older generation (Eurostat, 2020; European Parliamentary Technology Assessment (EPTA) 2019). Ageing populations are rapidly transforming societies (Eurostat, 2020). While population ageing brings challenges, it also presents a number of opportunities for society as older adults can contribute their multitude of experiences, their increased spare time, and possibly also their financial resources to the community. Many older adults that are of pension age are still active, and still work and contribute to their societies (EPTA, 2019). Older adults are a highly heterogenous group with different needs, and they require specific technological solutions that open new markets for individualized goods (van Hoof et al., 2017). It is important to create age-friendly environments, by



including adapting housing, public transport and urban structures to suit people of different abilities and ages. As population ageing is a major development, it has emerged as a central issue in public debate and on the policy agenda (Grunfelder et al., 2020).

### ***Ageing Populations and Healthcare Challenges***

Ageing societies are facing more complex demands for improved welfare that require major changes and social innovations to promote the health and well-being of older adults. Social protection, including social security, long-term care and social assistance services, should be guaranteed for every citizen. Population ageing has implications for health, and the number of people requiring extended care due to functional limitations or disabilities is likely to increase (EPTA, 2019). Health impairments and the need for intensive care both increase among older adults, and thus a collective effort is required to support a new agenda of active and healthy ageing. The number of people potentially in need of long-term care in European countries is expected to increase from 19.5 million in 2016 to 30.5 million in 2050 (European Commission, 2021a). Long-term care involves a variety of services designed to meet health needs that will help people to live as independently and safely as possible when they can no longer perform everyday activities on their own (National Institute on Aging, 2017).

Healthcare systems are different in each European country, but Norway, Sweden and Denmark have similar tax-funded healthcare systems: national, regional and municipal governments are responsible for the provision of care and may contract both public and private healthcare providers (EPTA, 2019; Grunfelder et al., 2020). The ageing populations of Scandinavian countries put pressure on their welfare models and affect their societies. The welfare models of Scandinavian countries are based on high levels on education and long life expectancies combined with investments in innovation and research (Grunfelder et al., 2020). Scandinavian welfare states are characterized by their provision of high-quality services for all age groups, as regional and municipal authorities play a central role in the delivery of key services (Heleniak and Sanchez

Gassen, 2020). The trend in Norway is that older adults remain in rural areas while younger people move to the cities. The collaboration reform has led to older patients being discharged faster from hospitals and municipal services focusing more on medical treatment (Norwegian Directorate of Health, 2020). In Scandinavian countries, one of the most important aims of policies relating to ageing populations is for people to remain in good physical and mental health for as long as possible (Grunfelder et al., 2020).

### **2.3 Technological Development and Digital Solutions in Healthcare Systems**

Demographic changes and the digital transformation often affect each other (European Commission, 2021a). We are moving from print-based society to a society which is greatly dependent on information technology, and this influences the way we live. More and more tasks that once required human workers are being performed more easily, quickly, cheaply, productively, and to a higher standard by a range of information technology systems (Susskind and Susskind, 2016). Examples include the tasks performed by factory workers, manual transporters, knocker-uppers and ticket sellers. In the last few decades we have seen a digital society being built up step by step. Online services are now relevant to all adults: patient records are available to the patients themselves, the majority of communications with public services are digital, and the younger generations are used to digitally communicating through a variety of social media platforms. Around the world, considerable effort is being put into providing many different kinds of online systems (Susskind and Susskind, 2016).

Technology, with its special features and its pros and cons, has become part of our world. Only a few decades ago a computer's capability was defined by the physical space that it occupied, but now hand-held devices have become very popular: there are more than 6 billion mobile phone subscriptions around the world, and in 2016 more people in our world had mobile phones than had toothbrushes (Susskind and

Susskind, 2016). Technologies that would have been regarded as science fiction two decades ago are often now taken for granted (Dufva and Dufva, 2019).

Internet use has continued to increase, with 85% of Europeans surfing the internet at least once per week (European Commission, 2020b). In Norway, most people used the internet once a week in 2019, and 95% used it daily (Statista, 2021e). Internet usage in Scandinavian countries was even higher in 2020, with 98% of Norwegians and Danes having internet access (Statista, 2021f). The most common online activity for Norwegians was internet banking, which was used by 93% of Norwegians in 2020 (Statista, 2021e).

Modern assistive technologies, and in particular digital technologies, are being heralded as part of the solution to providing sustainable care. More and more digital devices are being used daily in healthcare systems, and European ministries of health are increasingly investing in digitalization (WHO, 2019). This development has been supported by decision-makers and healthcare providers who recognize that digital technologies have the potential to contribute to active living in a cost-effective manner (EPTA, 2019).

### ***Telemedicine, Telehealth and eHealth***

The term 'telemedicine' was coined in the 1970s and refers to the use of information and communication technologies (ICTs) to improve patient outcomes by increasing patients' access to medical information and care (Strehle and Shabde, 2006).

Technological developments led to a new term with a wider meaning: 'telehealth'.

Telehealth refers to a broader set of remote healthcare services (WHO, 2010).

According to the WHO, telemedicine and telehealth share four characteristics: (1) they are intended to overcome geographical barriers, (2) they aim to provide clinical support, (3) their purpose is to improve health outcomes, and (4) they involve the use of various type of ICTs (WHO, 2010). Continuous digital development has brought with it even more new terms and definitions and European Parliamentary Technology Assessment reports about the usage of wider term 'eHealth'. This term covers

telehealth, telecare, telemedicine, tele coaching and mHealth (EPTA, 2019). The WHO defines eHealth as the secure and cost-effective use of ICT in support of health and health-related fields. This can be used to improve care, to increase the level at which patients engage with their own care, to offer quality health services, and to promote universal access to healthcare (WHO, 2016). Furthermore, eHealth can be seen as the use of modern ICT to meet the needs of citizens, healthcare providers and patients by improving the prevention, diagnosis, treatment, monitoring and management of people's health and lifestyles (European Commission, 2020a). Applying the WHO's (2010, 2016) and EPTA's (2019) definitions, the terms telemedicine and telehealth will hereafter be used interchangeably and eHealth will be used as a wider term.

### ***National eHealth Policies and Digitally-Led Healthcare***

The European Commission has been funding and initiating development activities relating to the use of ICT for health (i.e., eHealth) since 1988 (Olsson et al., 2004). eHealth has been a strategic priority of the European Commission for many years. There was an increase in telehealth adoption from 2013 to 2018 in European countries, but the extent of this increase varied between different countries (European Commission, 2018). The WHO's global survey of eHealth shows that 84% of European countries had a national universal health coverage policy or strategy in 2016, and 28 of these countries reported that their strategy specifically referred to the use of eHealth or ICT in support of universal health coverage (WHO, 2016).

Today, Norway, Sweden and Denmark each operate their own eHealth strategy. The Norwegian eHealth strategy aims for each citizen to have one digitalized patient journal containing all the information about their health, providing easy access to E-consultations, E-prescriptions, the ability to view and book doctor's appointments, and the ability to access information about available healthcare services and patient rights (Norwegian Directorate of eHealth, 2021). These elements fall under the term 'digitally-led' healthcare, which is used in this dissertation. The overall goal of Sweden's vision for eHealth in 2025 is to use the opportunities offered by digitalization

and eHealth to make it easier for citizens to achieve high quality and equal health and welfare (Ministry of Health and Social Affairs, 2016). The Danish Digital Health Strategy 2018-2022 focuses on digitalization and the use of health data in the contexts of care, preventive care, health promotion, direct treatment and rehabilitation outside hospital. The key principles of the strategy are universal coverage, free and equal access and a higher degree of decentralization (Healthcare Denmark, 2018).

### ***SARS-CoV-2 and eHealth***

Since 2020, many European countries have found themselves in emergency situations due to the high prevalence of SARS-CoV-2, which causes the disease COVID-19, and some countries are still working around the clock to fight against this pandemic (European Union, 2021). This situation immediately impacted the mindset with which telemedicine and the digitalization of healthcare provision are approached (MHN, 2020). Countries which quickly deployed digital technologies for testing, contact tracing and clinical management have remained front-runners in managing the burden of COVID-19 (Whitelaw et al., 2020). The European Commission (2021b) sees digital technology as a key component of our collective effort to tackle the virus and support new ways of living and working during the pandemic. Following the pandemic, the future of public health is likely to become increasingly digital, and recognizing the importance of digital technology in this field has become an urgent matter (Budd et al., 2020).

European countries have taken a common approach to the use of eHealth networks in collaboration with the agencies of the EU, the WHO, and other institutions (European Commission, 2021b). According to the Norwegian Directorate of eHealth, e-consultations with general practitioners in Norway increased by 1000% from February to March 2020, and usage of the national eHealth portal increased by 160% (Norwegian Directorate of eHealth, 2020a). Today, more than ever before, Norwegian authorities are prioritizing the development of national digital health solutions. New working groups and a prioritization board have been established to speed up the

process (Norwegian Directorate of eHealth, 2020b). It has been widely proposed that the use of digital technologies, including telehealth services, in care services should be developed and implemented, especially because older adults' social needs may become more pressing in the post-pandemic period (Zubatsky et al., 2020). The use of technology, including the internet, by individuals soared during the pandemic, but while the current crisis may be having the positive impact by increasing the number of internet users, the development of digital skills is not an automatic consequence of increased usage (European Commission, 2020b).

## **2.4 Previous Research, Knowledge Gap and Rationale**

Research shows that digital technology and eHealth systems have the potential to help older adults remain independent (Geraedts et al., 2014; Suslo et al., 2018). Digital technology can improve the quality of life of housebound older adults by increasing their functional independence and the length of time they can live independently outside of an institution (Chumblor et al., 2004). The use of eHealth systems may benefit citizens afflicted by the complex, multidimensional problems that many older adults suffer from (Cummings et al., 2017). Reviews from the last decade underline that the true needs of older adults as end-users are poorly known, and that further research is needed in order to facilitate the future utilization of digital solutions (Johnston, 2011; Rigaud et al., 2011; Arief et al., 2013; Barakovic, 2020). It is important to include end-users in the research process (Shippee et al., 2015). End-users can give valuable information for development of the systems for future end-users. It is important for service development, as Norwegian Patient and User Rights Act emphasizes that user participation in service development is required by law (entry into force 2001; NMHCS, 2001/2023).

Some studies from Norway cover the use of technology in healthcare and its relationship to older adults (Alvseike and Brønneck, 2012; Norwegian Directorate of Health, 2016; Thorstensen et al., 2020; Røhne, 2020). These studies focus on special technological solutions or cover only specific groups of people. Alvseike and Brønneck

(2012) investigated the impact of age, cognition and experience with technology on the ability of older adults to use iPad tablet computers. Røhne (2020) investigated use of digital supervision in institutions for older adults in Oslo. The Norwegian Directorate of Health has organized trials of digital home supervision, but these have mostly focused on patients with chronic diseases and outcomes relating to interaction and information sharing (Norwegian Directorate of Health, 2022). Nymberg et al. (2019) found that gathering information from older adults about their needs in the context of eHealth interventions is important to the successful implementation of eHealth systems.

In southwestern Norway, it has been found that self-efficacy significantly reduced the ability of adults 70 years and over with a physical disability to use smart house technology, and that earlier experience with ICT devices had an effect on their perception of technology (Alvseike and Brønneck, 2012). Older adults in Norway who reside at home consider technology to be more useful for other older adults than for themselves, or that it may be useful at some point in their future (Thorstensen et al., 2020). Research on welfare technology conducted in Oslo, in which some older persons participated, suggests that systems which work the first time they are used may not continue to work as older adults' health is in constant flux and the functions of technology also change over time (Norwegian Directorate of Health, 2016).

Some studies from Sweden in which older adults participated have covered technology or eHealth systems (Magnusson and Hanson, 2005; Nygård and Starkhammar, 2007; Lind et al., 2016). These studies focus on special technological solutions or cover only specific groups of people. Nygård and Starkhammar (2007) focused only on older adults with dementia, while Magnusson and Hanson (2005) focused on older adults with neurological disorders and Lind et al. (2016) focused only on older adults with diagnoses of heart failure. Research about the use of ICT in homecare by older individuals with dementia and their carers has aimed to determine whether the use of ICT systems can reduce the use of other healthcare services and

thereby reduce healthcare costs (Magnusson and Hanson, 2005). Nygård and Starkhammar (2007) aimed to identify difficulties in the use of technology by persons with dementia and found that learning something new is a challenge for these individuals.

Some studies from Denmark also cover technology or eHealth and include older adults (Siren and Grønberg Knudsen, 2017; Fisker Christensen et al., 2020). Fisker Christensen et al. (2020) focused on patients' and providers' experiences with the use of videoconferencing by older adults with depression. It was found that videoconferencing could not replace all face-to-face conversations and that they were most suitable for shorter follow-up consultations (Fisker Christensen et al., 2020). Siren and Grønberg (2017) investigated the use of ICT and the digital delivery of public services, claiming that policy measures which aim to bridge the digital divide should focus on skills and confidence rather than access and ability.

The studies cited above do not address dignity or other ethical issues. Skär and Söderberg (2017) underline the importance of preserving patients' dignity and autonomy when using digital technology and eHealth systems in healthcare. Preserving human dignity in the face of demanding digital innovations is a challenge, and may impact older adults' individual experiences. In order to utilize future technology and adapt digitally-led healthcare to the needs of older adults while preserving their dignity, one must first determine how existing solutions impact their sense of dignity.



### 3 Research Aim and Design

This chapter contains the overall aim of the dissertation and the aims of the three studies (Studies I-III) included in it. It is followed by a description of the design of this dissertation.

#### 3.1 Overall Aim

The overall aim of the research is to address societal digital demands and needs in healthcare services in order to view the dignity of adults aged 75 years and older. To determine older adults' acceptance of digitalization and their potential for entering digital society, in order to inform authorities, system developers, healthcare providers and the public, so that future system development can be improved and the aged population can be included in the digital context in a dignified way.

##### *Study I*

The aim of Study I is to map a body of literature in order to summarize and discuss research findings concerning historical digital development over the last 20 years that adults 75 years and older in European countries have been part of. To know what older adults have experienced and what are the main barriers and facilitators concerning societal digital demands. Moreover to identify research gaps in the existing literature to inform future research. This review is guided by following research questions:

*What is known from the literature about what citizens 75 years and older in European countries have experienced, as society has developed digitally?*

*What are the main barriers for people 75 years and older in European countries concerning societal digital demands?*

*What are the main facilitators for people 75 years and older in European countries concerning societal digital demands?*

### ***Study II***

The aim of Study II is to clarify the phenomenon of sense of dignity experienced in older adults concerning how their expectations and needs are met within the context of digitally-led healthcare in Norway. In order to utilize future technology and digitally-led healthcare adapted to the needs of older adults in a dignified way, one must first determine how existing solutions impact older adults' sense of dignity.

### ***Study III***

The aim of the Study III is to provide knowledge about digital strategies and eHealth policies concerning older adults and their dignity in three Scandinavian countries: Norway, Sweden and Denmark. To discuss Scandinavian experiences in order to bring dialogue, contrast and innovations to frontier European countries. This study is guided by following research questions:

*Which digital strategies concerning older adults are described in documents, including those by the Norwegian Directorate of eHealth, the Norwegian Directorate of Health, the Swedish Ministry of Health and Social Affairs, the Danish Ministry of Health ?*

*Which eHealth policies concerning older adults are described in documents, including those by the Norwegian Directorate of eHealth, the Norwegian Directorate of Health, the Swedish Ministry of Health and Social Affairs, the Danish Ministry of Health ?*

*Which national strategies for digital development and eHealth have innovative power in relation to the dignity of the older adults?*

## **3.2 Design of the Dissertation**

This dissertation includes three studies that build on one another, are interconnected, and contribute to the overall aim of this dissertation.

The structure of this dissertation includes micro, meso and macro perspectives.

According to Nelson et al. (2011) patients are considered to be the centre of different microsystems in healthcare, together with their relatives and healthcare providers.

Micro-level systems evolve over time and are often embedded in and influenced by broader systems. These microsystems are supported by mesosystems (for example, national healthcare systems) and these, in turn, are embedded in macro systems (for example, global healthcare systems).

The dissertation begins with a scoping review of relevant literature (Study I) from a macro-level perspective. This review includes research about the experiences of older adults in Europe when using digital technology and eHealth systems. Study I maps this body of literature and discusses research findings which concern historical digital developments over the last 20 years that older adults in European countries have been part of, and addresses historicity (Gadamer, 1999). It provides information about the experiences of older adults and the main barriers to and facilitators of their use of digital technologies. Sweden is represented by six studies, none of the studies included in the review were carried out in Norway. There is thus a gap in knowledge about older Norwegian adults' experiences. The information which emerged from Study I provided a broader knowledge base for conducting Study II.

The scope of this research is extended by the use of interviews (Study II), which allows a micro-level perspective to be taken. Study II clarifies the phenomenon of sense of dignity experienced in older adults concerning how their expectations and needs are met within digitally-led healthcare in Norway. It provides insights into how existing solutions impact older adults' sense of dignity in order to facilitate the utilization of future technology and digitally-led healthcare adapted to the needs of older adults while preserving their sense of dignity. Older adults' experiences and expectations of digitally-led healthcare in Norway are studied by addressing meaning and foregrounding the conscious subject.

This is followed by a theoretical investigation of relevant documents (Study III). Three Scandinavian countries (Norway, Sweden and Denmark) are included in this study as their healthcare systems and welfare models are similar (EPTA, 2019; Grunfelder et al., 2020; Heleniak and Sanchez Gassen, 2020). Furthermore, Denmark has been at the

forefront of the integration of digital healthcare for 20 years (Ministry of Foreign Affairs of Denmark, 2021) and almost half of the studies included in Study I were conducted in Sweden. It is interesting to see what kind of policy is behind that. Study III provides knowledge about digital strategies and eHealth policies concerning older adults and their sense of dignity within the three studied Scandinavian countries and examines these policies from a meso-level perspective. The results of Study I and Study II are discussed in Study III.

The research design comprises a comprehensive systematic review (Study I), a primary study (Study II), a theoretical investigation of documents (Study III), and a synthesis of the results of Studies I-III. Study I presents evidence from previous research, Study II explores the sense of dignity experienced by users and Study III addresses policies which are informed by research. The three studies are linked to each other in a hermeneutic circle, wherein each study deepens our understanding of societal digital demands and older adults' needs and dignity in the context of healthcare services.

## 4 Methodology and Methods

This chapter begins by describing the methodological foundation for this dissertation. The chapter also includes discussion of the ethical considerations relevant to this research. An overview of the methods used in the Studies I-III is then provided, along with justification of the selection of these methods. This includes separate information about study designs, methods of data collection, participants, settings and data analysis. The last part of the chapter provides insights into the synthesis of Studies I-III.

### 4.1 Methodological Foundation

This dissertation is based on the hermeneutical approach as described by Hans-Georg Gadamer (1900-2002) (Gadamer, 1999; Gadamer, 2006; Alvesson and Sköldbberg, 2017). The word 'hermeneutics' can be traced back to the Greek verb *hermeneuin*, which means to 'bring to understanding' through interpretation (Thompson, 1990). *Hermeneuin* shifts back and forth between merely translating meaning and the practical giving of instructions (Gadamer, 2006). The term 'hermeneutics', as used today, stands within the scientific tradition of the modern era and its usage begins with the rise of modern concepts of scientific methodology (Gadamer, 2006). Hermeneutics is characterized by the search for understanding rather than explanation (Gadamer, 2006). This study seeks to improve understanding of societal digital demands and the healthcare needs of older adults, and the hermeneutic approach thus fits the purpose of this dissertation.

This research covers different levels of reflection defined by Gadamer (1999), who described hermeneutics as a path of experience that belongs to an infinite category. Theory development rarely takes place through the use of a specific technique or method, but rests on the degree of one's understanding of the ontological reality one seeks knowledge about (Eriksson, 2002). Truth is not something that can be affirmed relative to a set of criteria, but an experience or event in which we find ourselves engaged and changed. Truth is fundamentally a 'happening', in which one encounters

something that is larger than and beyond oneself (Gadamer, 1999). In this dissertation, understanding is underlined as the universal connection in all interpretation (Gadamer, 1999). Gadamer (2006) emphasizes that in our understanding and interpretation we must let the matter itself appear on its own terms as far as possible. The emergence of the matter depends on our intuition, insight and awareness of our pre-understanding. To experience truth, one should lose oneself in something greater and more extensive than oneself (Gadamer, 1999). Openness, in this study, means being open to the text and being aware of one's pre-understanding.

This dissertation emphasizes the circularity of understanding. The concept of the hermeneutic circle was conceived by German philosopher Martin Heidegger (1889-1976) (Heidegger, 1927) and developed further by Gadamer (1975). The concept of the hermeneutic circle finds its deepest legitimation in the very ontological presuppositional structure of one's existential relation to being (Nerheim, 1995). Heidegger (1996/1927) explains that 'being-in' the world is not merely to be inside it spatially, but to belong there, to have a familiar place there. This means that the significance of the hermeneutic circle lies in pre-understanding (Nerheim, 1995). The substantiality of what is historically pre-given does not remain unaffected when it is taken up in reflection (Gadamer, 2006). Gadamer implies that the tradition that is effectively behind the educator prejudices inculcated in the rising generation and this is what the authority converges with knowledge means. To be in a hermeneutic movement as Gadamer (2006) describes, is about being in motion with one's own pre-understanding, empirical data and the context in which it is to be interpreted. There are parts and the whole that are in continuous mutual movement, and that means that when we have understood something, we have moved. It is all circular (Gadamer, 1999). Pre-understandings as part of this circle will always be characterized by prejudice, but when we put them to the test, a different picture can show up, depending on the context in which we operate (Gadamer, 1999; Gadamer, 2006).

Reflection includes how the results of the three studies are considered in relation to their settings and to the researcher's respective pre-understanding. It is also the basis when the three studies interact with each other and are combined to a whole through the synthesis. This reflexivity includes the significance of my own pre-understanding as a researcher in the interaction with the participants, theoretical perspectives, and the empirical data (Gadamer, 2006).

In this study, it has been an important challenge to put oneself at stake when using hermeneutics. This has involved the development of an awareness of one's prejudices and pre-understandings (Nilsson, 2007). My pre-understanding is shaped by my theoretical perspective, and has played a central role in this research. All understanding, both real and unreal, has its origin in pre-understanding (Gadamer, 1999). Understanding is impossible without pre-understanding, and awareness of one's pre-understanding can open up the possibility of new understandings (Gadamer, 1999). The horizon of my understanding was expanded during my analysis of the material throughout all the research process.

## **4.2 Ethical Considerations**

The concept of research ethics encompasses the values, norms and institutional rules that contribute to the regulation of scientific activities. This dissertation was conducted in accordance with applicable legislation, international guidelines and agreements. The General Data Protection Regulation (GDPR) and general guidelines for research ethics produced by the Norwegian National Committee for Medical and Health Research Ethics (NEM) were both followed throughout the research (Publications Office of the European Union, 2018). These guidelines are based on international conventions such as the Declaration of Helsinki (World Medical Association, 1964/2013), and are regarded as the conventional formats of research ethics. One of the fundamental principles of the Declaration of Helsinki is that concern for the individual must always take precedence over the interests of science and society. A data management plan was followed throughout the study (see Appendix

B). The three studies (Studies I-III) and the synthesis were completed in accordance with general guidelines for research ethics.

The regional older adults' organization, the University of the Third Age was contacted and asked to help to find participants who were in varying situations. A gatekeeper was contacted and a letter from the researcher was sent to the organization (see Appendix C). A meeting between with the researcher and the board of the organization was organized to allow the board to ask any questions about the research. This was a good opportunity for the members of the board to gain more information about the research and to make sure that it was suitable for their members. A gatekeeper from the organization, who was not part of the research team, helped by sharing information about the study with individuals who met the inclusion criteria. Qualitative research involves a relationship between the researcher and participants that is essential for the collection of data, but which at the same time is characterized by an asymmetry in terms of power (Orb et al., 2001). As a researcher, I think it was suitable that information about participation in the study was provided by the gatekeeper (Open Access Infrastructure for Research in Europe (OpenAIRE), 2021), as this avoided potential participants feeling pressured to participate in the study. To avoid any risk of coercion, a general principle that no contact should be made by the researcher until potential participants had received some information on the project, including the benefits and inconveniences of taking part, was established.

Ethical considerations and the inviolability of the individual are central to my professional background as a speech and language therapist (Body, 2009). There are many different ethical issues to consider when the participants are older adults. As a person's particular situation or characteristics may place them at greater risk of harm, some of the participants could be considered vulnerable older adults and the relevant ethical principles were thus considered (Gordon, 2020). I tried to make the interview situation comfortable for the participants. The participants were able to choose the time and place of their interviews (at their own home, in a private room at the



University or in a private room at the organization for older adults). Safe environments were chosen by the participants. They could also decide if they wanted someone from their family to be present during the interview, and some participants chose this option. Information about the purpose of the study, the recording of the interviews and the treatment of data was repeated immediately before each interview. I offered to pause the interview if necessary, tried to give the participants sufficient time to answer questions, and repeated questions when necessary. The interviews were conducted carefully, following the risk assessment detailed in Appendix D. I paid close attention to the participant's reactions during the interviews to avoid distress and to allow extra time when necessary. I also suggested conducting interviews in two parts or on two different days in cases where it may have been too exhausting to carry out the whole interview in one session. None of the participants chose this option. All the information gathered was treated confidentially according to NESH (NESH, 2016).

This study was approved by Social Science Data Services in Norway (NSD), which carried out an assessment to ensure that the study was undertaken in an acceptable manner, and that the data was collected, stored and shared safely and legally (project number: 916119; see Appendix E). The study was approved by the INNOVATEDIGNITY Ethical Scrutiny and Advisory Board, which ensured that it followed the European Union's Horizon 2020 Data Management Plan (see Appendix F).

In accordance with the Norwegian National Committee for Research Ethics in the Social Sciences and the Humanities (NESH), voluntary participation in this research was based on informed consent (NESH, 2016). The letter sent to potential participants introduced them to the criteria for inclusion of participants and the aim of the interviews, and clearly stated that there was no obligation to participate (see Appendix G). The same information was also communicated orally. Importantly, participants had the right to withdraw from the study if they decided that they had shared something that they actually did not want to be used in the research (NSD, 2019). Moral dilemmas and problems can occur throughout research conversations, also issues of

right and wrong (Fog, 2007). Informed consent was obtained from the participants (see Appendix H). Participation in individual interviews was voluntary and the participants had the right to withdraw from participation. No problematic or challenging situations were encountered during this study, and none of the participants chose to withdraw information from the research conversation.

### **4.3 Overview and Justification of Methods for Studies I-III**

This dissertation employs qualitative methods to understand societal digital demands and older adults' healthcare needs with regard to their sense of dignity. The connection between qualitative methods and hermeneutics is strong because the hermeneutic approach is characterized by the search for understanding (Gadamer, 1999).

#### ***4.3.1 Study I: Scoping Review***

I chose to start this study by finding available international evidence concerning older adults' experiences of using digital technologies and telehealth systems. Systematic review and scoping review methods were considered as possible options, as both methods are appropriate for finding international evidence (Munn et al., 2018). The purpose of Study I is also to identify knowledge gaps and clarify concepts, but it does not aim to answer a clinically meaningful question. According to Munn et al. (2018) the scoping review method is fit for this purpose. Beginning the research process with a scoping review, allows me to map a body of literature, clarify key concepts, and identify knowledge gaps in the available evidence (Anderson et al., 2008; Munn et al., 2018).

#### ***Study Design***

The scoping review was based on an *a priori* peer reviewed and published scoping review protocol conducted using the methodology described in Article 1a, which was developed by the researcher and supervisors in collaboration with a university librarian (Raja et al., 2021a). Before starting work with protocol, an initial limited

search of Cumulative Index to Nursing and Allied Health (CINAHL) and Medical Literature Analysis and Retrieval System Online (MEDLINE) via PubMed was undertaken to find relevant studies about older adults' dignity when using technology. This initial search was followed by an analysis of the abstracts found. As very few studies relevant to older adults' dignity were found, it was decided to widen the search to include studies relevant to older adults' experiences of using technology and not to directly search for keywords relevant only to older adults' dignity. The published protocol was followed throughout this second process. The 'Population, Concept and Context' (PCC) approach (Aromataris and Munn, 2020), was used to prepare the search and form the basis of the research questions and aims of the study. In this case, the population was adults aged 75 years and older at the time of the study, the concept included telemedicine, technology, and digital devices, and the context was European participants' own homes or home surroundings. A framework proposed by Arksey and O'Malley (2005) was used to guide the scoping review process. The original framework has been further developed by Levac et al. (2010) and by the Joanna Briggs Institute (JBI) (Aromataris and Munn, 2020). The review process comprised five stages: (a) identifying the research questions; (b) identifying relevant studies; (c) selecting studies; (d) charting the data and (e) collating, summarizing and reporting the results (Arksey and O'Malley, 2005).

### ***Data Collection***

As recommended by the JBI (Aromataris and Munn, 2020), a three-step search strategy was used. The first step was an initial limited search of CINAHL and MEDLINE via PubMed. This initial search was followed by an analysis of text words in the titles and abstracts of retrieved papers, and of the index terms used to describe relevant studies with PCC elements similar to those targeted by this scoping review (Aromataris and Munn, 2020). The second search step involved exploration of all the included databases, using all the identified keywords (Aromataris and Munn, 2020). The search strategies, including lists of standardized search terms and relevant Medical Subject Headings (MeSH terms), were drafted by the researcher with supervisors in

collaboration with a university librarian (Aromataris and Munn, 2020). A controlled vocabulary and keyword search was conducted using the following electronic databases: Embase, CINAHL, MEDLINE via PubMed, Scopus, and Open Grey. These databases were chosen because they cover topics which are relevant to this study. English search terms were used. The specific terms changed slightly depending on the database, but the main keywords were used throughout the search. Identified and used search terms are shown in Table 1 in Article 1b (Raja et al., 2021b). This strategy was used to find both published literature and unpublished ('grey') literature. A grey literature search may be an invaluable component of a review, and may include theses and dissertations, research and committee reports, government reports, and documents produced by ongoing research, among other forms of literature (Paez, 2017).

Criteria for inclusion in the scoping review covered primary research studies with several different study designs: qualitative studies, quantitative research and mixed method research. Government recommendations, political documents and opinion papers were excluded. Only papers published after January 1998 were considered. Since the 1<sup>st</sup> of January 1998 the telecommunications market in Europe has been opened to full competition (European Parliament, 2020). Only publications which included only persons aged 75 years or older, or which included separate results from this population, were included. Statutory pension ages in Europe are between 60 and 67 years old (Eurostat, 2020). As an age of 75 years marks about 10 years since an individual's transition into retirement, this age group has generally not been involved in the digital transition of the labour force and has not experienced digitalization in connection with their work in the way that younger adults have (European Commission, 2020). Articles in Danish, English, Estonian, Finnish, German, Norwegian, Russian and Swedish were considered for inclusion in this review because the researchers were familiar with these languages and it is important not to overlook research that has not been published in the English language (Bondas and Hall, 2007).

The third step was the visual scanning of the reference lists of articles selected for potential inclusion to ascertain whether any key studies had been missed. Studies were included through a two-step process: (a) a title and abstract review and (b) a full-text review. After removing duplicates, all abstracts were screened. Then, all potentially relevant articles were reviewed in full. Studies that met the inclusion criteria were included in the study. The inclusion of relevant studies is visualized as a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram in Article 1b, Figure 1 (Raja et al., 2021b).

### ***Data Analysis***

Standardized data collection forms were developed for this study, and are shown in Article 1a, Table 2 (Raja et al., 2021a). This table includes information about authors, titles, journals, years of publication, countries being studied, study populations, settings, methodologies, study aims, the types of digital tools/telemedicine systems/digital demands being described, reported outcomes, and facilitators of and barriers to the use of digital tools. Information from the selected studies was organized in tables. The findings of different studies were summarized, discussed, compared, and contrasted. The results were sorted into three categories: older adults' experiences as society has developed digitally, the main barriers to, and main facilitators of the use of different types of digital devices, telehealth and technology.

The scoping review was conducted from a macro-level perspective (Nelson et al., 2011) and provides an overview of older European adults' experiences when using digital technology and eHealth systems. Having identified gaps in the literature, I decided to explore the experiences of older adults in Norway when using digital technology in the context of digitally-led healthcare.

### ***4.3.2 Study II: Interviews With Older Adults***

According to Cresswell and Poth (2018), there are five qualitative research approaches that suit the behavioral, social and health sciences: narrative research, phenomenology, grounded theory, ethnography and case study. It is important to

consider both the focus of research and the research problem when choosing the appropriate method. Grounded study, ethnography and case study have a bit different research focus than the focus of the research in this dissertation. Narrative and phenomenological research approaches could be considered to be appropriate, as both methods explore people's discourses about their own experiences in their lifeworld (Cresswell and Poth, 2018). Narrative research focuses on exploring the life of an individual, while phenomenological research focuses on understanding the essence of an experience. Narrative research tells stories of individual experiences, while phenomenological research aims to describe the essence of a lived phenomenon. Given the aims of this study, a phenomenological approach to the research was considered appropriate.

### ***Study Design***

The study was conducted using the Reflective Lifeworld Research (RLR) method, a phenomenological approach with philosophical roots in the work of German and French philosophers (Dahlberg et al., 2008). The discipline of phenomenology is the study of structures of experience. This research focuses on phenomena: the appearances of things, or things as they appear in our experiences. In line with Husserl (1970/1936), in this study, the 'lifeworld' is seen as the *horizon* of all our experiences, in the sense that it is the background on which all things appear as themselves and as meaningful. The lifeworld is seen as a lived personal world from which it is not possible to withdraw, because we live in and through it (Husserl, 1970/1936). In line with Heidegger (1996/1927), who used the term 'being-in-the-world' (*in-der-Welt-sein*) and stressed the practical dimensions of the lifeworld and openness to the world, it is considered in this study that 'being-in' is not merely to be inside it spatially in the sense just canvassed, but to belong there, to have a familiar place in the world. Merleau-Ponty (2012/1945) used the term 'being-to-the-world' (*etre-au-monde*). He explained that understanding being to the world is to see his life fully, particularly his life of knowledge as an inhabitant of the world (Merleau-Ponty, 1968/1964). Following Merleau-Ponty (2012/1945), in this study the lifeworld is also seen as the experienced

world that we have access to through our bodies, and all knowledge is regarded as embodied knowledge. Furthermore, this study regards human beings' existence in the world as whole; that is, that there is no dividing concrete line between body and soul. In line with RLR, this study aims to describe the studied phenomena as it is experienced by the participants; meaning is thus manifested by its essence, variations and nuances (Dahlberg et al., 2008).

### ***Participants and Setting***

To find answers to the research questions about what is essential to the phenomenon, a purposive sample of 13 older adults from northern Norway were interviewed. Sandelowski (1995) points out that sample size can be thought of in terms of numbers of events, incidents and experiences, not solely in terms of the number of participants. I wanted to find participants that were willing to share their experiences. The participants were citizens of Norway aged 75 years and older, living at home and not receiving consistent assistance. The flexible pension age in Norway is between 62 and 67 years, so the age of 75 years marks about ten years since a person's transition into retirement (Norwegian Government Security and Service Organisation (DSS), 2020). According to Gadamer (1999), understanding takes place from within a historically and linguistically structured pre-understanding that functions as a condition of the possibility of understanding. According to Dahlberg et al. (2008), it is important not only to present the main, general findings of a study, but also to recognize variations of meaning that are based on the uniqueness of experiences.

The participants were recruited with the help of the University of the Third Age, an organization founded in Toulouse, France at the beginning of the 1970s. A branch of the organization was established in the home city of the participants in northern Norway in 1996 (Blichner and Solberg, 2003). There was a voluntary arrangement at a center of local older adults organization for an audience of more than 80 people. The author of this dissertation and one of her supervisors were invited to this arrangement to give a presentation of the project. The recruitment of participants started after this

arrangement. Demographic changes are leading to an ageing population in Norway overall, but the proportion of citizens aged 70 years and older is expected to grow faster in northern Norway than in the rest of the country (Business Cycle Barometer for Northern Norway (KBNN), 2019). In 2016 the Norwegian government set a target that 90% of households in Norway should have access to broadband at speeds of at least 100Mbit/s by 2020 (Norwegian Ministry of Local Government and Modernization, 2016). The construction of both wired and wireless digital infrastructure has faced the challenge of Norway's difficult geographical features. Development has been particularly slow in northern Norway, where only 73% of households were connected to digital infrastructure in 2019 (KBNN, 2020). Today, northern Norway has satisfactory digital infrastructure but it is important to highlight the future needs of northern Norwegians, along with opportunities for potential value creation through the development and upgrading of digital infrastructure over the next few years (KBNN, 2020).

### ***Data Collection and Storage***

Data was gathered through individual in-depth interviews in the autumn of 2020. This was during the second wave of SARS-CoV-2 in Norway, and national infection control measures were in place. The Norwegian Prime Minister recommended that citizens stayed at home and had as little social contact as possible (DSS, 2021). The interviews were held according to local infection control regulations (DSS, 2021). The participants were asked to describe their lived experiences of the phenomenon that the research focuses on (Dahlberg et al., 2008): their everyday experiences with technology, including the context of digitally-led healthcare in Norway. Contextual variations in their daily lives were also considered important, as these variations of meaning in their experiences help to illustrate the structure of the phenomenon (Dahlberg et al., 2008). The interviews were carried out by the author.

The interviews were prepared and conducted with an emphasis on the following themes: Older adults' current experience of using digital technology; and their



expectations and needs with regard to digitally-led healthcare in Norway. The interviews started with an open question: *“When I say the word ‘technology’ what comes to mind for you?”* The participants were then asked if they had ever used digital technology, digital solutions offered by the healthcare system in Norway, or assistive devices. In accordance with Dahlberg et al. (2008), probing questions were asked to find out what the participants considered important when using technology. They were asked, for example, *“Can you tell me more about this situation?”* These probing questions were asked to obtain details, to gather descriptions of examples and to clarify unclear statements (Dahlberg and Dahlberg, 2019a). Information about participants’ age, gender, educational level and the experience with using digital tools was gathered. The interviews were conducted using interview guide provided in Appendix I.

The data were collected using a Nettskjema-dictaphone. This device was developed and operated by the University Information Technology Center at the University of Oslo, and was suggested by the Nord University’s Data Protection Officer as a secure technical solution (University of Oslo, 2019). The Dictaphone App sent the audio files directly to an institutional password protected server. For security reasons, it was not possible to play the audio recordings directly on the phone. The recordings were encrypted and temporarily stored on the phone until the phone was connected to the internet. Data was stored on an institutional password protected server only; it was not stored on any mobile devices, memory sticks, or anywhere else. Two-factor authentication was required to access the server. The audio files and text files were password protected, and were only available to myself and my supervisors. All participant names were anonymized in the transcribed text files (NESH, 2016).

All processing of personal data was pseudonymized, so the data could not be traced back to any individual. Information about participants’ age, gender, educational levels and experience of using of digital tools was gathered separately, and a key which linked this information to original sources was kept separate from the data. This key

was available only to me during the study. The data were processed lawfully, fairly and, in relation to the research participants, transparently (NSD, 2019).

### ***Data Analysis***

The RLR method of phenomenological analysis was used, as the study of the appearances of things, and the meanings things have in our experiences.

Phenomenology addresses the significance of objects, the flow of time, events, and tools as these things arise and are experienced in one's lifeworld (Gadamer, 1999).

Phenomenological methods describe and interpret these meanings as they present themselves and are shaped by our consciousness, language, sensibilities and pre-understandings (van Manen and Adams, 2010). Phenomenological inquiry may be

adopted to explore the unique meaning structures of any experience or lived phenomenon (van Manen and Adams, 2010). The aim of RLR is to describe the studied phenomenon as it is experienced by the participants (Dahlberg et al., 2008), and thus in this case the participant's experiences of technology and digitally-led healthcare in Norway. In this study, within a lifeworld approach, digital devices and technology—like all other things—are not simply objects, but are closely integrated into the man-world relationship (Heidegger, 1996/1927). To be able to say something about the essence of a phenomenon, it must be associated with a particular context (Dahlberg et al., 2008). RLR uses the concept of the lifeworld as starting point when understanding meaningful experience (Dahlberg et al., 2008). The term 'lifeworld' refers to the world as experienced (Dahlberg, 2006). Here, it means articulating older adults' experiences of technology, including of the digital solutions offered by healthcare systems in Norway.

A phenomenological approach to analysis was chosen in order to explore the essence of the phenomenon as faithfully as possible. According to Dahlberg et al. (2008), the essences *are* their phenomena and the phenomena *are* their essences; using this approach, researchers try to uncover a phenomenon while staying open to the meaning of a participant's lifeworld as expressed by the participant. In this study, this

meant not rigidly adhering to established steps in the research, but instead remaining open to the possibility that the research material may contain more than was first assumed. The phenomenological approach is applied when a phenomenon is to be investigated through an analysis. The openness of the researcher is related to the impartiality of the research. The term 'bridling' refers to a shift from a natural attitude into a phenomenological attitude of openness (Dahlberg et al., 2008). In this study, researcher took an open attitude during the interviews which could be described as bridling. Bridling is the art of being present and asking questions further to one's own understanding of a phenomenon, rather than taking it for granted, and evolving one's understanding so that it does not happen randomly or too fast (Dahlberg and Dahlberg, 2019a). In accord with RLR (Dahlberg et al., 2008), older adults' awareness and understanding of the context were articulated partly through dialogue with the interviewer. Bridling cannot be seen as a methodological technique, but rather as part of the phenomenological approach to scientific research (Dahlberg et al., 2008).

Older person's experiences of technology, including digitally-led healthcare in Norway, were studied from their perspectives. The analysis was based on contextual variations in their daily life, as they themselves described them. In this study a descriptive phenomenological analysis was used to search for the essence of a phenomenon and what constitutes it, in order to be able to describe the way we relate to understandings of it. Dahlberg et al. (2008) emphasizes that, throughout an analysis, movement between the whole and the parts is crucial. Following Dahlberg et al. (2008), the interview texts were initially read in their entirety to get a sense of the interview as a whole. To avoid misconceptions of meaning, the original language was maintained as long as was necessary during transcription and analysis, until the essences was found and translated to English. The descriptions were divided into units of meaning, and meanings that seemed to belong to each other were temporarily grouped together in clusters. These clusters were analyzed and organized, then related to each other while looking for essential meanings that described the phenomenon. According to Dahlberg et al. (2008), the description of essences is a

clarification of meaning as it is given, and any meaning that we discover belongs to the phenomenon. The phenomenon being analyzed in this study was older adults' experiences of technology and digitally-led healthcare in Norway. The research process led to a new written understanding of the phenomenon's essential meaning described in terms of essence, followed by the identification of its constituents, which are the meanings that constitute the actual essence of the phenomenon.

Study II was conducted from a micro-level perspective and gives insights into older adults' experiences with regard to their sense of dignity within the context of digitally-led healthcare in Norway. In the next section, this dissertation continues by searching for knowledge about the relationship between digital strategies, eHealth policies and older adults' sense of dignity in three Scandinavian countries (Norway, Sweden and Denmark).

#### ***4.3.3 Study III: Document Analysis***

In order to uncover meaning, develop understanding, and discover insights relevant to the research problem, documents were used as data sources for this research (Bowen, 2009). Furthermore, in this study documents were used to provide background and context, a means of tracking change and development (Bowen, 2009). National digital strategies and eHealth policies that outline the vision, goals, and methods of the use of ICT are often described in governmental and other documents (WHO, 2016).

Documents can provide supplementary research data. Information and insights derived from documents can be valuable additions to a knowledge base, and document analysis is often used in combination with other qualitative research methods as means of triangulation (Bowen, 2009). For these reasons, and because of the specific aims of this study, document analysis was considered an appropriate method.

#### ***Study Design***

Documents were used as a data source in this study to develop understanding and discover insights about digital strategies and eHealth policies concerning older adults'

dignity in three Scandinavian countries. Following the methodology outlined in O’Leary (2014), the process of document analysis tracked the following steps: (a) planning; (b) gathering; (c) reviewing; (d) interrogating; (e) reflecting; and (f) analyzing data. The planning step began with the creation of list of texts to explore. Consideration was given to how texts would be accessed, with attention given to linguistic barriers, addressing biases, knowledge of the kind of data for which one was searching, and the consideration of ethical issues. The gathering phase involved data collection, the development of a scheme for organizing the documents, and the copying of documents as required. The review phase involved assessing the authenticity and credibility of each text and exploring the agenda of the document. The Interrogation phase involved the extraction of background information from documents and exploring their contents. The interrogation process was followed by reflection on the data and analysis of it.

### ***Planning, Data Gathering and Reviewing***

Government documents, such as policy documents and governmental reports by the Norwegian Directorate of eHealth, the Norwegian Directorate of Health, the Danish Ministry of Health and the Swedish Ministry of Health and Social Affairs concerning older adults were used as data sources. In addition, a systematic search of several databases was undertaken to find relevant papers. This search was guided by the JBI’s framework for systematic reviews of texts and opinion papers (McArthur et al., 2020). The criteria for inclusion in the study restricted the review to textual and opinion papers that explore national digital strategies and eHealth policies concerning older adults in Norway, Sweden or Denmark. Government reports, expert consensus, reports from professional organizations, policy reviews, papers about case reports and studies including expert opinion published in Danish, English, Norwegian and Swedish were all considered. The searches began in 2021, and papers published from January 2016 onward were considered for inclusion. This is because the WHO considers topical updates from the last five years, about information on the countries’ goals and targets of comprehensive national health sector policies (WHO, 2022a).

A systematic search for relevant governmental papers was conducted on the websites of the Norwegian Directorate of eHealth, the Norwegian Directorate of Health, the Danish Ministry of Health and the Swedish Ministry of Health and Social Affairs. Keywords in English and in the relevant Scandinavian language were used. To find documents from other sources, a controlled vocabulary and keyword search of the following medical and social science electronic databases was conducted: CINAHL, MEDLINE via PubMed, ORIA and Google Scholar. The search strategies were drafted by the researchers in collaboration with a university librarian. The strategy for searching the databases used English search terms. The specific terms changed slightly depending on the database, but the main keywords were used throughout. Boolean logic was used, with search terms containing combinations of MeSH terms and Text Words (Sayers, 2008). The final search reports were exported into Rayyan (Ouzzani et al., 2016). After removing duplicates, all governmental papers and other documents were screened by two researchers (the author of this dissertation and supervisors). Papers were included in the study according to inclusion and exclusion criteria. Reference lists of potential papers were visually scanned.

Included texts were reviewed critically using the JBI's Critical Appraisal Checklist for Text and Opinion Papers (McArthur et al., 2020). This checklist questions the source of the paper, the field of the authors' expertise, the focus and logic of the opinion given in the paper, and any references to extant literature. Each question was answered on a scale 'Yes', 'No', 'Unclear' or 'Not Applicable'. Papers that received a 'Yes' to four or more questions were included in the study (McArthur et al., 2015).

### ***Data Interrogation, Reflection and Analysis***

In accordance with O'Leary (2014), background information on the author, audience, purpose and style of each included paper was extracted. Pertinent information from the data sources was identified and separated from non-pertinent data (Bowen, 2009). First, all extracts were deductively coded to distinguish those concerning national digital strategies and innovative eHealth policies; then, they were inductively

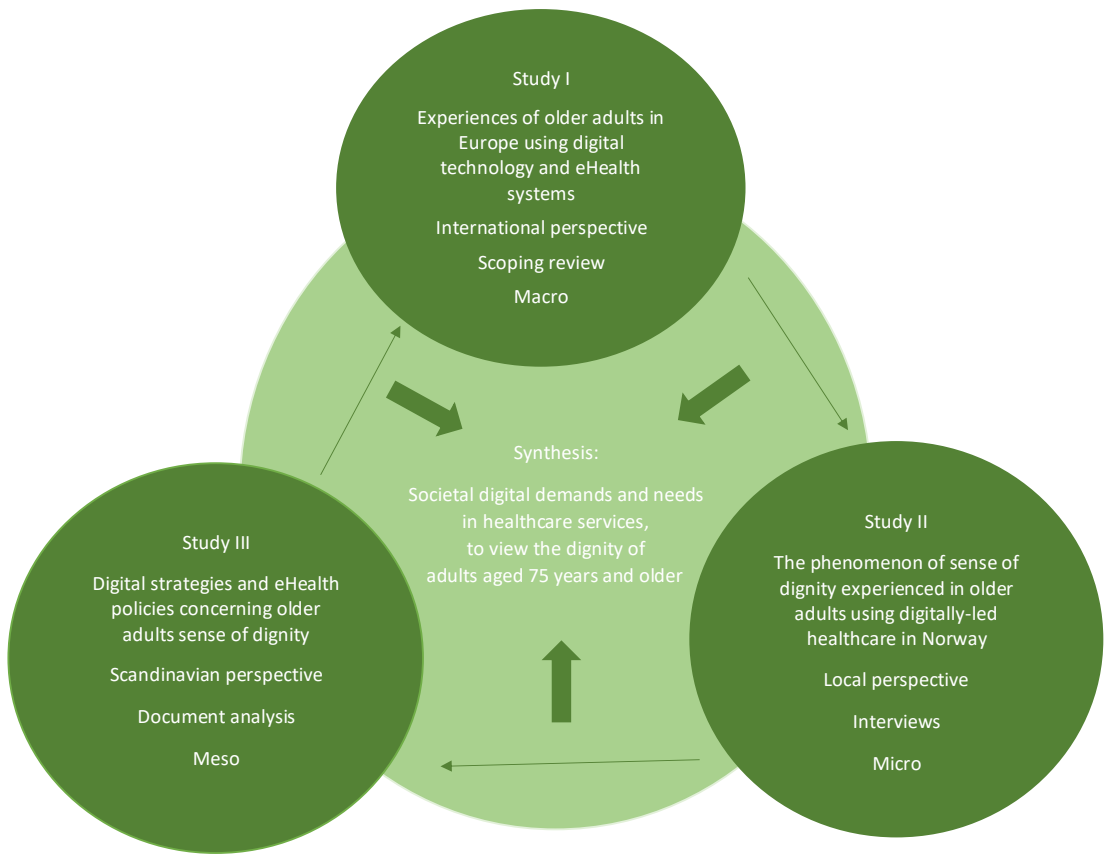
coded using a thematic analytic approach (Braun and Clarke, 2006). Any discrepancies in the initial coding were discussed between the researchers until a consensus was reached. Analysis involved constantly moving back and forth between the entire data set, the coded extracts, and the analysis of the data that was produced. The final codes were subsequently categorized according to research questions into the three overarching categories, which were organized into themes. Descriptions of these are presented in the results section.

Study III takes a meso-level perspective and provides insight into digital strategies and eHealth policies which concern older adults' dignity in Scandinavian countries. The following section describes the synthesis of Studies I-III.

#### **4.4 Synthesis of Studies I-III**

The results of Studies I-III were synthesized to provide a broader and more in-depth understanding of the results than would be possible if the three studies were only considered individually. As Table 1 shows, both the types of data produced by each study and the aims of each study are different, but Figure 1 illustrates the overall synthesis of these studies, showing how the three studies can be seen in light of each other and combined into a greater whole.

These studies with different designs and methods make a scientific whole that allows the main research question to be answered. This synthesis of three studies (Study I-III) allows a hermeneutical approach to be used to discover a new understanding. Each study deepens our understanding of societal digital demands and needs, and dignity of older adults in the healthcare context.



**Figure 1.** Synthesis of Studies I-III

In this dissertation, the core values of dignity and its rupture are central to the chosen framework and lie behind the analysis of the older adults' societal digital demands and needs in healthcare services. It is acknowledged that dignity is the foundation of all human rights, which applies to every person and it must be respected and protected (United Nations, 1948/2022; European Union's Charter of Fundamental Rights, 2012; Haak, 2012; May and Daly, 2020). The analysis is performed through the lens of the framework of dignity (Gallagher et al., 2008; Todres, Galvin and Holloway, 2009; Galvin and Todres, 2015; Hoffmann, 2014).



Circularity of understanding is underlined by using hermeneutical synthesis (Gadamer, 1999; Gadamer, 2006; Alvesson and Sköldbberg, 2017). Hermeneutics is applicable to different levels of reflection, and understanding is the universal connection in all interpretation (Gadamer, 1999). Following Gadamer (2006), I tried to let the matter itself appear on its own terms, dependent on my intuition, insight and awareness of my pre-understanding. In this hermeneutic process, my pre-understanding was put into play instead of bracketing (Gadamer, 1999). One's commitment to a theme or to an absence of understanding is important. What I cannot see or understand may have as much of an effect as what I am able to capture and recognize. I have thus taken a conscious attitude to my pre-understanding, including my prior knowledge, perspectives on the subject and specific interests. As Gadamer (1999) writes, this attitude can help to open up opportunities for new understandings. We always achieve only partial representations of reality, not the whole picture. Process openness depends on critical reflection on the research questions, the manner in which interviews are conducted, and how the data are interpreted.

In order to find new knowledge and information in my research field, I actively maintained an open mind. I reflected critically on the research questions, and a phenomenological attitude of openness was maintained during the process (Dahlberg et al., 2008). The synthesis was not performed in a mechanical, linear way but, by constant movement between the parts and the whole, between the three studies but also within the studies. I moved between emphasizing the parts and emphasizing the whole, and also back and forth between the three studies. The combination of the different methods used in Studies I-III helped to answer the main research problem by making a scientific whole.



## 5 Results

This chapter presents the results of Studies I-III. This includes results about older adults' experiences with telehealth and digital technology in European countries (Study I), older adults' sense of dignity in digitally-led healthcare in Norway (Study II) and national digital strategies and eHealth policies in Scandinavian countries which are relevant to older adults' dignity (Study III).

### 5.1 Study I: Older Adults' Experiences with Telehealth and Digital Technology (Raja et al., 2021b)

Study I is a scoping review of literature which aims to map a body of literature, identify and present evidence, and discuss research findings relevant to historical telehealth and digital developments that have affected older adults in European countries. The scoping review includes 13 papers published between 1998 and 2018. Of these 13 studies, two were conducted in three European countries (Germany, Finland, Italy or Austria, France, Hungary), six were conducted in Sweden, two in Estonia, one in Germany, one in Italy and one in Finland. None of the included studies were conducted in Norway. The extracted data from the included studies describe their origin, aims, participants, concept, context and results, and are shown in detail in tables drawn up according to the JBI Manual for Evidence Synthesis (Aromataris and Munn, 2020). These tables are presented as Table 3, Table 4, Table 5 and Table 6 in Article 1b (Raja et al., 2021), which is presented in Part 2 of this dissertation.

There were no outstanding differences between studies conducted 20, 10 or 5 years ago. A timeline has not therefore been used to present the results. The analysis show that the results are divided into three categories: (1) *outcomes about older adults' experiences*, (2) *the main barriers to the use of different types of digital devices and technology*, and (3) *the main facilitators of the use of different types of digital devices and technology*. The barriers and facilitators, taken from individual sources, are shown

in Table 5 and Table 6 in Article 1b (Raja et al., 2021), which is presented in Part 2 of this dissertation.

### **Older Adults' Experiences with Telehealth and Digital Technology in European Countries**

The first main theme illustrates the experiences of older adults in European countries who have been part of societal digital developments. This accords with the overall aim of this dissertation, which is to address the societal digital demands placed on older adults. This main theme has two subthemes: (1) *the impact of technology on older adults' lives* and (2) *technology makes life both easier and more difficult*.

*The impact of technology on older adults' lives* was identified when participants felt that telehealth systems had a positive impact on their lives: made them feel less lonely, helped them feel more joy in life, and feel more secure (Stroetmann and Erkert, 1999; Magnusson and Hanson, 2005; Lind et al., 2016). ICT-based support services have the potential to reduce the use of other services whilst maintaining one's quality of life (Magnusson and Hanson, 2005).

*Technology making life easier and the opposite* was identified from older adults' experiences who described that using technology makes their lives easier, while some older adults felt the opposite (Marcellini et al., 2000). For older adults, adopting a new strategy can be frightening at first and requires extra effort.

### **The Main Barriers to the Use of Telehealth and Digital Technology**

The second main theme in this study is *the main barriers to the use of telehealth and digital technology*. This theme gives us more information about older adults' digital needs and illustrates how older adults have (1) *difficulties using telehealth and other technology* and (2) *concerns about privacy when using technology*.

*Difficulties using telehealth and technology* for older adults include being too physically weak to use a device by themselves, or the tool not working properly (Lind et al.,

2016). Functional limitations due to age, including sight, hearing, difficulties remembering the instructions, were also identified as barriers by older adults (Nygård and Starkhammar, 2007; Rosenberg and Nygård, 2011; Wessmann et al., 2013; Adamssoo, 2018).

*Concerns about privacy when using technology* were identified as very important in one of the studies (Zsiga et al., 2013). Older adults considering using homecare robots were concerned that the robot's camera might not respect their privacy. Conversely, a study about using telehealth systems at home, reports that older adults had far less fear of being observed than researchers expected (Stroetmann and Erkert, 1999).

### **The Main Facilitators of the Use of Telehealth and Digital Technology**

The third main theme in this study is *the main facilitators of the use of telehealth and digital technology*. This theme illustrates how (1) *technology provides a sense of safety* and (2) *personal positive opinions about digital devices were as facilitators*.

*Technology providing a sense of safety* was underlined in several studies. Technology provides a sense of safety because it helps people to reach help and assistance when in need and the opportunity to get in contact with someone was motivating (Raja et al. 2021b). Both social support and lack of social support were described as facilitating the use of new technology (Marcellini et al., 2000; Rosenberg and Nygård, 2011).

*Positive personal opinions about digital devices* could facilitate the use of technology by older adults in Europe. Older adults stated that technology made life easier, and users who believed that digital assistive devices would provide really meaningful help adopted them more readily (Stroetmann and Erkert, 1999; Adamssoo, 2018).

### **Contribution of Study I**

This scoping review provides evidence concerning historical telehealth and digital developments, focusing on the main barriers to, and facilitators of, societal digital demands and experiences that affect adults aged 75 years and older in European

countries. Moreover, it identifies research gaps in the existing literature in order to inform future research. It provides insights into the societal demands placed on older adults when using digital technology. Although the six included studies were conducted in Scandinavia, none of these studies were conducted in Norway. This research gap was followed up in Study II. As the results indicate that both social support and lack of social support are facilitators of the use of new technology, this research focuses on what kind of social support is necessary in order to facilitate the uptake of new eHealth systems. As concerns about privacy when using digital technology were identified as being very important, and conversely, that older adults have far less fear of being observed than researchers expected (Stroetmann and Erkert, 1999), this was considered in the following research. As eHealth and ICT develops rapidly, future research should cover the systems which are most relevant to older adults today.

## **5.2 Study II: Older Adults' Sense of Dignity in Digitally-Led Healthcare (Raja et al., 2022)**

Study II aims to clarify and discuss the phenomenon of sense of dignity experienced in older adults, concerning how their expectations and needs are met within context of digitally-led healthcare in Norway. The results address societal digital demands and needs in healthcare services in Norway in relation to adults aged 75 years and older and their sense of dignity. The essential structure of meaning and its constituents are identified as: (1) *becoming dependent on help*, (2) *the importance of human contact and being treated as individuals*, (3) *prerequisites to develop new skills while being thrown into unfamiliar world*, (4) *insecurity concerning privacy in the digital world* and (5) *technology can give a feeling of safety*.

### **Essential Structure of Meaning**

*Older adults experience that using new digital systems in healthcare leads to them becoming dependent and gives rise to a sense of helplessness. They feel an increased sense of dependency on other people and that, in turn, assails their experience of*

*personal dignity. Older adults expect that digitally-led healthcare will give a sense of safety, but it also produces a feeling of insecurity concerning privacy and loss of the relational aspect of having a productive dialogue with healthcare providers and being treated as individuals. Participants are subject to demands from society in terms of being expected to know how to use systems, and are thrown into situations where they have to acquire new skills promptly, which they often struggle to achieve* (Raja et al., 2022, p5).

The first constituent, *becoming dependent on help*, was identified when older adults described experiencing obstacles when using digital technology and needing help to overcome them. Older adults described a sudden change from being independent to becoming dependent on other people. Loss of independence in a healthcare context that is continuously becoming more digitized can make older adults feel vulnerable and affect their experience of dignity.

The second constituent *the importance of human contact and being treated as individuals* was identified when older adults described their need to hear human voices and their concerns about reduced human contact in healthcare systems. Older adults hope that these systems do not become so complicated that human contact disappears in the future.

The third constituent, *prerequisites to develop new skills while being thrown into unfamiliar world*, was identified when older adults expressed how technological language, and the different icons used in digital solutions, were strange and alien to them. Older adults described how they were thrown into the digital world in a disruptive way, rather than being immersed naturally. Individual approaches are needed. One needs to take it at an appropriate tempo and have the possibility and time to try the system out.

The fourth constituent *insecurity concerning privacy in the digital world*, was identified when older adults stated that they lacked information about eHealth systems, how

these systems were used in healthcare, and who had access to their personal data. On the one hand, the participants had concerns that programmers would take over and the user would lose control; on the other hand, they also discussed being provided with little information about what kind of data about their health and medical history would be recorded in the system. Different concerns about a lack of privacy affect older adults' sense of dignity.

The fifth constituent *technology can give a feeling of safety* was identified when older adults expressed that being able to contact family members or health services if something happened, made them feel safe. Most of the participants had experienced that they or their significant others felt safe when using a safety alarm. If a user knew how to use a digital aid or eHealth system, then those were seen to be useful and helpful. This can affect older adults' sense of dignity by enhancing their feelings of self-worth.

### **Contribution of Study II**

This study contributes new knowledge about the phenomenon of sense of dignity experienced in older adults, concerning how their expectations and needs are met within context of digitally-led healthcare in Norway. Older adults expressed that using new digital systems in healthcare gave rise to their sense of helplessness and that assailed their experience of dignity. They described feeling an increased sense of dependency on other people. For them new technology produced a feeling of insecurity concerning their privacy and the loss of sense of being treated as individuals. On the other hand, digitally-led healthcare gave them a sense of safety, as it allowed them to contact healthcare providers when necessary.

As the results of Study I indicated that more research was needed into the kinds of social support older adults need in order to facilitate the uptake of technology in healthcare systems, Study II contributes new knowledge about this issue. This study illustrates how older adults are thrown into the digital world and expected to acquire



new skills promptly, which they often struggle to achieve. It is important not only to offer them help, but also to make sure that this assistance is suitable for them. In order to improve older adults' digital skills, the results of this study suggest some important steps to follow. Another theme from Study I followed up in Study II is that of older adults' privacy in the digital world. Study II contributes new knowledge about important ethical aspects of the use of new technology and digital solutions in eHealth systems. The participants, as users of the systems, can be able to help to shape future policy; they contributed to our knowledge of this subject by participating and sharing their experiences from the perspectives of their own lifeworlds.

On the other hand, Study II does not describe any national digital strategies or eHealth policies, which concern older adults' dignity. It also does not show whether eHealth policies aim to meet the expectations and needs of older adults within the context of digitally-led healthcare. Further research was required to provide knowledge about digital strategies and eHealth policies which concern older adults' dignity.

### **5.3 Study III: National Digital Strategies and eHealth Policies Concerning Older Adults' Dignity (Raja et al., 2023)**

Study III is a document analysis which aims to provide knowledge about the digital strategies and eHealth policies which concern older adults' dignity in three Scandinavian countries: Norway, Sweden and Denmark. The document analysis included 26 sources, published between 2016 and 2021. Of the 14 governmental papers, six were from Norway, four from Sweden and four from Denmark. Of the 26 included papers, nine focus directly on the older population and 17 describe strategies and policies that influence older adults. The background data extracted from each included paper describe the paper's origin, aims and style, and are shown in detail in Table 3 in Article 3 (Raja et al., 2023), which is presented in Part 2 of this dissertation. Table 3 in Article 3 was formatted following O'Leary (2014).

The results of Study III are divided into three categories: (1) *national digital strategies concerning older adults*, (2) *national eHealth policies concerning older adults*, and (3) *digital strategies and eHealth policies concerning older adults' dignity*.

### **National Digital Strategies Concerning Older Adults**

The first main theme illustrates what the national digital strategies in three Scandinavian countries contain concerning older adults. This main theme has two subthemes: (a) *access to digital technologies* and (b) *continuous learning for digital skills*.

The first subtheme, *access to digital technologies*, was identified when documents described national digital strategies in three Scandinavian countries and underlined a need to ensure equal access to digital technologies (Ministry of Health and Social Affairs, 2016; Randall et al., 2018; Nordregio, 2019; EPTA, 2019). It is important to acknowledge that access to digital technologies is not currently equal— there is a digital divide which is related to socio-economic status, age, health and gender, as well as disparities that appear between rural and urban areas.

The second subtheme, *continuous learning for digital skills*, was identified when documents about digital strategies described how the development of innovative digital solutions has advanced in Scandinavian countries and how continuous learning is required in order to keep up with it (Nordic Innovation, 2018; Hägglund, 2019). Digital strategies include programs which aim to support and increase the digital competence of older adults, trainings can help to strengthen older adults' opportunities to maintain social networks and can reduce their feelings of loneliness.

### **National eHealth Policies Concerning Older Adults**

The second main theme illustrates how national eHealth policies affect older adults. This main theme has two subthemes: (a) *the patient is at the centre of healthcare* and (b) *digital systems increase feelings of safety*.

The first subtheme, *the patient is at the centre of healthcare*, was recognized in documents describing national eHealth policies which emphasized that digitalization should give patients more opportunities to participate in their own healthcare and that patients should be at the centre of healthcare (Nordic Innovation, 2016; NMHCS, 2019; National Board of Health and Welfare, 2019; NMHCS, 2019). These documents state that strategies for technology implementation should address an individual's conditions and how eHealth can meet their particular needs.

The second subtheme, *digital systems increase feelings of safety*, was identified in documents which described how user-friendly care technology can give older adults and their relatives feelings of peace and safety (EPTA, 2019; National Board of Health and Welfare, 2019; Norwegian Directorate of Health, 2021). Safety alarms, remote health monitoring, electronic door locks, GPS monitoring and mobile applications can all provide support for older adults.

### **Digital Strategies and eHealth Policies Concerning Older Adults' Dignity**

The third main theme illustrates what the documents about national digital strategies and eHealth policies contain with regard to older adults' dignity. This main theme has two subthemes: (a) *digital device security* and (b) *access to data and the human dimension of care*.

The first subtheme, *digital device security*, was identified in documents which claimed that digital safety and the security of individuals are essential to the exploitation of the opportunities offered by new technology and digital devices. The digital strategies and eHealth policies of all three Scandinavian countries underline the importance of security (The Government, 2016; Randall et al., 2018; Ministry of Local Government and Modernization, 2019).

The second subtheme, *access to data and the human dimension of care*, was identified in documents which stated that national regulations are not always sufficient to guarantee patients easy access to their data, and that technology cannot replace the

human dimension of care (EPTA, 2019; NMHCS, 2019; Norwegian Directorate of Health, 2021; Valokivi et al., 2021). Even if national regulations aim for every citizen to be able to easily access their data, a lack of digital competence among older adults means that patients may have problems using digital healthcare systems.

### **Contribution of Study III**

Study III addresses the topic of this dissertation from a new angle. It contributes new insights about digital strategies and eHealth policies concerning older adults' dignity in three Scandinavian countries. These documents provide background information, as well as information on the context within which research participants operate (Bowen, 2009). National digital strategies and eHealth policies impact older adults as service end-users, and Study III adds insight into these effects. All three Scandinavian countries emphasize the importance of equal access to digital services, but at the same time recognize that access is not currently equal: older adults often lag behind in accessing and benefiting from digital services. Digital learning for older adults must therefore be encouraged. Study III follows up the themes of digital learning, safety and the human dimensions of care from Studies I-II. National eHealth policies put the patient at the centre of care and contribute to digital services providing a feeling of safety for service users and their families. It is also clear that the human dimension of care is important, as digital solutions are not always the most appropriate and cannot replace face-to-face contact. These and other findings were following Bowen's (2009) method, used in combination with findings acquired using other qualitative research methods (those of Study I and Study II) as a way to use triangulation to gain better insights into the research problem addressed by this dissertation.

## **5.4 Synthesis: Societal Digital Demands and Needs in Healthcare Services in Order to View the Dignity of Adults Aged 75 Years and Older**

The synthesis of Studies I-III show that technology cannot offer the human dimension of care and each study addresses the importance of human contact in healthcare

services. Older adults need someone's help when using new technology and eHealth systems, and continuous learning is necessary. The synthesis also suggests that older adults have concerns about new technology violating their privacy and they lack information about how the systems are used. Digital technology provides more independency, gives opportunity to contact someone, and provides a feeling of safety. The synthesis of Studies I-III covers four main themes: (1) *the importance of human contact*, (2) *the need for help and constant learning when using technology*, (3) *concerns about privacy*, and (4) *safety issues*.

### **Importance of Human Contact**

The first main synthesized theme, *the importance of human contact*, was identified when the results of scoping review Study I indicated that robots can potentially be useful for older individuals but cannot replace people. The results also suggest that robots frightened older adults. Study II added to these findings that there are concerns about the reduction of human contact in healthcare and fear of what lies ahead. Older adults feel that it is important to hear another person's voice and feel their presence. Human contact and being treated as an individual affects the experience of dignity. Older adults expect that the element of human contact in healthcare systems will not disappear in the future. The results of Study III also confirm that technology cannot replace the human dimension of care. Furthermore, in national healthcare systems, digital solutions have sometimes been found to be inappropriate, especially where there is a risk of all face-to-face contacts being replaced with digital solutions. This, in turn, can have negative effects on the level of social inclusion and human interaction among older adults. Table 2 illustrates how the themes, subthemes and constituents identified in the results of Studies I-III relate to this synthesized theme.

**Table 2.** Importance of Human Contact

Synthesized theme 1 in synthesis: <b>Importance of human contact</b> Themes, subthemes and constituents from Studies I-III		
Study I (theme) <b>Older adults’ experiences with telehealth and digital technology</b>	Study II (essential structure of meaning) <b>Relational aspect and being treated as an individual</b>	Study III (theme) <b>Digital strategies and eHealth policies concerning older adults’ dignity</b>
Study I (subtheme) <b>Impact on older adults’ lives</b>	Study II (constituent) <b>The importance of human contact and being treated as individuals</b>	Study III (subtheme) <b>Access to data and the human dimension of care</b>

### **The Need for Help and Constant Learning When Using Technology**

The second main synthesized theme, *the need for help and constant learning when using technology*, was recognized when the results from Study I revealed that older adults often need assistance when using technology. Studies II and III elaborated the content of that finding. Study I shows that there can be hitches when using a new digital system and that older adults can have difficulty remembering the instructions. Study II describes other barriers the participants faced when using digital healthcare systems, such as technology not working, their own lack of basic knowledge and instructions, rapid changes in programs and loss of access to systems. Furthermore, older adults experience that they were rendered passive and needed help when expected to use new digital systems. Technological language and the various different icons used in digital solutions were alien and strange to older adults. The results of Study III indicated that there is a lack of digital competence among older adults, and that individuals may have problems using digital healthcare systems. They also suggest that innovative digital solutions are being developed rapidly in Scandinavian countries and so continuous learning is necessary to keep up with the pace of development. Study I suggested that support from family and friends is important when older adults consider using new digital technology. Conversely, it also indicated that a lack of social support can facilitate the use of new technology. This raised a question about the kind of support that is needed in order to facilitate the use of digital technology. The results

of Study II indicated that in order for older adults to learn to use new digital technology, individuals must be introduced to it at an appropriate tempo and have the opportunity and time to try systems out. It is also important to get a manual or write the process they need to follow down, step-by-step, and later to have follow-up with further teaching. The results of Study III added that the digital strategies of the three Scandinavian countries include programs which aim to support and increase the digital competence of older adults, which in turn can result in additional benefits such as increasing their ability to maintain social networks and reducing their loneliness. Table 3 illustrates how the themes, subthemes and constituents of Studies I-III relate to this synthesized theme.

**Table 3.** The Need for Help and Constant Learning When Using Technology

Synthesized theme 2 in synthesis: <b>The need for help and constant learning when using technology</b> Themes, subthemes and constituents from Studies I-III		
Study I (theme) <b>The main barriers to the use of telehealth and digital technology</b> Study I (subtheme) <b>Difficulties using telehealth and other technology</b>	Study II (essential structure of meaning) <b>Older adults are thrown into situations in which they have to acquire new skills promptly</b> Study II (constituent) <b>Becoming dependent on help</b> Study II (constituent) <b>Prerequisites to develop new skills while being thrown into unfamiliar digital world</b>	Study III (theme) <b>National digital strategies concerning older adults</b> Study III (subtheme) <b>Continuous learning for digital skills</b>

### Concerns about privacy

The third main synthesized theme, *concerns about privacy*, was identified when the results from the scoping review Study I suggested that one of the main barriers to older adults' engagement with societal digital demands was that users were often concerned that their privacy might not be respected. This was described as older

adults being worried that device’s camera might violate their privacy. Conversely, it was also found that some older adults had far less fear of being observed than the researchers expected. The results of Study II add to this theme by indicating that older adults have concerns about lack of privacy when using eHealth systems, and this affects their sense of dignity. Older adults express that they lacked information about who had access to their personal data and how eHealth systems are used. They felt that this exposed them to violations of their privacy. Study III expanded this perspective further by suggesting that all three Scandinavian countries emphasize the importance of security in digital strategies in order to protect service users’ privacy. Users should be able to trust digital devices, as this can help to reduce barriers to the adoption of technological solutions. Table 4 illustrates how the themes, subthemes and constituents from Studies I-III relate to this synthesized theme.

**Table 4.** Concerns About Privacy

Synthesized theme 3 in synthesis: <b>Concerns about privacy</b> Themes, subthemes and constituents from Studies I-III		
Study I (theme) <b>The main barriers to the use of telehealth and digital technology</b>	Study II (essential structure of meaning) <b>Digitally-led healthcare produces a feeling of insecurity due to a perceived lack of privacy</b>	Study III (theme) <b>Digital strategies and eHealth policies concerning older adults’ dignity</b>
Study I (subtheme) <b>Concerns about privacy when using technology</b>	Study II (constituent) <b>Insecurity concerning privacy in the digital world</b>	Study III (subtheme) <b>Digital device security</b>

### Safety Issues

The fourth main synthesized theme, *safety issues*, was recognized when the results in Study I described how technology gives older adults a sense of safety because it helps them call for assistance when necessary. The opportunity that technology gives older adults to get in contact with someone helps to motivate them. Homecare robots can help to set up video connections with family members, and eHealth systems provide an opportunity to get in contact with healthcare providers. Study II also confirmed that

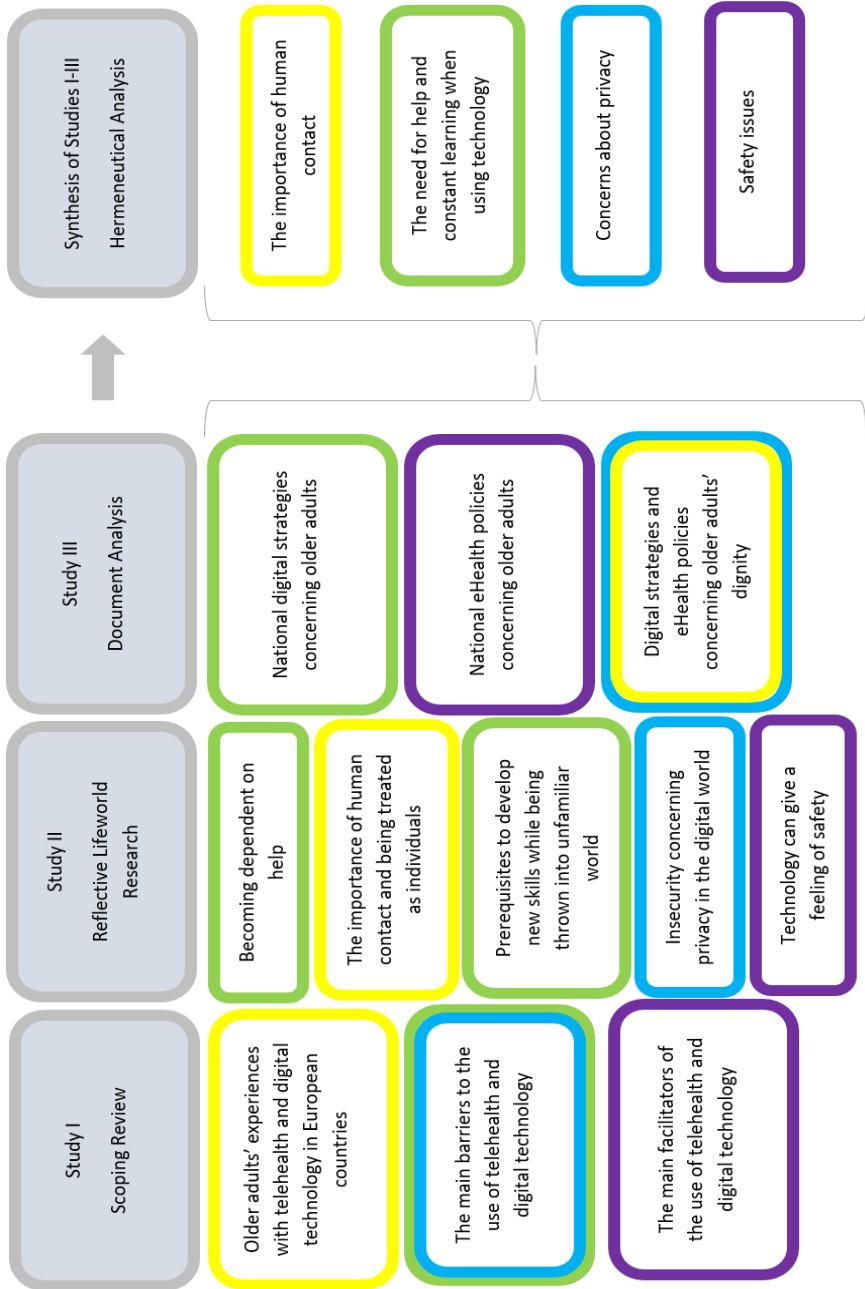


digital technology gives older adults an opportunity to contact healthcare services if something happens to them, and that being followed up helps one to feel safe. The results of Study II also indicated that using safety alarms, which are offered by the health system in cooperation with the local health service center, gave the participants a feeling of safety. Study III added to this theme by describing how, with remote health monitoring, the use of security cameras at night and automatic medicine dispensers, older adults can become less dependent on healthcare providers visiting their home while maintaining a feeling of safety. Furthermore, monitoring can also help older adults' significant others to feel safer, and can reduce the stress they are under as the monitored individual becomes more independent. Table 5 illustrates how the themes, subthemes and constituents from Studies I-III relate to this synthesized theme.

**Table 5.** Safety Issues

Synthesized theme 4 in synthesis: <b>Safety issues</b> Themes, subthemes and constituents from Studies I-III		
Study I (theme) <b>The main facilitators of the use of telehealth and digital technology</b>	Study II (essential structure of meaning) <b>Older people expect that digitally-led healthcare will give them a sense of safety</b>	Study III (theme) <b>National eHealth policies concerning older adults</b>
Study I (subtheme) <b>Technology provides a sense of safety</b>	Study II (constituent) <b>Technology can provide a feeling of safety</b>	Study III (subtheme) <b>Digital systems increase feelings of safety</b>

The relationships between the themes, subthemes and constituents of the essential structure of meaning in Studies I-III and in the synthesis are illustrated in Figure 2. The figure visualizes the synthesis as a hermeneutical analysis which further develops the scoping review in Study I, through the phenomenological Reflective Lifeworld Research analysis in Study II, and the document analysis in Study III. The yellow, green, blue and purple colours in the figure indicate how the themes of Studies I-III connect to the themes of the synthesis (as outlined in Tables 2-5). This synthesis will be further discussed in the following chapter.



**Figure 2.** The Relationships Between the Themes, Subthemes and Constituents of the Essential Structure of Meaning in Studies I-III and in the Synthesis

## 6 Discussion

This chapter comprises (see Fig 2) a discussion of the synthesis: *Societal digital demands and needs in healthcare services in order to view the dignity of adults aged 75 years and older*. The discussion in this chapter covers how the concept of societal digital demands in healthcare services affecting older adults' dignity has evolved over the course of the research, and how this dissertation contributes to existing knowledge. Furthermore, the four main themes of the synthesis are discussed. A methodological discussion including the strengths and limitations of the study as a whole concludes the chapter.

### 6.1 Societal Digital Demands in Healthcare Services Affecting Older Adults' Dignity

This synthesis contributes knowledge on how digital demands and needs in healthcare services may impact older adults' dignity and thereby their well-being, as dignity has become a central value in care for older adults in all three Scandinavian countries (NMHCS, 2010; Ministry of Social Affairs, 2012; Healthcare Denmark, 2019). It views the dignity of adults aged 75 years and older from perspectives that impact policy. The older adults participating in Studies I-II stated that they needed help when using new technology, that they had concerns about privacy and, in contrast, that technology gave a feeling of safety and new kind of comfort. The results from Study III confirm that older adults in Scandinavia have concerns about new digital technology and that providing them with help is seen as essential when implementing new eHealth systems.

This study reveals that the societal digital demands in healthcare services may have a number of advantages, including providing older adults and their families a feeling of safety through the remote monitoring of older adults by healthcare providers. This is consistent with the claim of Andersson et al. (2020) that the use of digital technology in healthcare may have considerable potential in terms of providing distance-spanning

solutions which may be of particular benefit to older adults living in remote areas. Nevertheless, digital solutions cannot always replace face-to-face contact between older adults and healthcare providers. Because of the high prevalence of SARS-CoV-2 since 2020, the development and use of eHealth has become even more topical (European Commission, 2021b). The European Commission (2021b) sees digital technology as a key tool for tackling the virus, and Norwegian authorities are prioritizing the development of digital healthcare services solutions more than ever before (Norwegian Directorate of eHealth, 2020b). The Norwegian National Health and Hospital Plan states that all health regions in Norway are committed to offering digital services to their citizens (NMHCS, 2019). It is also essential to consider the aspect of human face of care when considering the digital future of healthcare.

The results of this study show that human contact and being treated as an individual by healthcare providers, are important for older adults' experience of dignity. As technology cannot replace the human dimensions of care (EPTA, 2019), it is essential to consider aspects of new eHealth systems that may put older adults' dignity at risk. The Organization for Economic Co-operation and Development cites Norway as one of the countries that have come the furthest in digitalization, but highlights the need for stronger governance and coordination of this work (OECD, 2017). National digital strategies and eHealth policies impact the users of digital systems. Engagement between research and policy is driven by systematic factors (Oliver and Cairney, 2019). The results of this study are important, as including older individuals, as service end-users, in the process of policy making, influences the care and well-being of older adults. It is important in the light of the 3<sup>rd</sup> United Nations sustainability goal to ensure healthy lives and well-being for all at all ages (United Nations, 2023).

## **6.2 The Importance of Human Contact**

Older adults participating in Studies I and II experienced that technology has the potential to be useful as part of healthcare services, but that it could not replace human contact. This accords with the documents analyzed in Study III, which also

emphasize that technology cannot replace the human dimension of care. This includes experiences of feeling human during one's interaction with technology. These findings are in line with the Code of Ethics for Nurses, which state that it is vital to make sure that technological devices do not replace human relationships (International Council of Nurses, 2021).

Human contact and relationships are important for people's overall health and well-being (WHO, 2022b). A sense of belonging unfolds across person's life and it remains important in older age (Allen, 2019). A person's sense of self-worth and dignity can be promoted through human relationships, social inclusion and positive relationships with healthcare providers (Clancy et al., 2020). Social relationships support healthy ageing, help to buffer feelings of loneliness and offer a source of purpose and meaning (Allen, 2019). The synthesized results imply that preserving the human dimension of care is an important challenge when using digital technology in healthcare systems.

The findings of Study III indicate that digital substitutes can have negative effects on social inclusion, and this in turn can affect older adults' dignity, as it can be experienced and considered within relational situations (Galvin and Todres, 2015). These results correlate with findings from recent studies claiming that effective nurse-patient communications helps to preserve patient's dignity (Fuseini et al., 2022; Fuseini et al., 2023). A review about dignity and health claim that these two relate to each other (Jacobson, 2007) and dignity is important for successful ageing (Kisvetrova et al., 2021b). Moreover, even if technology is not used to replace human relationships, interactions with technology should still protect people's sense of being human and an understanding of what makes people feel human is closely related to the experience of dignity (Galvin et al., 2016). The European Parliament claims that the use of digital technologies in healthcare can lead to service users gaining independence through human-non human contact, but that in turn can have negative effects on the levels of social inclusion and human interaction (EPTA, 2019). Older

adults participating in this study were restless about human contact being replaced by digital solutions in the future.

The documents analyzed in Study III indicate that digital healthcare lacks the in-person face-to-face contact that is naturally part of traditional healthcare delivery. eHealth has the potential to misrepresent, or fail to represent completely, the human aspect of medical communication (Cheshire, 2017). The results of this study show that human contact and being treated as an individual, is important for one's experience of dignity. This accords with Kisvetrova et al. (2021a) claiming that lack of social invisibility is a significant threat to older adults' sense of dignity. The factors which lead to the loss of dignity need to be understood and acted upon in meaningful healthcare service development (Galvin et al., 2016). The participants in Study II had concerns about reduced human contact in healthcare services in Norway, and fears about what lies ahead. Clancy et al. (2020) found that the fear of becoming 'nobody' in healthcare systems is closely linked to older adults' sense of dignity. Older adults participating in this study expected that the system would not be made so complicated that human contact, and thereby the treatment of service users as individuals, will disappear in the future. This might affect their sense of dignity, as dignity can be restored through interaction with others (Galvin and Todres, 2015).

All three Scandinavian countries' strategies emphasize the importance of individualized dignified care for older adults (NMHCS, 2010; Ministry of Social Affairs, 2012; Healthcare Denmark, 2019). In the Norwegian strategy, dignified care is interpreted as keeping people safe and helping them maintain sense of meaning in their old age (NMHCS, 2010). The results of this study show that human contact is an important component of dignified care for older adults, one of the reasons why dignity has become such an important topic is that the rupture of a person's dignity can cause them great pain (Galvin and Todres, 2015). The challenge of keeping up with digital changes and technological shifts may put older adults' human dignity, and therefore their well-being, at risk.

The results evidencing concerns about the loss of older adults' human contacts and relationships are in line with Stjernberg's (2021) claim that increased adoption of technology in the healthcare sector may have named negative effects. The use of robots, monitoring, cameras and GPS transmitters in the care of older adults can, in some cases, lead to healthcare providers being replaced with health robots. This, in turn, may contribute to reduced social stimulus and thus failure to meet older adults' need for human contact. Contact with care robots cannot compensate for a lack of human contact. Robots may perform a given task and do an adequate job, but they lack uniquely human ability to cater to the needs of the individual. Research indicates that robots should only be used instrumentally for routine care jobs, and that care-giving tasks that require emotional, personal and intimate involvement should be performed by people (EPTA, 2019). The synthesized results add to the evidence of the use of digital technology in healthcare offering more and more empowerment for older adults, however, according to Dahlberg and colleagues (2009) it cannot be the full solution as older adults' deeper existential issues must also be taken care of. The analysis of documents in this study has shown that Scandinavian countries' national level eHealth policies address some of these issues. The Norwegian National Health and Hospital Plan underlines that, for many patients and types of examinations, it is not appropriate to replace physical meetings with digital solutions, and that it is important to make sure that digital systems are as effective as physical meetings (NMHCS, 2019). Swedish national documents about older adults' care stress that digitalization should not mean the absence of human contact, but should instead enable better contact between people. The use of technology in care should create added value for older adults and allow them to live independently for longer (Ministry of Social Affairs, 2017). The Danish national document about dignity and the care of older adults states that Denmark is implementing a number of technologies that support daily interactions between citizens and healthcare providers (Healthcare Denmark, 2019). Named important considerations support Scandinavian countries ageing-related policies for each individual to be supported to remain in good physical

and mental health for as long as possible (Grunfelder et al., 2020) and mental health and dignity should go mutually (WHO, 2015).

On the other hand, technology and digital solutions can be used to fight against older adults' social isolation and loneliness (Gauthier et al., 2022; WHO, 2022b). It has been widely proposed that digital technologies, including eHealth systems, should be developed and implemented by care services, because older adults' social needs may become more pressing in the post-COVID-19 period (Zubatsky et al., 2020). The synthesized results of this study do not indicate that digital technology in healthcare contributes to meeting older adults' social needs; on the contrary, they imply that the reverse is the case. High-quality social connections are essential for mental and physical health and for well-being (WHO, 2022b). A systematic review of systematic reviews claims that, so far, there is weak and inconsistent evidence for the efficacy of using e-interventions to remedy loneliness among older adults (Chipps et al., 2017).

### **6.3 The Need for Help and Constant Learning when Using Technology**

#### *The Need for Help when Using Technology*

The synthesized results indicate that older adults need help when using new digital technology and eHealth systems. The feeling of a need for help can make older adults vulnerable and thereby lead to loss of dignity and diminish one's personhood (Todres, Galvin and Holloway, 2009; Galvin and Todres, 2015). If important dimensions in one's life are not fulfilled, then something essential is missing to respond to human needs and rights that each individual is entitled to (United Nations, 1948/2022; Todres, Galvin and Holloway, 2009). Some older adults participating in Studies I and II have experienced that digital technology makes life easier, while others had experienced the contrary. Older adults participating in Study I also expressed that they could be physically too weak or shivering to use the device by themselves. The results of Studies I and II show that functional limitations due to age, including difficulty remembering the instructions, are experienced by older adults when using new digital technology and eHealth systems. Some older adults in Norway have experienced that they are



rendered passive by new digital systems and need help when expected to use them. They did not express a feeling of gaining power when using digital technology, but in fact felt the opposite. These highlighted results are in line with those of their peers in Finland and Ireland (Pirhonen et al., 2020).

The essential structure of meaning in Study II reveals that this need for help leads older adults to become dependent on other people and gives rise to a sense of helplessness among them. Older adults in Norway feel an increased sense of dependency and this, in turn, undermines their sense of dignity, as dignity is an experience closely related to autonomy (Nordenfelt, 2004; Hofmann, 2020). Scholars refer that dignity is more than autonomy but in end of life care it is found that autonomy is a determining factor to perceive dignity (Multiple authors, 2003; Rodriguez-Prat et al., 2016). Sæteren and Nåden (2021) also found that becoming dependent on others was experienced as a threat to older adults' dignity. Older adults who participated in Studies I and II said that they often needed help and assistance when using technology, but that they did not want to depend on others. In contrast, results of Study III did not reveal documents pointing to this issue. Good care practice includes ensuring that people always feel valued by the healthcare service and are treated with respect, dignity and compassion (Dahlberg et al., 2009). The synthesized results reveal that becoming dependent on help may reduce older adults' feeling of being valued and thereby affect their dignity, as from a phenomenological point of view dignity is the affirmation of something valuable in oneself or another (Galvin and Todres, 2015).

One view of being human is that one is always engaged in a process; this view encourages a certain openness to ways of responding and changing in response to our journeys' circumstances (Dahlberg et al., 2009). The results add that the loss of independence in a healthcare context that is increasingly digitized can increase the vulnerability of older individuals. A sense of helplessness caused by new digital systems in healthcare may therefore undermine older adults' sense of dignity, and

that should be acknowledged when forming digital strategies and eHealth policies to comply with the Charter of fundamental rights (European Commission, 2023).

### *Constant Learning when Using Technology*

Constant learning activities and programs which aim to support and increase older adults' digital competence can help them to better adapt to the digital environment. Digital policies see learning to use new technologies as a means of securing human rights (Gonzales et al., 2012; Suslo et al., 2018). The results of Study III indicate that digital strategies in the three Scandinavian countries include training programs to help older adults master technological tools (EPTA, 2019; National Board of Health and Welfare, 2019; Norwegian Centre for E-health Research, 2019; Frennert, 2020). These supportive programs has the European Commission`s aim for shaping Europe`s digital future for every individual to benefit from digitized society and thereby evidence the impact of the principle of equality corresponding to the United Nations sustainability goals for ensuring equal opportunities for all (European Commission, 2020a; United Nations, 2023). On the other hand, there was found no evidence about practical steps for achieving this goal, including which ministries are best placed to have responsibility for these issues. The results also reveal that even though there are many educational training programs in place to support constant learning, older adults still need help when using digital technology. The synthesized results of this study reveal that older adults are thrown into the digital world in a disruptive way, and that they experience using digital technology as a demanding and overly rushed process. Furthermore, digital technology develops rapidly: change is constant. Learning takes time and happens step by step, and in the meantime systems are upgraded, which changes outcomes for the users. Constant learning is thus needed. New updates mean that older adults need to re-learn how to use the systems. This knowledge has an important meaning for policies regulating older adults training programs for digital technology.

Technology acquisition by older adults has many different pathways (Peek et al., 2017), as older adults are a highly heterogeneous group with various needs (Van Hoof et al., 2017). The synthesized results reveal that the technological language and different icons in use in digital solutions are unfamiliar to older adults. A word that has one meaning in everyday life can have a totally different meaning in technological terms, and understanding this technological language does not come naturally to older adults. The essence of technology is dependent on one's understanding of it and how one confronts the technological world. The synthesized results of this study reveal some points that are important to follow up if we want older adults to benefit from being trained to use new digital technology and eHealth systems. People need to be allowed time to learn at an appropriate tempo and to have the opportunity to try new systems out. It is also important to write down the process that they must follow step-by-step, or get a manual, and this must later be followed up with further guidance. Struggling constantly with an unfamiliar process can be humiliating and diminish one's agency, therefore impacting one's sense of dignity, but achieving a new skill may increase the benefit one gains from a new system and may impact one's perceived dignity in a positive way. This process of learning would comply with the Norwegian Regulation of Dignified Care for the Elderly (NMHCS, 2010).

## **6.4 Concerns About Privacy**

Older adults participating in this study have concerns about the protection of their privacy when using digital technology and eHealth systems. The European Union's Agency for Fundamental Rights and the Constitution of Norway both advocate for the right to privacy, stating that everyone has the right to life and to personal freedom, integrity and security (Charter of Fundamental Rights of the European Union, 2012; Constitute, 2016). Ethical issues that may affect human rights are an important consideration in healthcare (United Nations, 1948/2022). The results of this study are consistent with previous research which points out that inadequate privacy is found as barrier to dignity among older adults (Fuseini et al., 2023) and loss of dignity raises

significant concern among older patients (Solomon et al., 2016). The findings of this study add that older adults lacked information about eHealth systems in Norway, about how these digital systems were used in healthcare, and about who had access to their personal data. This finding accords with a recent integrative review of ethical issues in eHealth, which claims that privacy and data protection are important issues (Jokinen et al., 2021). The results of this dissertation build knowledge about older Norwegian adults' voices, and identify their experiences with those of their peers in other countries. This knowledge is important for policy makers to acknowledge that policies should not only give directions to protect users' privacy but also make sure that information about this protection is available to the users to maintain their dignity.

The results of the document analysis (Study III) show that all three Scandinavian countries underline the importance of privacy in their digital strategies and eHealth policies (The Government, 2016; Randall, 2018; Ministry of Local Government and Modernization, 2019). This is in accordance with the Norwegian Patient and User Rights Act (entry into force 2001; NMHCS, 2001/2023). The eHealth policies of the three Scandinavian countries claim that the safety and privacy of individuals is essential to the exploitation the opportunities offered by digitalization and thereby focus on the importance of equal access to healthcare services, and the 10<sup>th</sup> United Nations sustainability goal to reduce inequalities within countries (United Nations, 2023). The right to privacy is one of the overarching ethical principles in healthcare and citizens should be allowed to choose what information they want to share about themselves (Thompson et al., 2006; Skär and Söderberg, 2018). The results of the document analysis (Study III) show that the Norwegian National Health and Hospital Plan aims for citizens to be confident that the healthcare service protects their privacy and makes use of the opportunities provided by technology to develop better services (NMHCS, 2019). The findings of this study indicate that the loss of privacy can affect older adults' privacy in a negative way. Furthermore, the synthesized results suggest that there are gaps between the aims of the eHealth policies and the way in which

older adults in Norway experience privacy issues when using eHealth systems. These results suggest new knowledge to the society that guidelines need to be drawn up to get these gaps filled to respect and protect older adults` dignity (European Union`s Charter of Fundamental Rights, 2012).

The results of Study III indicate that when using digital technology in healthcare, eHealth solutions must balance the giving up of medical information with the need for privacy. Systems that are capable of processing personal data are subject to regulation under the EU`s General Data Protection Regulation (GDPR, 2018). This regulation requires data protection safeguards to be built into technology early on in the development process (GDPR, 2018). However, this protection may not cover other kinds of data, such as social media activity and internet search history (EPTA, 2019), which can be used to reveal information about older adults and the people around them. Furthermore, the results add that digital devices connected to the internet with poor security can be vulnerable to hacking, posing risks to video and voice recordings, and potentially allow devices to be remotely controlled by an attacker. Older adults participating in Study II were concerned about what their medical data could be used for, by whom, and if it is was somehow possible to use it against them. They expected their health issues to be kept private to preserve their sense of dignity (Galvin and Todres, 2015). This accords with a systematic review about patient perspectives of dignity underlying importance of privacy (Rodriguez-Prat et al., 2016). Conversely, results from study I report that older adults using telehealth systems at home, had far less fear of being observed than researchers expected.

The synthesized results indicate that digital solutions are not always the best solutions. The Swedish Medical and Ethical Council has recommended that a balance should be struck between the benefits of using technological devices in healthcare and intrusion on the privacy of the individual that monitoring entails (Ministry of Justice, 2017). The results suggest that it is important to consider whether new digital methods are better

than non-digital solutions and whether they contribute to the desired developments in healthcare.

The document analysis shows that the Norwegian National Health and Hospital Plan claims that digital access to medical records strengthens patient's safety, as one can find out who has viewed one's information (NMHCS, 2019). The results of empirical part of this study emphasize that older adults in Norway still have questions about who can access their personal data through eHealth systems. They do not know how to use eHealth systems, or do not know that it is possible to find information about this issue. The synthesized results reveal that older adults need more information and assistance to deal with these issues.

## **6.5 Safety Issues**

The synthesized results imply that digital technology and eHealth systems may help to resolve safety issues by giving users a feeling of safety. Need for safety is important for older adults and healthy ageing involves fulfilling this need (WHO, 2017). Older adults participating in Studies I and II felt safer because eHealth systems helped them to reach out for assistance and human support when needed. The ability to contact the healthcare services if something happens makes people feel safe. Documents from Study III underline the important role of user-friendly care technology in increasing a feeling of safety among older adults, but also among their relatives, whose stress can be reduced if their older relatives become more independent as a result of using the new technology. Dignity and safety shape each other in the care of older adults (Goodwin et al., 2018). Filling the need for safety helps to uphold older adults' dignity (WHO, 2017). The synthesized results show that the use of eHealth and various different technological solutions in healthcare systems gives users a feeling of safety and thereby helps to sustain older adults' dignity.

The results underline the importance of safety alarms. These are emergency call devices that notify healthcare providers when there is an emergency situation, thus

helping to create a safe environment for older adults and empowering them to live an independent life in their own homes (Healthcare Denmark, 2019; NMHCS, 2019).

Findings confirm that most of the participants in Study II had experienced that themselves or their significant others had feelings of safety when using a safety alarm. The Norwegian law emphasizes the importance of taking care of medical needs and self-determination as part of dignified care (NMHCS, 2019). The results of this study add that safety alarms were considered by the participants to be easy to use and to give them a sense of safety. In Norway, safety alarms are provided by the national healthcare system in cooperation with municipalities and local healthcare service centres. People in Norway who need a personal safety alarm can apply to their local municipality (Norwegian Directorate of eHealth, 2022).

The synthesized results revealed that other types of technologies in use in healthcare systems may also help to resolve safety issues by increasing feelings of safety among older adults. A recent systematic review about mobile safety alarms suggest that evidence of the beneficial effects of GPS-based alarms on the well-being of older adults remains insufficient and future research is needed (Ehn et al., 2021). The results of this study add that remote health monitoring, fall sensors, automatic pill dispensers, electronic door openers and GPS- based tracking solution can protect the safety of older adults. By using these solutions, older adults may gain a higher sense of mastery and feelings of safety can be increased among their significant others (EPTA, 2019). Digital technology can contribute to older adults' independence and can facilitate their communication with healthcare providers as well as relatives and this, in turn, can help to bear up older adults' dignity.

Preserving safety involves achieving physical, social and psychological security, rights which must be protected and fulfilled under international human rights law (United Nations, 1948/2022). The synthesized results indicate that the use of technology may help to protect those important rights when adopting the technology does not require overly strenuous efforts. This is in contrast with situations where safety would come at

the cost of dignity, for example, in a situation where older adults were encouraged to remain in their beds instead of walking to the toilet to reduce the risk of falling (Goodwin et al., 2018). Older adults are vulnerable to accidents, in and around their homes. Many fatal and non-fatal accidents are attributed to the frailty and failing health of older individuals. Drawing the attention of older adults to dangerous and unsafe habits can help to reduce accidents. Older adults' perceptions of safety include awareness of the importance of active living, coping at home, managed living and knowing about the existence of diseases (Kivimäki et al., 2020). Digital technology has the potential to support these aspects of safety. This kind of sense of safety can improve older adults' well-being and thereby help to protect older adults' rights to dignified care, as this is a central value in care of older adults in Scandinavian countries (Hastrup, 1991; WHO 1999; NMHCS, 1999).

To experience well-being means to live under secure conditions and to experience an active and meaningful life with others. This can help to enhance the feeling of being worth something and thereby positively affect one's sense of dignity. Safety and dignity are interconnected in the care of older adults (Goodwin et al., 2018). The synthesized results indicate that technology has the potential to affect older adults' dignity in a positive way by supporting their feelings of safety. Living a dignified life requires good quality healthcare services and healthcare providers who show respect for older individuals' privacy and integrity. The self-determination, participation and individualization of older adults must be respected and supported, and this comply with laws concerning older adults' care in Scandinavian countries which are closely following the Charter of fundamental rights (Hastrup, 1991; WHO 1999; NMHCS, 1999; Clancy et al., 2020).

## **6.6 Methodological Considerations**

This section begins with a discussion of the strengths and limitations of this dissertation. These methodological considerations are also based on trustworthiness, which was a central principle at all phases of research for this qualitative study. As



stated by Guba et al. (1994), methodological considerations about trustworthiness must include discussions of credibility, dependability, confirmability and transferability.

### **Strengths and limitations**

An important strength of this dissertation is that ethical considerations has been at the forefront of the research. I have sought to ensure that the research has positive consequences. Each part of this dissertation was conducted in accordance with applicable legislation, international guidelines, and agreements. The project has been designed and implemented fairly. This study began with a paper about ethical considerations following GDPR, the general guidelines for research ethics provided by the Norwegian National Committee for Medical and Health Research Ethics (NEM) and the ethical requirements for the INNOVATEDIGNITY project (INNOVATEDIGNITY, 2019). As a researcher, I felt that it was important to make sure that ethical issues were considered at the very beginning of the research process and before starting to collect the data. Following the Declaration of Helsinki (World Medical Association, 1964/2013), it has been essential that concern for the individual takes precedence over the interests of science and society. The well-being of the participants has been treated as important throughout the research process. A gatekeeper was used to recruit participants for this study. Participants were given the opportunity to choose safe environments for the interviews at times which suited them. They were also given the option of having a family member present during the interviews. A risk assessment was prepared in advance and helped to foreground older adults' well-being, by identifying risks that could potentially harm the participants or give them psychological stress and to mitigate these factors. It was made sure that all the information was gathered and treated confidentially to avoid any recognition of the participants' identities. A data management plan (Appendix B) was followed throughout the research process. This governed my actions during the research and also after the

research was completed. The research data has been processed lawfully, fairly and in a transparent manner (NSD, 2019).

All research that is considered scientific must be based on evidence (Dahlberg, 2018), and another strength of this dissertation is that the research process has been validated by my supervisors and the co-authors of the four articles (Articles 1a, 1b, 2 and 3), and was peer reviewed prior to the publication of the articles. As Studies I-III took shape, the results were presented for discussion to colleagues in the research group and at national and international conferences.

The use of three different research designs and methods in this dissertation could be seen as both a strength and a limitation. On the one hand, it could be seen as limiting the amount of empirical work performed for this dissertation. On the other hand, the results of these three research methods (Study I-III) were combined holistically. Study I provides an international perspective, Study II provides a local perspective, and Study III provides a Scandinavian perspective (see Figure 1) on the subject of this research. Documents provide context, and a means of tracking change and development (Bowen, 2009). In this dissertation, Study I provides background information and the document analysis performed in Study III contextualizes the study. In the healthcare context, older adults' experiences are not only impacted by the systems that they use and the healthcare providers that they have contact with. National digital strategies and eHealth policies also direct and shape the context. It is important to understand the bigger picture. Due to the used methods, Studies I and III include research questions, but Study II includes a more open aim of the study to clarify the phenomenon according to RLR (Dahlberg et al., 2008). The combination of Studies I-III extends perspectives on the subject of this dissertation and allows for more complex insights into the research problem.

There is a circular relationship between pre-understanding, empirical data, and theory (Christians, 2005). Having my pre-understanding shaped by cultural, personal, and social traditions, it can yield strengths and limitations. From Gadamer's perspectives

(1999), my cultural background, experience working as speech and language therapist, Christian beliefs as part of my pre-understanding, lifeworld and prejudice, can influence each part of this dissertation. Also my own understanding as a researcher can influence how the empirical data is understood and interpreted. Prejudice affects understanding in any scientific activity that is carried out (Gadamer, 1999). My pre-understanding provides practical knowledge learned in practical situations when previously working with older adults (Halås et al., 2017), this is in accordance with the PhD in Science of Professions program with which this dissertation is associated (Nord University, 2022). Having these experiences is a strength, whereby insight arises from researcher`s reflection on her own experience and from interaction (Ekebergh, 2007).

On the other hand, my pre-understanding also challenges the questioning of what is taken for granted and the movement from proximity to distance in this dissertation (Alvesson and Sköldberg, 2017). This is a key limitation related to the hermeneutical foundation. It has been important for me, as the researchers, to be aware of how pre-understanding influences analysis (Kvale and Brinkmann, 2015). This is supported by recognizing and handling my own pre-understanding by aware reflections as a researcher and by questioning the results in constructive discussions between co-authors of the articles, supervisors and in workshops and seminars with other researchers in the INNOVATEDIGNITY project.

This dissertation foregrounds older adults` experiences, and this is an important strength of the research as end-users were involved in the research process (Shippee et al., 2015). On the other hand, analysis of the experiences of significant others and healthcare providers would have allowed more knowledge of different stakeholders` experiences with eHealth and digital technology to be gathered.

It can be seen as a limitation that these studies were restricted to the context of participants` homes and home surroundings. The participants in the empirical study (Study II) were functioning well, lived at home and did not receive consistent assistance. The strength is that it gives a strong bases to do further research.

Focusing on the concept of dignity in this dissertation has its strengths and limitations. More attention to dignity can be thrown in countries which are not struggling for essentials for life (WHO, 2022c). Using the concept of dignity in research can therefore be seen as a limitation in some contexts. In this dissertation, it can be seen as a strength because all three Scandinavian countries underline the importance of dignity in their national healthcare systems and care of older adults (NMHCS, 2010; Ministry of Social Affairs, 2012; Healthcare Denmark, 2019).

The concept of dignity has been criticized in research because it lacks clarity (Waldron, 2014). This could be seen as a limitation of this dissertation but in cases where dignity seems to be too unclear or vague, scholars are advised to specify what they mean when they use the term dignity (Hofmann, 2020). It is therefore a strength that dignity as concept is clarified in Chapter 1 from six different perspectives and addressed specifically into the three Scandinavian countries.

It is a strength of this dissertation that trustworthiness has been considered at each phase of the research, and the credibility, dependability, confirmability and transferability of the results have been treated as central to it. The rest of this section discusses these four themes individually.

### **Credibility**

Credibility is understood here as the perception of the results being true and credible. Using different perspectives and methodologies to explore the same topic is a way of strengthening the credibility of research findings (Erzberger and Prein, 1997). The credibility of this dissertation is increased by the use of triangulation, which extends the perspective of this research. The convergence of information from different sources increases the trustworthiness of the findings (Bowen, 2009). Studies I-III, which used different designs and methods, were synthesized. The results from each study influenced the synthesis produced in this dissertation. Synthesis involves constant movement between the parts and the whole, both within and between the

three studies in this case (Gadamer, 1999). Discussions with and reviews by my four supervisors and an international cross-professional research team during the research process (INNOVATEDIGNITY, 2019), also strengthened the dissertation by means of triangulation by different researchers (Lincoln and Guba, 1985).

Credibility is also understood here as how the results are perceived from the participant's perspectives. Research should not result in findings that merely reflect what the researcher believes, wishes or already sees (Dahlberg, 2018). The involvement of service users' representatives is known to optimize the trustworthiness, dissemination and applicability of research (Shippee et al., 2015). This research aimed to explore the experiences of older adult's who are users of healthcare systems. It is important for qualitative researchers to be self-aware and practice reflective openness throughout the research process (Dahlberg, 2018). I have tried to maintain an open attitude when conducting this research. When conducting the interviews in Study II, the phenomenological approach known as *bridling* was used. This is a shift from a natural attitude into a phenomenological attitude of openness (Dahlberg et al., 2008). A researcher's openness is relevant to the objectivity of their research. I have actively questioned my own understanding of the phenomenon being studied; rather than taking it for granted, I have been evolving my understanding in such a way that it has not developed randomly or too quickly (Dahlberg and Dahlberg, 2019).

Concurrently, my preunderstanding has impact on the research. When working with the analysis, researcher is not without her own preunderstanding and influences (Gadamer, 1999). In the process of a hermeneutic research path, choices must be made: some themes are appropriate, and others are not. The possibility of alternative hermeneutical interpretations should always be kept open (Nyström, 2015). When researcher feels that the data in a text is of no use to them, this can be because the researcher's pre-understanding is so superficial or inappropriate that they cannot grasp the essential meaning in the text (Lindseth and Nordberg, 2004). When

performing the analyses, I depended on my own ability to process and interpret the data. The interpretation process involves forming an understanding of both the parts and the whole (Gadamer, 1999). All this represents an ongoing hermeneutical process in which interpretation and knowledge are developed.

### **Dependability**

To support the dependability of research, the process of data collection and data analysis should be described in enough detail that another researcher can follow the same steps (Stenfors et al., 2020). Study I followed an *a priori* published protocol that was compiled in collaboration with my supervisors and a university librarian to secure a well-prepared search. The Joanna Briggs Institute's Manual for Evidence Synthesis provided methodological guidance for this process (Aromataris and Munn, 2020). The five stages of the review process were described in detail. Standardized data collection forms were developed for use in Study I and are shown in Article 1a, Table 2 (Raja et al., 2021a). In Study II, data were gathered through individual in-depth interviews. These interviews were conducted using the interview guide that is attached to this dissertation (Appendix I). The phenomenological method of RLR was used, and the analysis process is described in the methods section. The constituents and essential structure of meaning are shown in Article 2, Table 2 (Raja et al., 2022).

Study III, a document analysis, followed the six steps laid out by O'Leary (2014). These steps are described in methods section of this dissertation and were combined with the JBI's framework for systematic reviews of text and opinion papers, which provided methodological guidance for the systematic search of databases (McArthur et al., 2020). The inclusion and exclusion criteria used to select relevant documents are shown in Article 3, Table 2 (Raja et al., 2023). The analysis used deductive coding (Bowen, 2009) followed by inductive coding according to the method described by Braun and Clarke (2006). Another possibility would have been to follow only the JBI's framework for systematic reviews of text and opinion papers, and not to combine it with other methods. The JBI method is intended to map text and opinion-based

evidence that is drawn from the expert opinions, consensuses, comments, assumptions or assertions that appear in various journals, magazines, monographs and reports (McArthur et al., 2015). An important part of Study III was its focus on governmental documents from the three studied Scandinavian countries. The aim of Study III was not only to map evidence about older adults' dignity in digitally-led healthcare, but also to add to the body of evidence about this issue.

In all three studies, following the appropriate guidelines has helped ensure a trustworthy research process.

In addition, time is considered as an issue of dependability in this dissertation. The scoping review of literature in Study I includes studies published between 1998 and 2018. A single review cannot provide a complete, unquestionable overview of an area of knowledge (Aromataris and Munn, 2020). Technological and digital development is rapid, and continuous development brings new knowledge. To ensure that the knowledge in this dissertation was up to date, several searches of literature were performed prior to the submission of Study I, after the publication of Study I, and prior to the submission of this dissertation.

### **Confirmability**

Confirmability is understood in this dissertation as the transparent description of the results and the presence of a clear link between the data and the findings (Lincoln and Guba, 1985). This requisite transparency was strengthened in Study I by the use of the JBI's Manual for Evidence Synthesis (Aromataris and Munn, 2020) as a comprehensive guide to structuring the *a priori* published and peer reviewed protocol (Raja et al., 2021a) and conducting each step of the study according to it (Raja et al., 2021b). In Study II, confirmability was strengthened by describing the phenomenon along with the general structure of meaning and its constituents (Raja et al., 2022). Such a structure encompasses both the essential meanings of the phenomenon and individual experiences of it; the essential meanings illuminate the characteristics of the

phenomenon, without which it would not be that specific phenomenon (Dahlberg, 2018). The requisite transparency in Study III was strengthened by the use of the JBI's Framework for Systematic Reviews of Text and Opinion Papers (McArthur et al., 2020). The analysis and results from Studies I-III are described and grounded in data individually in four articles (article 1a, 1b, 2 and 3). These descriptions of analysis and results are elaborated in this dissertation. The potential for going into depth and detail in these articles is influenced by different journal requirements and reviewers. The interview guide, data management plan, notification forms, letters to the organization and participants, and consent schemes are appended to this dissertation (Appendices B-G).

### **Transferability**

Transferability is understood as the extent to which results are usable in other contexts (Guba et al., 1994). Some of the results of this dissertation contribute knowledge to the digitally-led society and healthcare field in Norway insofar as it concerns older adults, and cannot be immediately generalized to other contexts. Regardless, analytical generalization in which the results are considered transferable in relation to other similar settings is nevertheless possibility (Kvale and Brinkmann, 2015). A detailed description of the context in which the research was performed, and how this has shaped the findings, is important in this regard (Stenfors et al., 2020). A description of the organization that the participants in Study II were members of, along with information about northern Norway's digital infrastructure, can be found in the methods section. Information about participants' age, gender, marital status, residence and experience with use of eHealth is provided in Article 2, Table 1 (Raja et al., 2022). This information helps to construct the context that surrounds the research. The town involved in Study II has been anonymized. This led to some limitations, but ethical considerations are essential.



## 7 Conclusions

This dissertation offers new knowledge about perspectives concerning societal digital demands and needs in healthcare services, and how this relates to adults aged 75 years or older and their dignity. The results reveal that aspects of using new digital healthcare services and technology, can impact the dignity of older adults in both positive and negative ways, and this, in turn, has implications for policy. The perspectives concerning older adults' dignity in digitally-led healthcare are: (1) *the importance of human contact*, (2) *the need for help and constant learning when using technology*, (3) *concerns about privacy*, and (4) *safety issues*.

In summary, new technology may provide users with a sense of security, but learning to use a new device often takes extra effort. This study reveals knowledge about older adults experiencing a sense of feeling lost when using new technology, and this impacts their perception of dignified ageing. The loss of their dignity as a result of being thrown into unexpected situations impacts their well-being. Their dignity can be ruptured if their needs for human contact, constant help and privacy in the digital world are not satisfied.

During a digital transformation, it is essential to recognize the importance of human contact. Digital substitutes can have negative effects on the social connections which are essential for mental and physical health and well-being. The results of this dissertation add knowledge about older adults having concerns about reduced human contact in healthcare systems in Norway, and fear what lies ahead. They underline the importance of hearing another person's voice and feeling their presence. This illustrates the relationship between people and objects involved in the practice.

Older adults in the study use their language to express a need for help and constant learning when using technology, thus common understandings of activities are important. They feel that they are not immersed naturally into the digital world, as they have not grown up with digitalization. The findings of this dissertation add new

insights about older adults being expected to have skills that they struggle to achieve; this can be humiliating, diminishing their agency and therefore affecting their sense of dignity. Loss of independence in a continuously more digitized healthcare context can make older adults feel vulnerable and lead to suffering among them.

Older adults have concerns about their privacy in the digital world. They lack information about new digital systems in healthcare in Norway, how these systems are used, and who has access to their personal data. They express their thoughts around the activity, that their privacy is exposed when it is included in data, and this in turn affects their experience of dignity. The results of this dissertation add new knowledge about discrepancies between the ways in which older adults in Norway experience privacy issues when using eHealth systems and the stated aims of the eHealth policies.

The findings of this dissertation reveal knowledge about older adults expecting digitally-led healthcare to provide a new kind of safety. Having the ability to contact healthcare providers if something happens and being followed up makes older adults feel safe. A sense of safety can help to enhance the feeling of being worthy and thereby affect an individual's sense of dignity and well-being.

The results of this study argue for a balance between digital technology's potential benefits and the effort required for its use. Older adults are more open to new technology if its advantages outweighs the efforts needed to adopt it; however, to see the opportunities of digitalization, older adults need to be better informed about technology and given the necessary digital skills. While new digital technology can increase older adults' feelings of vulnerability and insecurity, integrating it into healthcare systems opens up new opportunities and gives older adults a sense of safety. Filling the gaps between digital strategies and eHealth policies and older adults' use of digital systems can be challenging process as it involves political decisions at different levels regarding economy, service providers, training and privacy, while accounting users' digital literacy and needs, traditions, context and governmental aims.

If we want older adults to benefit from digital solutions and eHealth systems, it is essential to emphasize their perspectives. The results of this study add new knowledge about older adults' perspectives and are salient as including older individuals in the process will influence policy making, thereby enhancing the care and well-being of older adults. This dissertation offers a valuable scientific contribution in that it elucidates the gaps between digital strategies and eHealth policies and older adults' needs as users. Furthermore, it calls attention to important aspects to consider when implementing changes in digital strategies and eHealth policies for systems to suit the needs of older adults.

## 7.1 Implications

The results of this study will guide to find new ways of engaging with older adults in order to shape digital development. The study provides an analysis of the impacts of new technology and digitally-led healthcare on the dignity and well-being of older adults and adds new insights into these issues. As participants have shared their experiences including characteristic discourse, relations involved in the process and importance of common understanding of activities. The knowledge that this dissertation provides is especially salient for authorities and policy makers who are responsible for implementing new digital strategies and eHealth policies. They can use this information to implement changes in digitally-led healthcare that suit the needs of older adults. They can gain new knowledge about societal digital demands and needs in healthcare services which concern adults aged 75 years and older and their dignity.

These results relate to European countries, as they map evidence from different European countries, having focus on Scandinavian countries' digital strategies and eHealth policies, and including Norwegian users' perspectives. Results that add new knowledge about older adults living in Norway are especially relevant to Scandinavian countries, as these countries' welfare models and healthcare systems are similar. Three Scandinavian countries welfare states are characterized by their provision of high-quality services for all age-groups and by the importance of regional and

municipal authorities in the provision of healthcare services (Heleniak and Sanchez Gassen, 2020). Digital technologies are viewed as tools with which to fulfil existing national healthcare responsibilities and realize regional goals in these three Scandinavian countries (Nordregio, 2019), and the results of this dissertation may help them to better realize these goals. Common knowledge can help to reduce inequality in countries' policies. A belief in the importance of international collaboration has been strengthened within the cross national research project that this dissertation is a part of.

This research that has used well-known methods of obtaining knowledge from evidence, can bring dialogue, contrast and innovation to countries at the frontier of Europe. The results of this study provide new knowledge about digital strategies which relate to older adults' dignity. This knowledge can help other European countries, which are implementing new digital technologies to take actions to fulfil their healthcare responsibilities, as demographic changes are leading to an ageing population in many European countries and health ministries are investing increasingly in digitalization (WHO, 2019).

For healthcare providers, this knowledge can be used as a source for learning more about older adults' acceptance of digital society and the potential for them to enter into it and the relationship between people and objects involved in this process. The Code of Ethics for Nurses states that it is vital to make sure that technological devices do not replace human relationships (ICN, 2021) and that it is essential to make sure that digital systems are as good as physical meetings. In the process of learning to use new technologies, are actions as well as language used in this activity very important. The results of this study provide new insights into this issue and older adults' struggles in digitally-led healthcare. This knowledge can help to keep foreground older adults' well-being.

The results of this study are also relevant for older adults and their families. Older adults can gain more knowledge about national digital strategies and eHealth policies,

which may reassure them that users' safety and data security is always in focus. Families can learn about what older adults consider important, in terms of their dignity, when entering digitally-led healthcare, and what support they should provide in order to facilitate older adults' well-being. The results indicate that a step-by-step approach to learning is important when older adults are trying to use new technology.

This research relates to the healthcare context. However, the results may arguably be relevant to other contexts that concern older adults and digital developments, for example the provision of digital public services. Governments have a responsibility to create conditions in which citizens can make the most of digital opportunities. The results of this study can help them to find new ways of undertaking digital development while recognizing older adults' needs and dignity.

## **7.2 Recommendations for Further Research**

The results of this study provide new knowledge about societal digital demands and needs in healthcare services as they relate to adults aged 75 years and older and their dignity. This study represents a good platform for the future enhancement of research into older adults' dignity in digitally-led healthcare in Scandinavian countries. There are some specific aspects of this subject that could be considered in future research. Future research in other contexts (not only older adults' homes and home surroundings) could provide even more perspectives on older adults' needs. Individuals living in institutions may have different surroundings, daily routines and levels of dependence on other people. They may experience the use of digital technologies in care settings in multiple different ways.

Older adults in Study II attended meetings at the local older adults' centre and were active. In contrast, homebound individuals may have different perceptions and needs. Older adults' who receive consistent assistance or homecare may have different experiences with digitally-led healthcare. They may be more dependent on other people or experience different challenges and facilitators in their use of technology

due to their specific circumstances. Furthermore, individuals with functional limitations might experience various other challenges. This would be one important area for further research.

Due to my two different specialist areas, including clinical experience, a way forward for deeper research would be including neurological patients or other vulnerable groups, for whom dignity would be more at stake. The functional limitations and speech and language disorders resulting from stroke might be important challenges for older adults when they need to use new technology and digital devices. Older adults experiencing functional limitations may have different experiences of the use of technology in healthcare.

As understanding takes place within a historically and linguistically structured pre-understanding (Gadamer, 1999), the origin of the participants is also important. As the trend in Norway is that older adults stay in rural areas (Norwegian Directorate of Health, 2020), future research could include also older adults from other districts in Norway.

The results of this study show that older adults have concerns about privacy in the digital world and that they need to learn constantly and receive help in order to use technology in healthcare. The results provide guide to the kinds of help that are needed to facilitate the use of technology in this context. Future research could share this information with healthcare providers to see if using the steps outlined in this dissertation can help older adults to adapt to digitally-led healthcare. Future research is also needed into healthcare providers' knowledge about these issues, to see whether they are confident enough about the use of technology to help older adults or whether they need more support to do so.

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## Appendices

Appendix A Exhibition Invitation

Appendix B Data Management Plan

Appendix C Letter from the Researcher to the Organization

Appendix D Risk Assessment

Appendix E Answer from the Norwegian Center for Research Data

Appendix F Answer from INNOVATEDIGNITY Ethical Scrutiny and Advisory Board

Appendix G Letter from the Researcher to the Participants

Appendix H Informed Consent

Appendix I Interview Guide





**INVITATION**  
*Udstilling & åbningsreception*

**Når vi bliver gamle**  
**When we get old**

Åbningsreception: Torsdag den 2. Februar 2023 kl. 15:00

Taler:

- Kathleen Galvin, Projektleder for INNOVATEDIGNITY, professor of Nursing Practice, School of Health Sciences, University of Brighton, England
- Jørn Høgh Nielsen, Formand Ældre Sagen Kolding
- Repræsentanter fra INNOVATEDIGNITYs udstillere

Klik **HER** for at tilmelde dig åbningsreceptionen

Udstillingen kan opleves fra d. 2. februar til d. 31. marts 2023

Dansk Sygeplejehistorisk Museum  
Danish museum of nursing history  
Fjordvej 152, 6000 Kolding, Denmark

INNOVATE  
DIGNITY

INNOVATEDIGNITY  
Training the next generation of leaders to deliver innovations in digital/sustainable care systems for older people

Jayne Tauzer



Data Management Plan

Dignity within digital innovation

Addressing the barriers and facilitators of the societal digital demands in citizens  
75 years and older

**INNOVATEDIGNITY**

**Early Stage Researcher 4** Moonika Raja

Faculty of Nursing and Health Science

Nord University

Norway

**Main supervisor:**

Professor Lisbeth Uhrenfeldt (Nord University)

**Co-supervisors:**

Associate professor Ingjerd G. Kymre (Nord University)

Associate professor Jorunn Bjerkan (Nord University)

Professor Kathleen T. Galvin (University of Brighton)

**Data management.** Early Stage Researcher (ESR) anticipates undertaking 12 interviews.

Interview questions will be created with an emphasis on the following themes: experiences, attitudes and expectations about digitally led society in Norway. If incidental data not relevant to research questions rise, it will be removed from data sets and securely stored before it is destroyed. General Data Protection Regulation (GDPR) will be precisely followed through the data collection and management (1).

Data will be collected using Nettskjema-dictaphone. The device is developed and operated by University Information Technology Center at University of Oslo and is suggested by Nord University's Data Protection Officer as secure technical solution (2). The dictaphone app will send the audio files directly into Institutional password protected server. For security reasons, it will not be possible to play the audio recordings directly on the phone. The recording is encrypted and is temporarily stored on mobile until the phone is online. ESR will make sure that, after the recording, used mobile device will be immediately online, and all data will be directly sent to server. Audio record can last for one hour. In case of longer interview, another record will be started. The files will be saved in MPEG4 format (.m4a), that is optimized for speech. Data will be stored in Institutional password protected server only. Data will not be stored on mobile devices, memory sticks etc. Two-factor authentication is needed to enter the server.

Data will only be available to ESR and her supervisors. Transcriptions will be made from the audio record to form of notes within 3 months after the interview by the ESR who conducted the interview. Interview notes will be typed up according to agreed formats and standards. Data files belonging to the same interviewee will be stored in the same folder. All files that are created during the transcription, from the audio records to form of notes, will be named in a consistent way, and include date of creation (YY-MM-DD) and a short description of the content in the file. Text files will be stored in Institutional two-factor authentication protected servers only and audio files will be erased after end of the project. Estimated end of the project is December 2022.

All processing of personal data will be pseudonymized, so that the data cannot be traced to any individual. Information about participants age, gender, educational level and the experience from usage of digital tools will be gathered. There will exist a key to link the

information to original sources that will be kept separately from the data. Key link will be available only to the researchers during the study. After the study is finished, key link will be erased. Data will be processed lawfully, fairly and in a transparent manner in relation to the research participants. Data will be processed adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed. It will be processed in the manner that ensures appropriate security of the personal data, including protection against unauthorized processing. Nord University as Data Controller, will ensure that the Data Protection Officer is involved in a timely and correct manner in issues relating to personal privacy (3). The research will be presented in anonymized form.

**Open data access plan.** The project will be a part of the Open Research Data Pilot program, Horizon 2020 (4). Open access refers to the practice of providing online access to scientific information that is free of charge to the end-user and reusable (right to read, download, print, search, copy, link and mine). Open access to scientific publications means free online access for any users, open access to research data refers to information collected to be examined and considered as basis for reasoning, discussion, or calculation. It will help to build on previous research results, encourage collaboration, speed up innovation and involve citizens and society (4).

For this study it means that 1) open access to publications and 2) open access to research data (text files of the interviews) will be provided. A machine-readable electronic copy of the published version of peer reviewed manuscript accepted for publication will be deposited in Nord University's repository, Nord Open Research Archive (5). It will give free online access to publications for any users. Research data (anonymized text files of the interviews) will also be deposited in Nord University's repository. The institution registers and maintains the content and configures distribution rules of the material. Measures will be taken to enable which parties to access, mine, exploit and disseminate this research data. The service logs necessary information to avoid misuse of the repository. The material will be stored according to guidelines of the Research Council of Norway and European Commission Directorate-General for Research & Innovation (4, 6). The data is intended to remain re-usable for ten years.

## References

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## Appendix C A Letter from the Researcher to the Organization

### Forespørsel om rekruttering av informanter til forskningsarbeid

Mitt navn er Moonika Raja, og jeg er doktorgradsstipendiat ved Nord Universitet. Jeg har bakgrunn som klinisk logoped med 7 års erfaring fra nevrologisk avdeling og 10 års erfaring å jobbe med eldre mennesker. Jeg jobber med mitt doktorgradsarbeid ved Fakultet for sykepleie og helsevitenskap ved Nord Universitet og et internasjonalt prosjekt med tittelen INNOVATEDIGNITY. INNOVATEDIGNITY er et treårig EU-finansiert prosjekt som startet før jul i 2019 og blir noe forlenget på grunn av covid-19. Det er et omfattende tverrfaglig prosjekt med forskere fra Norge, Danmark, Sverige, Hellas og Storbritannia fra 15 ulike institusjoner som skal undersøke hvordan dagens omsorgsordninger påvirker eldre menneskers livskvalitet. Prosjektet skal bruke eldregenerasjonens egne erfaringer i forskningen på nye og innovative omsorgsmodeller, samt se på hvordan digitale hjelpemidler kan brukes for å gi de eldre et verdig møte med fremtidens omsorgsapparat. Professor i sykepleiepraksis ved universitet i Brighton, Kathleen Galvin, leder prosjektet fra Storbritannia. Professor i Fakultet for sykepleie og helsevitenskap, Lisbeth Uhrenfeldt, er ledende forsker i Nord universitet, samt med førsteamanuensis Ingjerd Gåre Kymre.

I forbindelse med mitt doktorgradsarbeid søker jeg herved om tillatelse til å gjennomføre intervju med 12 eldre mennesker rekruttert gjennom Tusenhjemmets Kultur og Kunnskapscenter. Aktuelle informanter er 75 år gamle eller eldre, bor i Norge og har kompetanse til å gi samtykke.

Prosjekttittel: *« Eldre menneskers erfaringer og forventninger om digitalt ledet helsevesen i Norge »*

Norsk Samfunnsvitenskapelig Datatjeneste (NSD) blir kontaktet for godkjenning av arbeidet. Intervjupersoner og tekstdata vil bli anonymisert. Informasjonsbrevet til informantene er skrevet ut fra en standard mal fra NSD. Personvernombudet ved Nord Universitet har innsyn i arbeidet. Jeg legger ved en fil med forespørsel om deltakelse til aktuelle informanter. Deltakelse er basert på frivillighet og de som takker ja, likevel kan trekke sitt samtykke tilbake uten å oppgi noen grunn.

Dersom jeg får tillatelse til å rekruttere intervjupersoner gjennom dere, håper jeg at en kontaktperson ved Tusenhjemmet Kultur og Kunnskapssenter kan formidle disse til aktuelle informanter, og så gi meg tilbakemelding med kontaktinformasjon. Deretter blir aktuelle informanter kontaktet og nærmeste avtale om tidspunkt kan da gjøres. Jeg vil sette av tilstrekkelig tid til at dette kan gjennomføres uten at mennesker belastes unødige. Hvis man har spørsmål kan man gjerne ringe eller ta kontakt på E-post.

Med vennlig hilsen

Stipendiat Moonika Raja

Fakultet for sykepleie og helsevitenskap

Nord Universitet

8049 Bodø

Telefon: +47 75517765

E-postadresse: [moonika.raja@nord.no](mailto:moonika.raja@nord.no)

[www.nord.no](http://www.nord.no) ; [www.innovatedignity.eu](http://www.innovatedignity.eu)



## Appendix D Risk Assessment

### Risk assessment

#### Dignity within digital innovation

#### Addressing the barriers and facilitators of the societal digital demands in citizens 75 years and older

##### INNOVATEDIGNITY

**Early Stage Researcher 4** Moonika Raja

Faculty of Nursing and Health Science

Nord University

Norway

##### **Main supervisor:**

Professor Lisbeth Uhrenfeldt (Nord University)

##### **Co-supervisors:**

Associate professor Ingjerd G. Kymre (Nord University)

Associate professor Jorunn Bjerkan (Nord University)

Professor Kathleen T. Galvin (University of Brighton)

##### **Date:**

28.04.2020

Identified Risks	Likelihood	Potential Impact/Outcome	Risk Management/Mitigating Factors
Travel risks to location of research project: <ul style="list-style-type: none"> <li>Road accident</li> <li>Encountering wild animals</li> </ul>	Low	Researcher: <ul style="list-style-type: none"> <li>Physical injury</li> <li>Psychological harm</li> </ul>	Awareness of options for mode of travel. Awareness of physical environment. Travel with companion.
Fire risk at the location	Low	Participant: <ul style="list-style-type: none"> <li>Physical injury</li> <li>Psychological stress</li> </ul> Researcher: <ul style="list-style-type: none"> <li>Physical injury</li> <li>Psychological stress</li> </ul>	Researcher to be aware of health and safety policies of research location: fire bells, location of fire alarms, location of exits.
Fear of Coronavirus disease (COVID-19)	High	Participant: <ul style="list-style-type: none"> <li>Psychological stress</li> </ul> Researcher: <ul style="list-style-type: none"> <li>Psychological stress</li> </ul>	Follow updated information and advice from the Government. Follow infection prevention strategy. Ask the participant if there is some way to make it more comfortable.
Discussion of a sensitive topic in an interview has potential to cause distress to participant	Medium	Participant: <ul style="list-style-type: none"> <li>Psychological stress</li> </ul> Researcher: <ul style="list-style-type: none"> <li>Anxiety about dealing with a complex situation</li> </ul>	Offer to take a pause. Offer to move to next question. Offer to cease interview. Signpost participant to external/internal support services.
Not understanding a question has potential to cause distress to participant	Low	Participant: <ul style="list-style-type: none"> <li>Psychological stress</li> </ul> Researcher: <ul style="list-style-type: none"> <li>Anxiety about dealing with a complex situation</li> </ul>	Prepare different ways asking the same question. Prepare explanations and examples. Allow extra time to familiarize with the theme. Offer to move to next question.

Disclosure of unmet health or social care needs	Low	Immediate, urgent or prompt response may be required from service providers	Ensure all verbal and written information about research indicates possible researcher response to disclosure. Signpost participant to external/internal support services.
Research participant in danger of harm to self or others	Low	Immediate or urgent response may be required from service providers or emergency services	Ensure all verbal and written information about research indicates possible researcher response to indication of danger to self or others. Signpost participant to external/internal support services.
Participant becomes ill or has an accident during the interview	Low	Immediate or urgent response may be required from emergency services	Researcher to be aware of health and safety policies. The participant will be able to make decision as to whether they would like another member of their family or carer present.
Researcher is in danger of physical threat or abuse	Low	Researcher: <ul style="list-style-type: none"> <li>• Psychological harm</li> <li>• Physical injury</li> </ul> Leave the location. Inform supervisors. Inform service providers if needed.	Maintain a safe and appropriate distance. Signpost participant to external/internal support services. Signpost researcher to external/internal support services.
Researcher being in a compromising situation, in which there might be accusations of improper behavior	Low	Researcher: <ul style="list-style-type: none"> <li>• Psychological harm</li> </ul>	The participant will be able to make decision as to whether they would like another member of their family or carer present. Signpost researcher to external/internal support services.
Psychological trauma as a result of what is disclosed during interaction with participants	Low	Researcher: <ul style="list-style-type: none"> <li>• Psychological harm</li> </ul>	Signpost researcher to external/internal support services.



## Answer from the Norwegian Center for Research Data

### Dignity within digital innovation

Addressing the barriers and facilitators of the societal digital demands in citizens  
75 years and older

#### **INNOVATEDIGNITY**

**ESR 4** Moonika Raja

Faculty of Nursing and Health Science

Nord University

Norway

#### **Main supervisor:**

Professor Lisbeth Uhrenfeldt (Nord University)

#### **Co-supervisors:**

Associate professor Ingjerd G. Kymre (Nord University)

Associate professor Jorunn Bjerkan (Nord University)

Professor Kathleen T. Galvin (University of Brighton)

NSD sin vurdering

**Prosjekttittel**

Eldre menneskers erfaringer og forventninger om et digitalt ledet helsevesen i Norge

**Referansenummer**

916119

**Registrert**

15.10.2020 av Moonika Raja - moonika.raja@nord.no

**Behandlingsansvarlig institusjon**

Nord Universitet / Fakultet for sykepleie og helsevitenskap / Helsevitenskap

**Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)**

Lisbeth Uhrenfeldt, lisbeth.uhrenfeldt@nord.no, tlf: +4529441063

**Type prosjekt**

Forskerprosjekt

**Prosjektperiode**

02.11.2020 - 15.12.2022

**Status**

23.10.2020 - Vurdert

**Vurdering (1)****23.10.2020 - Vurdert**

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg 23.10.2020. Behandlingen kan starte.

MELD VESENTLIGE ENDRINGER Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til NSD ved å oppdatere meldeskjemaet. Før du melder inn en endring, oppfordrer vi deg til å lese om hvilke type endringer det er nødvendig å melde:

[https://nsd.no/personvernombud/meld\\_prosjekt/meld\\_endringer.html](https://nsd.no/personvernombud/meld_prosjekt/meld_endringer.html) Du må vente på svar fra NSD før endringen gjennomføres.



TYPE OPPLYSNINGER OG VARIGHET Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 15.12.2022. LOVLIG GRUNNLAG Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

PERSONVERNPRINSIPPER NSD vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om: - lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen - formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke behandles til nye, uforenlige formål - dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet - lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: åpenhet (art. 12), informasjon (art. 13), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19), dataportabilitet (art. 20). NSD vurderer at informasjonen om behandlingen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13. Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned. FØLG DIN INSTITUSJONS RETNINGSLINJER NSD legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32). Dersom du benytter en databehandler i prosjektet må behandlingen oppfylle kravene til bruk av databehandler, jf. art 28 og 29. For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og/eller rådføre dere med behandlingsansvarlig institusjon. OPPFØLGING AV PROSJEKTET NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet. Lykke til med prosjektet! Tlf. Personverntjenester: 55 58 21 17 (tast 1)



## Appendix F Answer from INNOVATEDIGNITY Ethical Scrutiny and Advisory Board



Ethical Scrutiny and Advisory Board 9th November 2020

### **Project 4: Moonika Raja**

**First reader: Cathrine Fredriksen Moe, Nord University, Norway**

**Second reader: Nikos Bakalis, University of Patras, Greece**

**Project title:** Addressing the barriers and facilitators of the societal digital demands in citizens 75 years and older.

The major ethical issues in this project is data protection/data management and good practice for ethics.

The research project is conducted in accordance with applicable legislation and international ethical guidelines. General data protection regulation (GDPR) and general guidelines for research ethics by the Norwegian national committee for medical and health research ethics (NEM) will be followed. It is not stated that all activity will comply with the declaration of Helsinki or the Charter of fundamental rights of the European union, but the Ethical scrutiny board assess that the central principles are covered.

The project is approved by the Norwegian center for research data (NSD), reference number 916119. Nord University's data protection officer will make sure that the regulations are complied with and protects the personal privacy interests of everyone on whom the researcher has recorded information. The research project is not assessed by the regional ethic committee (REK) and the project documents do not inform of the ethical justification of not asking for ethical approval from them.

The participants of the study are citizens 75 years and older and may be considered as a vulnerable group. The research team has described how to address ethical issues concerning this: To avoid any risk of coercion, there will be a general principle that no contact will be made from the research team until participants have received some project information, including the benefits and inconveniences of taking part. The information letter clearly states that there is no obligation to take part in the study. Participants will be assured that the information will be treated confidentially according to the Norwegian national committee for research ethics in social sciences and the humanities (NESH). The open research data pilot

program, Horizon 2020, will be included in consent forms. The participation in interview is voluntary and the participants have their rights to withdraw from participating. The participants will be informed that they can stop the interview at any time or choose not to answer any specific questions. A risk assessment and guidance for the researcher creating a positive and safe working environment when working with vulnerable older people is attached. With respect to vulnerable older people, technique of capacity interviewing (CI) will be used.

The research project has met the criteria according to the INNOVATEDIGNITY Template Horizon 2020 "DATA MANAGEMENT PLAN (DMP)". See the following comments:

The purpose of the data collection is clearly stated (Examine older people's perspectives of care systems, focusing on dignity and investigating the potential for digital innovation that is person centered to provide knowledge for sustainable care that enables older people to live well). In addition, issues related to data collection analyzed quite well. For example, anonymity, confidentiality, consent forms, appropriate participant information described, and forms provided.

Participants identified and the researcher has stated that she will get permission to conduct twelve (12) interviews. A letter including all the necessary information provided (aim of the project, responsible institution and person, benefits participating to the project, participants anonymity-voluntary-confidentiality-rights).

Data will be collected using Nettskjema-dictaphone. The device seems to be reliable and valid since is developed and operated by University Information Technology Center at University of Oslo and is suggested by Nord University's Data Protection Officer as secure technical solution. Details provided regarding the data collection, coding and analyses (all processing of personal data will be pseudonymized, there will exist a key to link the information to original sources).

Researcher also provides useful and clear information related to data availability after the end of the research project (key link will be erased), how access will be provided in case there are any restrictions, and if data need to be re-use (research data will be deposited in Nord University's repository).

Last, but not least, the research project a) described a policy in order to create a positive and safe working environment when researcher working with vulnerable older people and b) risk assessment tools have been developed including identified risks, potential impact/outcome and risk management tools.

We confirm that the project has complied with local requirements following the guidelines of NEM and NESH, and the study is approved by the Norwegian center for research data (NSD).

## Appendix G A Letter from the Researcher to the Participants

### Vil du delta i forskningsprosjektet

### *«Eldre menneskers erfaringer og forventninger om et digitalt ledet helsevesen i Norge» ?*

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å finne ut hvordan digitale hjelpemidler kan brukes for å gi de eldre et verdig møte med fremtidens omsorgsapparat. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

#### **Formål**

Dette prosjektet er en del av internasjonalt prosjekt med tittelen INNOVATEDIGNITY. INNOVATEDIGNITY er et omfattende tverrfaglig prosjekt med forskere fra Norge, Danmark, Sverige, Hellas og Storbritannia fra 15 ulike institusjoner som skal undersøke hvordan dagens omsorgsordninger påvirker eldre menneskers livskvalitet. Prosjektet skal bruke eldre generasjonens egne erfaringer i forskningen på nye og innovative omsorgsmodeller, samt se på hvordan digitale hjelpemidler kan brukes for å gi de eldre et verdig møte med fremtidens omsorgsapparat.

Det overordnede formålet til dette delprosjektet er å bruke eldre menneskers erfaringer med bruk av digitale hjelpemidler og forventninger om digitale løsninger som helsevesenet i Norge tilbyr- for å gi eldre et verdig møte med et digitalt ledet helsevesen i Norge.

Opplysningene skal brukes til å få mer kunnskap om eldre menneskers erfaringer og forventninger om et digitalt ledet helsevesen i Norge.

Resultatene skal publiseres på engelsk i internasjonale tidsskrifter.

#### **Hvem er ansvarlig for forskningsprosjektet?**

Ansvarlig forsknings institusjon er Nord Universitet, fakultet for sykepleie og helsevitenskap.

Ved Nord Universitet er prosjektansvarlig professor Lisbeth Uhrenfeldt, andre ledende forskere ved Nord Universitet er førsteamanuensis Ingjerd Gåre Kymre (Bodø) og biveileder førsteamanuensis Jorunn Bjerkan (Levanger). Prosjektmedarbeider med ansvar for den praktiske gjennomføring i Norge er Moonika Raja, stipendiat ved Fakultet og helsevitenskap ved Nord Universitet (Bodø).

Professor Kathleen Galvin ved universitet i Brighton er prosjektkoordinator for INNOVATEDIGNITY.

Vi er 15 stipendiater som jobber med ulike delprosjekter. Arbeidet skal resultere i en felles kunnskapsbase som et bidrag til dem som skal lede framtidens eldreomsorg i Europa.

### **Hvorfor får du spørsmål om å delta?**

Du får spørsmål om å delta fordi du bor i Norge og er 75 år eller eldre. Du kan bidra med dine erfaringer og forventninger i dette forskningsprosjektet. Vi fant fram til deg gjennom å kontakte kontaktperson ved Tusenhjemmets Kultur og Kunnskapssenter. Du er blant dem som det ble aktuelt å spørre.

Hvor mange blir spurt? Vi ønsker å gjennomføre intervjuer med 12 mennesker.

Dersom du ikke ønsker å delta vil vi spørre deg om det er greit at vi gjør en anonymisert registrering av at du ble spurt.

### **Hva innebærer det for deg å delta?**

Hvis du velger å delta i prosjektet, innebærer det at du deltar i et intervju. Intervjuet inneholder spørsmål om erfaringer og meninger om digitalt utstyr som du har brukt og digitale løsninger som helsevesenet i Norge tilbyr. Jeg tar lydopptak og notater fra intervjuet. Det vil ta i underkant av 1 time. Ved behov kan vi ta en pause underveis.

### **Det er frivillig å delta**

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du likevel, når som helst trekke ditt samtykke tilbake uten å oppgi noen grunn. Personopplysninger om deg vil da bli slettet.

Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

## **Ditt personvern- hvordan vi oppbevarer og bruker dine opplysninger**

Vi vil bruke opplysningene om deg til de formålene vi har fortalt om i dette skrivet. Intervju inneholder dato, alder, kjønn og utdanningsnivå. Vi behandler alle opplysningene konfidensielt. Vi behandler opplysningene i samsvar med personvernregelverk, iverksatt i juli 2018.

De som får tilgang til opplysningene er bare de medlemmene i prosjektgruppen fra Nord Universitet i Norge og universitet i Brighton, Storbritannia. For å sikre at ingen uvedkommende får tilgang til personopplysningene vil kun en kode kople kontaktopplysningene dine med navn.

Prosjektmedarbeider, Moonika Raja, tar lydopptak fra intervjuet med Nettskjema-diktafon som er diktafon-app for telefon, utviklet av Universitet i Oslo. Diktafon-appen sender lyd-filene direkte til innelåst enhet. Av sikkerhetsgrunner er det ikke mulig å avspille lydopptaket direkte fra telefonen. Ingen utenom dem som samler inn og analyserer datamaterialet får høre intervju opptak.

Samtykkeerklæringen lagres separat fra lydopptak. Datamaterialet lagres innelåst og knyttes ikke til private enheter. Forsker som gjennomfører Intervju, transkriberer lydopptak til tekst-filer senest 3 måneder etter intervju og filene lagres innelåst.

Deltakerne vil ikke kunne gjenkjennes i publikasjoner.

## **Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?**

Dette prosjektet skal etter planen avsluttes i desember 2022. Opplysningene anonymiseres og lagres forsvarlig ved Nord Universitet. Lydopptakene slettes. Dette prosjekt er en del av åpen data program «*The Open Research Data Pilot Program*». Det betyr at de anonymiserte tekstfilene lagres forsvarlig ved Nord Universitets vitenarkiv. Vitenarkiv er en tjeneste hvor materiale som produseres ved den behandlingsansvarlige institusjonen kan arkiveres og gjøres åpent tilgjengelig. Institusjonen (Nord Universitet) registrerer og vedlikeholder

innholdet, og konfigurerer distribusjonsregler for materialet. Tjenesten loggfører nødvendig informasjon for å hindre misbruk av vitenarkivet.

Formålet med behandlingen av personopplysninger er å kunne levere forskning på nasjonalt og internasjonalt faglig høyt nivå til gagn for fremtidige digitale løsninger i helsevesen.

## Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få utlevert en kopi av opplysningene,
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg,
- å sende klage til Datatilsynet om behandlingen a dine personopplysninger.

## Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Nord Universitet skal NSD- Norsk senter for forskningsdata AS vurdere at behandlingen av personopplysninger i dette prosjektet er i samsvar med personregelverket.

## Hvor kan jeg finne ut mer?

Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Forsker/stipendiat Moonika Raja; Nord Universitet, Bodø. [Moonika.raja@nord.no](mailto:Moonika.raja@nord.no); telefon: 75 51 7765
- Professor Lisbeth Uhrenfeldt; Nord Universitet, Bodø. [Lisbeth.uhrenfeldt@nord.no](mailto:Lisbeth.uhrenfeldt@nord.no)
- Førsteamanuensis Ingjerd Gåre Kymre; Nord Universitet, Bodø. [Ingjerd.g.kymre@nord.no](mailto:Ingjerd.g.kymre@nord.no)
- Førsteamanuensis Jorunn Bjerkan; Nord Universitet, Levanger.



- INNOVATEDIGNITY koordinator Professor Kathleen T. Galvin; University of Brighton, Falmer Campus.
- Behandlingsansvarlig institusjon: Nord Universitet [www.nord.no](http://www.nord.no)
- Vårt personvernombud: Toril Irene Kringen [personvernombud@nord.no](mailto:personvernombud@nord.no) ;  
telefon: 74 02 2750
- NSD-Norsk senter for forskningsdata AS, [personvernombudet@nsd.no](mailto:personvernombudet@nsd.no) ; telefon: 55 58 2117





## Appendix H Informed Consent

### Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Eldre menneskers erfaringer og forventninger om et digitalt ledet helsevesen i Norge», og har fått anledning til å stille spørsmål. Jeg samtykker til:

- å delta i intervju
- at anonymisert tekstfil om lydopptak lagres etter prosjektslutt i vitenarkiv ved Nord Universitet som del av åpen data programmet «*The Open Research Data Pilot Program*»

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, ut desember 2022.

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(Signert av prosjektdeltaker, dato)



## Appendix I Interview Guide

ESR: Moonika Raja, Faculty of Nursing and Health Science, Nord University

Main supervisor: Professor Lisbeth Uhrenfeldt, Nord University

Co-supervisor: Associate professor Ingjerd G. Kymre, Nord University

Co-supervisor: Associate professor Jorunn Bjerkan, Nord University

Co-supervisor: Professor Kathleen K. Galvin, University of Brighton

### Older adults' experiences and expectations about digitally-led healthcare in Norway

The aim of the study is to clarify the phenomenon of sense of dignity experienced in older adults concerning how their expectations and needs are met within the context of digitally-led healthcare in Norway.

Background to the questions	What would I like to know more about?	Questions
Introducing questions.	How can the participants be characterized?	Questions about age, gender, level of education and experience from using digital technology.
Older adults in Europe have experienced both technology making life easier and the opposite. <sup>1,2,3</sup> Using a new digital technology could at first be frightening or it needs extra efforts to adopt a new strategy. <sup>3,4,5</sup>	What have older adults in Norway experienced when using new digital technology?	Have you ever used digital technology? Can you tell me more about it? Can you describe another example of the use of technology? Can you tell me more about this?
Older adults that were considering using home care robots were concerned that robot's camera might not respect their private life. <sup>5</sup> On the contrary research found that older adults have far less fear of being observed than researchers expected. <sup>4</sup>	What kind of barriers have older adults in Norway experienced when using technology? What kind of concerns older adults have about using digital technology?	What obstacles have you experienced when it comes to using technology? Can you tell me more about the barriers you have experienced?
Studies conducted in Europe show that technology gives a sense of security because it helps to reach help. <sup>4,6,7</sup>	What have older adults in Norway experienced concerning this issue?	Have you experienced that technology can give a sense of security? Can you tell me more about this?

<p>It was found that both social support and lack of social support could facilitate using technology and digital assistive devices.<sup>1,8</sup></p>	<p>What kind of support is needed to facilitate the use of technology?</p>	<p>Have you ever received help from someone to use digital technology? Can you tell me more about that? Have you experienced receiving help that was useful? Can you tell me more about this?</p>
<p>Studies in Europe have stated that it is important for older adults that technology would be easy to use.<sup>3</sup></p>	<p>What are older adults expectations and needs when using digital solutions offered by the Norwegian health system?</p>	<p>Have you ever used digital solutions offered by the Norwegian health system? Can you tell me more about this? Have you ever used digital aids? Can you tell me more about this?</p>

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## Interview Guide

Age:

Gender:

Level of education:

Experience from using digital technology:

### Questions about the use of technology

*When I say word “technology” what comes to mind for you? When I use the term “digital technology” what comes to mind for you? What is digital technology? (I will give my examples if needed, so we would be talking about the same thing)*

*Have you ever used digital technology? Can you tell me more about that? Can you give me some examples of what it was like for you?*

*Can you describe another example of using technology? Can you tell me more about this? Can you give me some examples of what it was like for you?*

### The barriers

*What obstacles have you experienced when it comes to use of technology? Can you tell me more about the barriers you have experienced?*

*Have you ever experienced that technology does not respect your privacy? Can you tell me more about this situation?*

*Have you ever experienced a situation where you felt undignified or sensed a lack of dignity when it comes to the use of technology?*

*What other kinds of experiences can you describe when using technology or digital technology?*

### Help and support

*Have you ever received help from someone to use digital technology? Can you tell me more about that?*

*Have you experienced receiving help that was useful? Can you tell me more about this experience?*

*Have you experienced that technology can give you a sense of security? Can you tell me more about it?*

### Digital solutions offered by the healthcare system in Norway

There are various digital solutions in use in healthcare system in Norway. For example: e-prescriptions, electronic medical records, digital dialogue with healthcare professionals, access to your own hospital medical records, digital appointments with your general practitioner etc.

*Have you ever used digital solutions offered by the Norwegian health system?*

*(If no experience: Is there any reason you can tell me about? Do you know anyone else who has this experience?)*

*Can you tell me more about that?*

*Have you ever used digital assistive devices? Can you tell me more about that?*

*(If no experience: Do you know anyone else who has this experience?)*

### **Expectations**

*What is important in relation to digital solutions that the health system in Norway offers?*

*What are your expectations for the digital solutions of the future?*



## Part 2

The four articles this dissertation is based on

- 1a Raja M, Bjerkan J, Kymre IG, Galvin KT, Uhrenfeldt L. The digital development within society that persons of 75 years and older in European countries have been part of: A scoping review protocol. *Journal of Nursing Education and Practice*. 2021a;11(6):9-15. doi:10.5430/jnep.v11n6p9
- 1b Raja M, Bjerkan J, Kymre IG, Galvin KT, Uhrenfeldt L. Telehealth and digital developments in society that persons 75 years and older in European countries have been part of: a scoping review. *BMC Health Services Research*. 2021b;21:1157. doi:10.1186/s12913-021-07154-0
- 2 Raja M, Uhrenfeldt L, Galvin KT, Kymre IG. Older adults` sense of dignity in digitally led healthcare. *Nursing Ethics*. 2022;1-12. doi:10.1177/09697330221095140
- 3 Raja M, Kymre IG, Bjerkan J, Galvin KT, Uhrenfeldt L. National digital strategies and innovative eHealth policies concerning older adults` dignity: A document analysis in three Scandinavian countries. *BMC Health Services Research*. 2023;23:848. doi:10.1186/s12913-023-09867-w



## REVIEWS

# The digital development within society that persons of 75 years and older in European countries have been part of: A scoping review protocol

Moonika Raja\*<sup>1</sup>, Jorunn Bjerkan<sup>1</sup>, Ingjerd G. Kymre<sup>1</sup>, Kathleen T. Galvin<sup>2</sup>, Lisbeth Uhrenfeldt<sup>1</sup>

<sup>1</sup>Faculty of Nursing and Health Sciences, Nord University, Norway

<sup>2</sup>School of Health Sciences, University of Brighton, Brighton, United Kingdom

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## ABSTRACT

Over the past decades countries of the world have experienced increase in the share of older people in demographics and the number is expected to rise even more. People are becoming more than ever dependent on digital technologies. The aim of this study is to map the body of literature concerning historical digital development over the last 20 years that people of 75 years and older in European countries have been part of. Moreover the goal is to identify research gaps in the existing literature in order to inform future research. The five-staged Arksey and O'Malley methodology framework is used to guide the scoping review process. Research strategy and eligibility criteria are defined. The study selection is made based on the eligibility criteria. A framework developed for the scoping review informs the charting of data from the included studies. Results will be summarized with criteria relevant for policy-makers, healthcare providers and the public.

**Key Words:** Older people, Europe, Digital technology, Telemedicine

## 1. INTRODUCTION

The world's population is ageing: virtually every country in the world is experiencing growth in the numbers and the population aged 65 and over is growing faster than any other age group.<sup>[1]</sup> In 2019 one in 11 people in the world were aged 65 or over, it is expected that by 2050, one in six people will be over 65 years old.<sup>[2]</sup> The number of persons aged 80 years or over is projected to triple between 2019 and 2050.<sup>[1]</sup>

Demographic changes are also leading to an ageing population in Europe.<sup>[3,4]</sup> In early 2018 almost one fifth of the total population living in the EU countries were older people, the relative share of people 65 years and older of the total population in 2050 is projected to reach 28.5%.<sup>[5]</sup> Today, in

Norway, over one in nine people are aged 70 years or older, this percentage is set to expand.<sup>[6]</sup> In Denmark the share of older people has noticeably increased during the last 10 years and in Sweden the largest demographic group growth in next decade is expected among older people.<sup>[7,8]</sup> The life expectancy in Nordic countries and other parts of Europe has increased over the past decades and is expected to rise continually.<sup>[5]</sup>

Population ageing is poised to become one of the most notable social transformations of the twenty-first century, with implications for many sectors of the society, including healthcare.<sup>[1,3]</sup> In addition to countries' healthcare systems, other sectors must respond by creating the environments that sup-

\* **Correspondence:** Moonika Raja; Email: [moonika.raja@nord.no](mailto:moonika.raja@nord.no); Address: Faculty of Nursing and Health Sciences, Nord University, Bodø, Norway.

port older people.<sup>[11]</sup> Observers argue that ageing in Europe provides a stimulus for developing new goods and services that also would be adapted to the needs of older people, as citizens expect to live increasingly long lives.<sup>[5]</sup>

Digital technologies are being used more than ever: there are benefits in different areas in daily life, the list is continually expanding.<sup>[9, 10]</sup> Devices that would have been two decades ago regarded as science fiction are now often taken for granted.<sup>[11]</sup> Learning and using new technologies by the older people is seen as a demand for their integration in society.<sup>[12, 13]</sup>

## 1.1 Background

Digitalization impacts older people, the existing literature shows that an age-related digital divide remains, people from 55 years and older lag behind in using and benefiting from IT in general.<sup>[14, 15]</sup> A recent study about acceptance of mobile health applications (mHealth Apps) use among people with hypertension in Austria and Germany, showed that age has a negative association with the intention to use the Apps.<sup>[16]</sup> Similarly a research from the United Kingdom found that those using Smartphone Apps and Wearable Trackers were younger than those who did not.<sup>[17]</sup> A review study on internet use and the quality of life of the older people suggests that adults with a stronger social network can get help from younger generation, but those without that possibility cannot often keep up with the digitalization.<sup>[18]</sup> A research among adults from the United Kingdom proposes that Internet users, particularly 65 years and older, are less likely to feel lonely and have higher mental wellbeing scores.<sup>[19]</sup> It is found that internet usage can improve the quality of life by decreasing loneliness and integrating older people into society.<sup>[18]</sup>

The reality of the twenty-first century with societal digital demands see fostering digital literacy in the older people as a means to secure their needs and human rights.<sup>[13]</sup> The rapid development of information and communication technologies brings also wider use of homebased telemedicine.<sup>[20]</sup> Usage of telemedicine may benefit citizens with complex, multidimensional problems, as often occurs with many cases of older people.<sup>[21]</sup> In some cases telemedicine might replace face-to-face contact with health personnel, a study made in France showed that geriatric teleconsultations prevented hospitalization for 83.3% of cases.<sup>[22]</sup> In contrast a research from Sweden showed that telemedicine users visit the emergency room at least as often as other residents.<sup>[23]</sup>

The proportion of older people using Internet and digital devices has increased in recent years.<sup>[22]</sup> In Denmark the percentage of Internet usage in population in 2017 reached 97 percent and in Sweden and Norway in 2018 reached 98

percent.<sup>[8, 25, 26]</sup> But a high proportion of older people are still not experienced digital users.<sup>[24]</sup> In 2017 two fifths of people of 65 years and older in the EU 28 countries had never used a computer.<sup>[8]</sup>

In the European Region health ministries are increasingly investing in digitalization.<sup>[27]</sup> European national healthcare systems have started to move towards a provision which includes services offered by digital means, like accessing personal health records, scheduling medical appointments on the web and communicating remotely with care providers.<sup>[28]</sup> A program analysis between 2014 and 2016 in Austria, Croatia, Germany, Hungary, the Netherlands, Norway and the United Kingdom showed that it is widely accepted that the evolution of digital health tools alongside clear policies toward their adoption will facilitate regional uptake and scale-up of services with embedded digital health tools.<sup>[29]</sup>

The Danish Digital Health Strategy 2018-2022 focuses on digitalization and the use of health data in context of prevention, care, and direct treatment.<sup>[30]</sup> The Norwegian digitalization strategy for 2017-2022 aims for the citizens to have easy and safe access to healthcare services.<sup>[31]</sup> Norwegian citizens should have one digitalized patient journal with all the information about one's health, easy access to E-prescription, E-consultation, access to see and book available doctor appointments, get information about patient rights and available healthcare services.<sup>[32, 33]</sup> Sweden's vision for eHealth in 2025 overall goal is to be the leader in using eHealth to make it easier for all the citizens to achieve good and equal health and welfare, and to strengthen their own resources for participation in the life of society.<sup>[34]</sup>

In Europe older people are expected to embrace such technological shifts in healthcare just as much as other age groups.<sup>[35]</sup> The rapid development of information and communication technologies and the use of homebased telemedicine brings new advantages but new challenges as well.<sup>[20]</sup> There exists reviews from Europe concerning telemedicine and older people: one review study about telehealth initiatives in palliative care in the United Kingdom aimed to scope the information available from published and unpublished research, with particular reference to older people<sup>[36]</sup> another review study about the different technological solutions conceived for patients suffering from Alzheimer's disease and their caregivers.<sup>[37]</sup> Both studies were published in 2011.<sup>[36, 37]</sup> As telemedicine develops rapidly, up to date research is needed.<sup>[20]</sup>

Scoping studies can be useful to map the body of literature, clarify key concepts and identify knowledge gaps in the evidence.<sup>[38, 39]</sup> Such research will raise understanding, about what older people have experienced about using new devices,

as society has developed digitally.

## 1.2 Study objective

This study aims to map the body of literature concerning historical digital development over the last 20 years that people of 75 years and older in European countries have been part of. The purpose is to address main barriers and facilitators of the societal digital demands that older people have experienced. To know the aged citizen's acceptance and potential for entering the digital society, will inform both authorities, system developers, healthcare providers and the public in order to improve development of future systems and thereby the inclusion of aged population in the digital context. This knowledge can be useful concerning digital strategies for use in healthcare services. Moreover the goal is to identify research gaps in the existing literature in order to inform future research.

In this scoping review, we consider studies that include a population of 75 years and older at the time of the study. The concept of included studies cover telemedicine, communication technology and digital devices. The context of included studies is Europe and participants own home or home surroundings.

## 2. METHODS AND ANALYSES

A framework proposed by Arksey and O'Malley will be used to guide this scoping review process.<sup>[40]</sup> The original framework has been further developed by Levac and colleagues<sup>[41]</sup> and the Joanna Briggs Institute.<sup>[42]</sup> The review process includes 5 stages: identifying the research questions, identifying relevant studies, study selection, charting the data, collating, summarizing and reporting the results.<sup>[40]</sup>

### 2.1 Identifying the research questions

Arksey and O'Mally propose that an iterative process is required in order to formulate research question(s).<sup>[40]</sup> Research questions for this study are developed through an iterative process and familiarizing with the literature. The participants in this systematic scoping review are European citizens (+75). The concept of investigations is their experiences concerning digital demands. The context of the review is older people's own home. This review is guided by a main broad research question:

*What is known from the literature about what citizens of 75 years and older in European countries have experienced, as society has developed digitally (1998-2018)?*

Furthermore, two secondary research questions are used to guide this review:

*What are the main barriers for people of 75 years and older*

*in European countries concerning societal digital demands? What are the main facilitators for people of 75 years and older in European countries concerning societal digital demands?*

### 2.2 Identifying relevant studies

According to Arksey and O'Malley,<sup>[40]</sup> the criteria in use for identifying relevant studies is developed by the team of researchers in collaboration with an experienced university librarian. The scoping review include published studies retrieved from the following electronic databases: MEDLINE via Pubmed, Scopus, CINAHL and Embase. The keywords to be used during the search are shown in Table 1. We use English search terms in the strategy. The specific terms may change slightly depending on the database, however, the main keywords will be used throughout. Boolean logic that contains combination of MeSH Terms and Text Words will be used.<sup>[43]</sup> Detailed search strategy for MEDLINE via Pubmed is seen in Appendix 1.

This scoping review will include primary research studies with different study designs: qualitative studies, quantitative research and mixed method research. As recommended by the Johanna Briggs Institute,<sup>[42]</sup> unpublished literature will be included. Text (e.g. government recommendations and political documents) and opinion papers will be excluded. Papers published between 1998 and 2018 will be included. This period is chosen because digital development has spread rapidly during the last two decades.<sup>[10,44]</sup> European Parliament<sup>[45]</sup> claims that since 1st of January 1998, when opening up of the telecommunications market to full competition in Europe and the beginning of its implementation, a key priority of the European Union has been a Europe fit for the digital age. Selected publications must include persons of 75 years and older. From these, publications that include digital demands and communication technology in European countries are selected. It is important not to overlook non-English research.<sup>[46]</sup> Articles in Danish, English, Estonian, Finnish, German, Norwegian, Russian and Swedish will be considered for inclusion in this review.

As recommended by the Joanna Briggs Institute,<sup>[42]</sup> a three-step search strategy will be used. It will start with an initial limited search of CINAHL and MEDLINE (via PubMed). Terms for that will be chosen in collaboration with the university librarian to retrieve the maximum number of articles. A second search step will include exploration across all of the included databases using all the identified keywords. Eventually the reference list for all the identified articles will be studied for additional information.

**Table 1.** The keywords to be used during the search

	Population	Concept	Context
<b>Keywords:</b>	Aged	Digital demands	Europe
	Older	Digitalization	Homecare
	Senior	e-Health	Home setting
	75	Telemedicine	Outside
			Own home
<b>Headings</b>	Aged	Assistive technology	Europe
<b>(CINAHL):</b>	Aged, 80 and over	Computer Communication	Home care
	Aging	Networks	Home health care
	Geriatric	Digitizers/ES	
		Technology/ES	
		Telecommunications	
		Telecommuting	
		Telemedicine	
<b>MeSH terms and keywords</b>	Aged (65-79y)	Digital assistant	Europe
	Elderly	eHealth	Home care
<b>(MEDLINE):</b>	Nonagenarian (90-99y)	Mobile Health	Home care services
	Octogenarian (80-89y)	Telehealth	Home health nursing
	Oldest old (80y+)	Telemedicine	Home nursing

### 2.3 Study selection

A two-part study selection process will be used 1) a title and abstract review 2) full-text review. The inclusion and exclusion criteria will be tested on a sample of abstracts before conducting the search. The literature search results will first be retrieved from each database and imported into a reference management software. Duplicates will be removed. All the articles which are considered relevant will be included in the full-text evaluation. All known studies identified by the comprehensive literature search are reported only once.

### 2.4 Charting the data

The fourth stage of Arksey and O’Malley scoping review methodology is the charting of the data of the selected articles.<sup>[40]</sup> A data extraction form will be developed Table 2. It will be used to assess the full study articles retrieved from the literature fulfilling the eligibility criteria for inclusion. The data extraction form will be piloted before conducting the actual searches. The draft data charting tool will be modified and revised as necessary while extracting data from each included study. Where relevant, the authors of primary studies will be contacted for further information.

**Table 2.** Data charting form

Authors	
Title	
Journal	
Year of publication	
Country	
Study population	Age, background, other characteristics (e.g. disability)
Setting	
Methodology	
Aim of the study	
Type of digital tool/telemedicine/digital demands described	
Reported outcomes	
Facilitators	Describe the factors that made using digital tools/eHealth easier
Barriers	Describe the factors that made using digital tools/eHealth harder

### 2.5 Collating, summarizing and reporting the results

The analyses of data collected using the data extraction framework will provide information on the body of research concerning historical digital development over the last 20 years that people of 75 years and older in European countries have been part of. The data extracted from the studies will be mapped and presented in the form that will reflect the objectives of this scoping review. The narrative description of data will be presented according to experiences, facilitators and barriers concerning the use of technology and telemedicine. Tabular representations of the data will be used to illustrate the identified results and will be supported with description of the data. A narrative summary will be used to answer each review question and will include commentary on the consensus between studies and gaps in knowledge. Results will be summarized with criteria relevant for policy-makers, healthcare providers and the public. This scoping review is a first part of the study that aims to address the barriers and facilitators of the societal digital demands and needs in healthcare services in citizens 75 years and older in Norway. The scope of research will be followed by another part of the study that will collect data by the use of interviews and theoretical investigation of documents by the Norwegian Ministry of Health and Care Services that will be contrasted by the strategies from similar countries (Denmark and Sweden).

### 3. ETHICS AND DISSEMINATION

Since the scoping review methodology aims to synthesize information from available publications, this study does not require ethical approval. An article reporting the results of the scoping review will be submitted for publication to a scientific journal and presented at relevant conferences. The results of this review will provide an overview of the field that will help system developers and healthcare providers to improve future system development and thereby the inclusion of aged population in the digital context, furthermore the results will help to guide future research.

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### CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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RESEARCH ARTICLE

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# Telehealth and digital developments in society that persons 75 years and older in European countries have been part of: a scoping review

Moonika Raja<sup>1\*</sup>, Jorunn Bjerkan<sup>2</sup>, Ingjerd G. Kymre<sup>1</sup>, Kathleen T. Galvin<sup>3</sup> and Lisbeth Uhrenfeldt<sup>1,4</sup>

## Abstract

**Background:** Demographic changes are leading to an ageing population in Europe. People are becoming more dependent on digital technologies and health ministries invest increasingly in digitalisation. Societal digital demands impact older people and learning to use new telehealth systems and digital devices are seen as a means of securing their needs.

**Methods:** The present study undertakes a scoping review in order to map relevant evidence about telehealth and digital developments in society involving citizens aged 75 and over in European countries. It focuses on their experiences and the main barriers to, and facilitators of, societal digital demands. A framework proposed by Arksey and O'Malley was used to guide the scoping review process. The studies included in the review covered telehealth, digital technology and digital devices, and the context covered participants' own home or surroundings. A comprehensive search on PubMed/MEDLINE, CINAHL, Scopus, Embase and Open Grey was undertaken.

**Results:** Out of 727 identified citations, 13 sources which met the inclusion criteria (9 original study articles, 2 theses, 1 letter about a product and 1 project report). Few of the studies identified have investigated European citizens 75 years and older separately. The studies included varied in their design, location and focus. Older people have experienced both telehealth and digital devices making life easier and the opposite. The outstanding facilitator found was that technology should be easy to use, and difficulty in remembering the instructions was seen as an important barrier. Interestingly, both social support and lack of social support were found as facilitators of using new devices.

**Conclusions:** Telehealth may give a sense of security but learning to use a new device often takes extra effort. Older people were more open to new devices if the possible advantages of the new technology outweighed the effort that would be involved in adopting a new strategy. As technology develops rapidly, and life expectancy in Europe is anticipated to rise continually, there is a need for new and additional research among older European citizens. Future research should cover the technical solutions most relevant to older people today, social support and participants' access to the devices.

**Keywords:** Telehealth, Digital devices, Health services for the aged, Societal digital demands, Aged 80 and over

\* Correspondence: [moonika.raja@nord.no](mailto:moonika.raja@nord.no)

<sup>1</sup>Faculty of Nursing and Health Sciences, Nord University, Bodø, Norway  
Full list of author information is available at the end of the article



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## Background

The world is facing an ageing population and the proportion of older people is expected to grow even more [1]. The number of people aged 75 years and older in European countries is projected to expand by 60.5% by 2050 [2]. The growing number of older people within society poses a range of challenges, creating a significant impact on socio-economic structures and providing a stimulus for the development of new goods and telehealth services adapted to the needs of the older generation [2, 3].

Digital technologies are steadily transforming our world and changing our daily life [4, 5]. As much as any other age-group, digitalisation impacts older people [6]. Older adults are a highly heterogeneous group with differing needs and they require specific technological and telehealth solutions [7]. Societal digital demands see learning to use new technologies as a means of securing older people's health needs and human rights [8, 9].

The European Union's Charter of Fundamental Rights [10] declares that human dignity is inviolable and must be respected and protected. Dignity is the affirmation of something valuable in oneself or another; in its variations a gathering of both common vulnerability and common value [11]. Dignity has a wide range of protective functions as well as having reciprocal, relational and social aspects [12]. The loss of dignity is especially noticed in its rupture [11]. As telehealth and digital devices can give older people more autonomy, it may impact their dignity in both positive and negative ways [13, 14]. Policy in Europe is moving in the direction of addressing the issue. The European Commission [6] underlines that in shaping Europe's digital future it is very important that every citizen reap the benefit of an increasingly digitalised healthcare and society.

Research from the beginning of the 21st century shows that the proportion of older people using telehealth and information and communication technologies (ICT) is low. In this period, an example from Scotland about ICT use in healthcare among older people, suggests that satisfied clients tend to be under 80 years [15]. Another example, a survey related to telehealth conducted in 15 European countries among older people, showed that the respondents' interest in various telehealth systems declined considerably with age [16]. Later research in Europe includes a wider range of different types of telehealth and digital technology, such as smartphone apps, wearable devices and robotics. Digital development is rapid, and the list continually expanding [17]. European studies from the last 5 years also claim an age-related digital divide: a recent study from the United Kingdom found that age 65 years and older was the strongest inverse correlate of using physical activity surveillance through wearable trackers [18]. Likewise, research

among people with hypertension in Austria and Germany showed that age has a negative association with the intention to use mobile health applications [19]. Literature, generally, shows that as telehealth and ICT evolves, seniors are open to using it, but there are interface barriers such as lack of knowledge and confidence, costs, health-related obstacles and lack of guidance in the use of new digital devices [20, 21].

Continuous digital development brings wider use of home-based telemedicine [22]. The term telemedicine, coined in the 1970s, refers to the use of ICT to improve patient outcomes by increasing access to care and medical information [23]. Technological developments led to a newer and wider term, telehealth, which refers to a broader scope of remote healthcare services [24]. According to WHO, telemedicine and telehealth both comprise 4 elements: (1) the purpose is to provide clinical support, (2) it is intended to overcome geographical barriers, (3) it involves the use of various types of ICT and (4) its goal is to improve health outcomes [24]. As continual digital development has brought even more new terms and definitions, a European Parliamentary Technology Assessment reports on the usage of the wider term eHealth covering telehealth, telecare, telemedicine, tele coaching and mHealth [3]. WHO defines eHealth as a secure and cost-effective use of ICT in support of health and health-related fields. Furthermore, eHealth can be seen as the use of modern ICT to meet the needs of citizens, healthcare professionals and patients by improving prevention, diagnosis, treatment, monitoring and management of health and lifestyle [28]. According to WHO are terms telehealth and eHealth both in use but in this study, due to including historical perspective, will hereinafter be used term telehealth.

Digital technology is a wide term that in addition to telehealth covers all electronic tools, technological devices and automatic systems that generate, store or process information [6]. Digitalisation concerns bringing together people, data, and processes; it is something that affects human experience [3]. For purposes of this review our focus was on telehealth but some digital technology engagement of note did emerge in the review.

Older people have experienced that telehealth and digital technology has the potential to assist them in remaining independent [14]. Usage of telehealth may benefit citizens with the complex, multidimensional problems many older people suffer from [25]. It can improve quality of life for homebound older people and increase the amount of time they can live independently outside of an institution [13]. A review study about facilitators of, and barriers to, the adoption of telehealth in persons older than 65 years found that the use of telehealth among older adults is expected to rise, but in order for effective adoption, it is important to keep the

patient's perspective at the forefront [26]. A systematic review covering worldwide studies of ICT among older citizens, published in English between 2002 and 2015, suggested that ICT could be an effective tool to tackle social isolation among older people. However, it is not suitable for every senior alike [27].

Digital demands impact health ministries to invest increasingly in telehealth and digitalisation [3, 28]. The use of ICT and homebased telehealth brings new facilitators but new barriers as well [22]. Existing reviews from Europe covering older people, telehealth and technology include only certain groups of older citizens such as those in palliative care [29] or patients suffering from Alzheimer's disease [30]. A review from 2013 covers findings specifically related to telehealth applications for people aged 55 and over [31]. As societal digital demands develop rapidly, up-to-date research is needed [22]. A recent systematic review of ICT solutions included studies covering a wider range of older people, but only involved ICT solutions that have been implemented or deployed in pilot form contributing to the key smart ageing and excluding research materials on telemonitoring and telehealth programmes which include self-monitoring [32]. Reviews from 2011 to 2020 underline that the true needs of older people as end-users are poorly known and further research is needed in order to utilise future ICT solutions. Furthermore, Arief et al. [31] emphasised that the barriers of using telehealth can be overcome by utilising the facilitators. Munn et al. [33] claim that scoping reviews can be used when the purpose of the review is to identify types of available evidence, identify knowledge gaps and clarify concepts.

In this scoping review, we considered papers that included a population 75 years and older at the time of the study. The statutory pension age in Europe is between 60 and 67 years [2] which must be set against a growing demand from all sectors for employees with basic digital skills, and adults who are actively working have experienced more or less digitalisation in connection with their work [6]. As 75 years marks about 10 years from their transition into retirement, this age-group has spent recent years further and further from the labour force digital transition and has not experienced digitalisation in connection with their work in the way younger adults have. The concept of included studies covered telehealth, digital technology and digital devices. From 1st January 1998, a whole new period in Europe's transition to the Information Society, with the complete liberalisation of all telecommunications networks and services in the European Union, began [34]. In this study, the context was Europe, and participants' own home or home surroundings. In order to utilise

future telehealth and ICT adapted to the needs of older citizens, one must determine whether existing solutions are satisfying their needs.

The aim of this scoping review was to map a body of literature, summarise and discuss research findings concerning historical telehealth and digital development over the last 20 years that people 75 years and older in European countries have been part of. Moreover, to identify research gaps in the existing literature in order to inform future research.

This review was guided by a broad main research question:

1. *What is known from the literature about what citizens 75 years and older in European countries have experienced, as society has developed digitally (1998-2018)?*

Furthermore, two secondary research questions provided structure to this review:

2. *What are the main barriers for people 75 years and older in European countries concerning societal digital demands?*
3. *What are the main facilitators for people 75 years and older in European countries concerning societal digital demands?*

## **Method**

### **Protocol**

The scoping review protocol was developed by the researchers in collaboration with a university librarian. The a priori peer-reviewed protocol was followed throughout the process [35]. It is described briefly below.

The framework proposed by Arksey and O'Malley [36] was used to guide this scoping review process. The original framework has been further developed by Levac and colleagues [37] and the Joanna Briggs Institute [38]. The review process included 5 stages: (a) identifying the research questions; (b) identifying relevant studies; (c) selecting studies; (d) charting the data and (e) collating, summarising and reporting the results [36].

### **Eligibility criteria**

The criteria for inclusion in the scoping review was primary research studies with different study designs: qualitative studies, quantitative research and mixed method research. As recommended by the Joanna Briggs Institute [38], unpublished literature was included. According to Paez [39], grey literature search may be an invaluable component of a review and may include theses and dissertations, research and committee reports, government reports, and ongoing research, among others. Text (e.g.,

government recommendations and political documents) and opinion papers were also included. Papers published between 1998 and 2018 were considered. This period was chosen because digital development has spread rapidly during the last two decades [17, 5]. Selected publications had to include only persons 75 years and older that live at home or include separate results from this population. From these, publications that included telehealth, digital devices and communication technology in European countries were selected. Articles in Danish, English, Estonian, Finnish, German, Norwegian, Russian and Swedish were considered for inclusion in this review in order to include non-English research [40].

### Information sources and search

A controlled vocabulary and key word search was conducted using the following electronic databases: Embase, CINAHL, MEDLINE via PubMed, Scopus and Open Grey. The search strategies were drafted by the researchers in collaboration with a university librarian. The keywords used during the search are shown in Table 1.

Keywords not covered by the protocol were added during the search process. In the strategy, we used English search terms. The specific terms changed slightly depending on the database. However, the main keywords were used throughout. Boolean logic containing combinations of MeSH Terms and Text Words was used [41]. The final search strategy for MEDLINE can be found in Table 2. The final search results were exported into End-Note, and duplicates removed. Reference lists of included articles were visually scanned to ascertain whether any key studies had been missed.

### Selection of sources of evidence

The inclusion and exclusion criteria were tested on a sample of abstracts ( $n=50$ ) before conducting the search. No changes were made. We included studies according to inclusion and exclusion criteria through a two-step process: a title and abstract review and full-text review (see PRISMA flow diagram, Fig. 1), following the protocol [35]. The literature search results were retrieved from each database and imported into a reference management software. After removing duplicates, all

**Table 1** Keywords used during the search

	Population	Concept	Context
Keywords:	Aged	Communication technology	Europe
	Elderly	Digital assistant	Home-based
	Nonagenarian (90-99yrs)	Digital demands	Homecare
	Octogenarian (80-89yrs)	Digitalization	Home care
	Older	eHealth	Home setting
	Oldest old (80yrs+)	Electronic health	Outside
	Senior	Health informatics	Own home
	75	Health technology	
		mHealth	
		Mobile Health	
		Telehealth	
		Telemedicine	
	Headings:	Aged	Computer Communications
Aged, 80 and over		Digitizers/ES	Home care
Aging		Networks Assistive technology	Home health care
Geriatric			
		Technology/ES	
		Telecommunications	
		Telecommuting	
MeSH terms:	Aged (65-79yrs)	Telemedicine	Europe
	Aged, 80 and over		Home care services (by professional)
			Home health nursing
			Home nursing (by family)

**Table 2** MEDLINE Search Strategy via Pubmed

#	Searches	Results
1	Aged OR elderly OR oldest old OR octogenarian OR nonagenarian	5 434 075
2	Telemedicine OR Mobile Health OR mHealth OR telehealth OR eHealth OR digital assistant	71 142
3	Home care OR home care services OR home nursing OR home health nursing OR own home	827 013
4	Europe	1 482 707
5	#1 AND #2 AND #3 AND #4	602
6	Limit to 1998/01/01- 2018/12/31	513
7	Limit to Danish, English, Estonian, Finnish, German, Norwegian, Russian, Swedish languages	475

abstracts were screened by two authors. Then, all potentially relevant full articles were reviewed by the first and second author. Reference lists of potential articles were visually scanned to ascertain whether any key studies had been missed. Potential articles were reviewed by the first and second author. The degree of agreement at full-text review was 98.4%, discrepancies were resolved in discussion with the third and fifth author and then all potential articles were agreed for inclusion by all authors.

#### Data charting process and data items

We used standardised data collection forms developed by the research team for this study [35]. The first author tested the form with 3 sources. After testing, definition of study population was added to the data collection form. The information abstracted included: authors, title, journal, year of publication, country, study population, setting, methodology, aim of the study, type of technology/telehealth/digital demands described, reported outcomes, facilitators of, and barriers to the use of digital technology. First author charted the data, and the other researchers verified the data for accuracy. For obtaining missing data, the author of 1 study was contacted. The information gathered from the selected sources was organised into tables to reflect the objectives of this study (outcomes about what older people have experienced, the main barriers and the main facilitators

of using different types of digital devices and technology). The tables contained information about type of characteristics and the results. The final version of the tables is presented in the results section (see Tables 3, 4, 5 and 6). We have discussed, compared, and contrasted the findings of different studies in the results section following the tables.

## Results

### Selection of sources of evidence

In this review, 727 abstracts were retrieved, and after deduplication 687 abstracts were reviewed. A total of 186 publications were selected from a title and abstract review for a full-text review. Among the excluded studies, common reasons for exclusion included population younger than 75 years ( $n=137$ ), concept not covering telehealth, technology or digital devices ( $n=27$ ), hospital or institutional context ( $n=11$ ) and studies not being conducted in Europe ( $n=2$ ). A total of 10 publications satisfied the inclusion criteria, 2 of the included articles were about the same study, but research methods and outcomes were different. Of 10 sources, 1 article was excluded because the study and methods were similar to those described in another included article [42]. Reference lists of the articles included were visually scanned to ascertain whether any key studies had been missed: 4 additional publications were found this way. The total number of papers to review was 13, see PRISMA flow

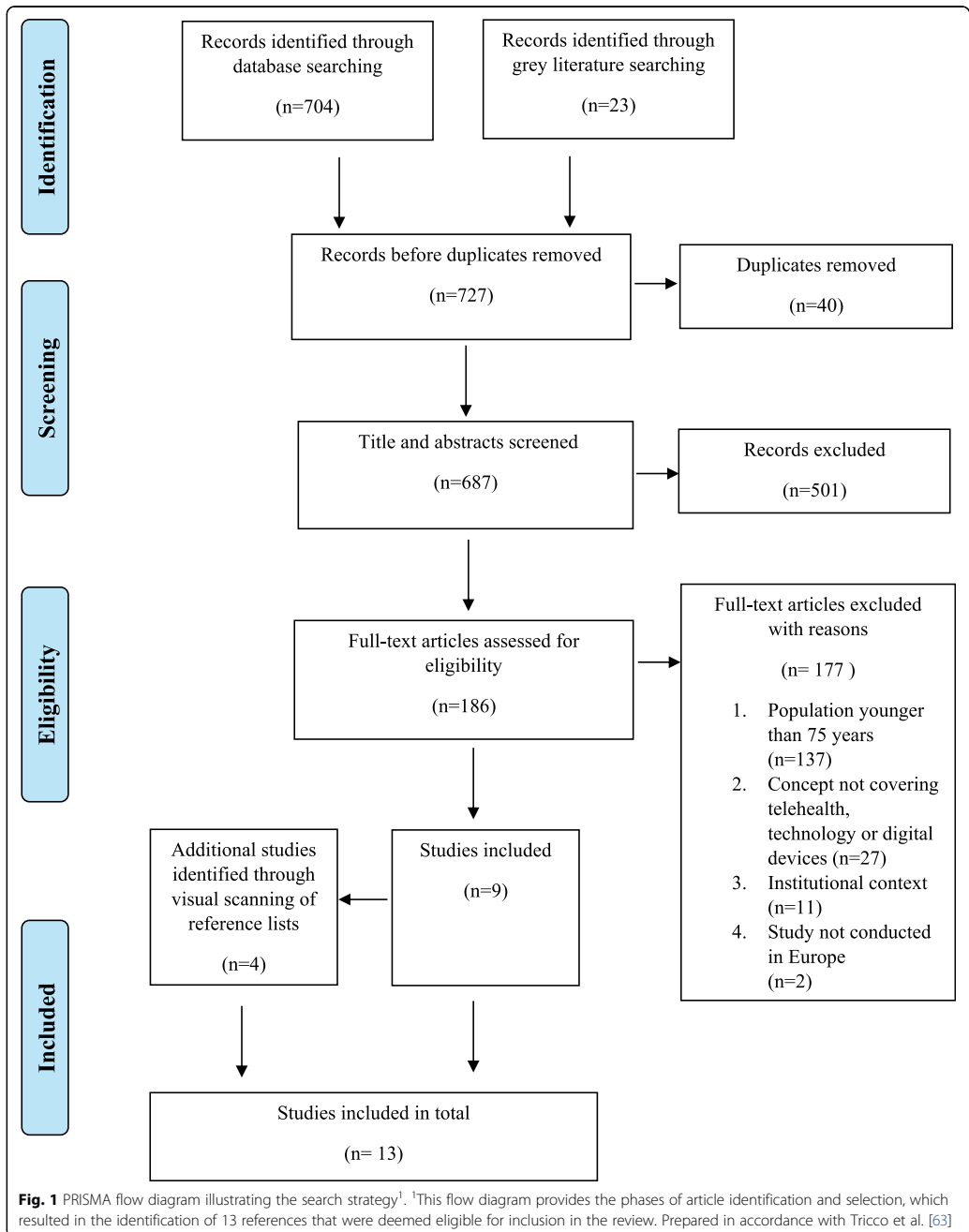




diagram (Fig. 1). An additional search was conducted in October 2020 to find any potential new sources from 1st January 2019 to up to date. There were 179 abstracts retrieved. Through following the PRISMA strategy, none of the found sources met the inclusion criteria, a common reason for exclusion was population younger than 75 years.

### Characteristics of sources of evidence

Of the 13 studies selected for the final analysis, 2 were conducted in 3 European countries (Germany, Finland, Italy or Austria, France, Hungary) [43, 44], 6 were conducted in Sweden [45–50], 2 in Estonia [51, 52], 1 in Finland [53], 1 in Germany [54] and 1 was conducted in Italy [55] (see Tables 3 and 4). There were 5 articles including only a population 75 years and older [45, 50, 53–55] and 8 studies included also other groups (significant others of the participants) [43, 44, 46–49, 51, 52], but the participants were divided into age-groups and the results of each group were given separately, which made it possible to study the results of those 75 years and older.

The sample size of participants 75 years and older, varied between 1 and 1007. In addition, 1 study gave information about contacts made to a medical helpline [45] but there was no information about how many times each individual had made the call. However, 7477 contacts were made. All the studies included were published between 1998 and 2018, but 2 studies used information collected earlier in the 90 s: 1 of them started a pilot in 1991 [54], the other

collected data in 1995 [43]. Of the 13 included sources, 9 articles were published in international journals [43–50, 54], 2 were theses [51, 52], 1 was a letter about a product [55] and 1 was a project report [53]. There were 10 studies in English [43–50, 54, 55], 2 in Estonian [51, 52] and 1 in Finnish [53]. Of the analysed studies, 5 explored telehealth [45, 46, 49, 50, 54], 2 robots [44, 55] and 6 other types of technology [43, 47, 48, 51–53].

The studies' population, concept and context are described in Tables 3 and 4. The context of these studies was homecare [46–50, 54], home surroundings [45, 47, 52, 53], test-centre-based [44, 51, 55] and one had an outdoor environment [43]. There were 11 qualitative [44, 46–55] and 2 quantitative studies [43, 45]. Of the 13 included studies, 5 explored the usage of new digital technologies provided to the participants in trials lasting between 20 days and 7 years [46, 48–50, 54], 2 studies explored the general usage of technological solutions in daily life [47, 53], and 1 in the outdoor environment [43]. Furthermore, 1 looked into calls made to the medical helpline during 1 year [45], 1 explored the usage of smartphones [52], 1 looked into the usage of the internet [51] and 2 studies introduced a new device to the participants and asked their opinion about it [44, 55]. As 46% of the included studies were conducted in Sweden, the focus it shows in this country will be discussed separately. Table 3 gives information about characteristics of sources from different European countries and Table 4 gives information about studies conducted in Sweden.

**Table 3** Characteristics of sources of evidence from different European countries

Author(s) and year	Population	Concept	Context
Stroetmann and Erkert 1999 [54]	17 mobility-impaired older people (aged 75 to over 90)	Videophone service (HausTeleDienst). The clients were connected to the service centre using a standard cable-TV network	Homecare in Germany
Marcellini et al. 2000 [43]	1007 older people with different health conditions (aged 75 years and older). In addition, younger age-group	Ticket machines, automatic teller machine and phones that use phone cards	Outdoor environment in Germany, Finland and Italy
Perle 2012 [51]	75-year-old lady. In addition, 20-year-old lady	The internet	Test-centre in Estonia
Wessmann et al. 2013 [53]	22 older people (aged between 75 and 90 years)	Technology used by older people (for example computer, phone), information technology	Home surroundings in Finland
Zsiga et al. 2013 [44]	11 older people (aged between 77 and 85 years). In addition, caregivers	Robot. The functions demonstrated included speech recognition, navigation, reminder function, shopping list creation and video conferencing	Test-centre in Austria, France and Hungary
La Tona et al. 2017 [55]	4 older people presenting a wide range of age-related disorders (aged between 87 and 89 years)	Robot with voice, gesture and touch interfaces.	Test-centre in Italy
Adamssoo 2018 [52]	5 older people (aged between 75 and 81 years). In addition, younger age-group	Smartphone	Home setting in Estonia

**Table 4** Characteristics of sources of evidence from Sweden

Author(s) and year	Population	Concept	Context
Magnusson and Hanson 2005 [46]	5 older people with neurological disorders (aged between 75 and 83 years). In addition, spouses	ICT based support service for older people and their family carers that consists of a range of multimedia caring programs that the family access via their personal computers	Homecare in Sweden
Nygård and Starkhammar 2007 [47]	3 older people with dementia (aged 76, 82 and 75 years). In addition, younger age-group	Everyday digital technology (televisions, electronic machines, remote controls, cell phones and computers)	Home setting in Sweden
Rosenberg and Nygård 2011 [48]	3 older people with dementia (aged between 79 and 91 years). In addition, significant others	An electronic calendar, a speaking clock and a digital watch with six built-in alarms	Homecare in Sweden
Lind and Karlsson 2014 [49]	7 older people with diagnosed heart failure(aged 75 years and older). In addition, spouses	Digital pen-and-paper technology with a digital IR camera that records everything the pen writes, and data can be transferred to a server via Internet	Homecare in Sweden
Lind et al. 2016 [50]	14 older people with diagnosed heart failure (aged 75 years and older)	Digital pen-and-paper technology with a digital IR camera that records everything the pen writes, and data can be transferred to a server via Internet	Homecare in Sweden
Dahlgren et al. 2017 [45]	Older people (aged 80 years and over). 7477 contacts were made but there is no information about if each individual was calling more than once	Nationwide medical helpline, Healthcare Guide 1177 by Phone in Sweden	Home setting in Sweden

### Results of individual sources of evidence

The studies' aims and reported outcomes together with factors that made using digital devices easier or harder can be found in Tables 5 and 6. Table 5 represents results of individual sources of evidence from different European countries and Table 6 represents results from Sweden.

### Synthesis of results

In accordance with the inclusion criteria, studies in the review included older peoples' experiences with reference to different types of telehealth and other digital technology. Digital devices used in the studies included telehealth systems such as digital pen and cable-tv-based videophone service, assistive devices like electronic calendars, speaking clock, digital watch, homecare robot, and other technology like smartphone, computers, ticket machines, automatic tellers and telephones that using telephone cards (see Tables 3 and 4). As the digital devices were very different, the experiences and outcomes also varied. Synthesis of results were conducted based on research questions by dividing the results into 3 categories. Below, the results for Sweden and the other European countries are presented separately in those categories: outcomes about what older people have experienced, the main barriers and the main facilitators of using different types of digital devices and technology.

1. *What is known from the literature about what citizens 75 years and older in European countries have experienced, as society has developed digitally (1998-2018)?*

### Technology has impact on older people's lives

Older people in Sweden experienced that the services had a positive impact on their lives. Participants who used a digital-pen telehealth system or ICT based support services felt more secure [46, 50]. Older people's experience of using an ICT support service showed that the system had the potential to reduce the use of other services whilst maintaining their quality of life [46]. Experience of using assistive devices in Sweden showed that these tools had the potential to be useful, but persons might need time to try out the devices [48]. At the same time, it was found that digital devices might need to be adapted or combined with something else in order to be beneficial [48]. Rosenberg and Nygård [48] concluded that digital devices might make some older participants' lives easier; however, others might feel the contrary. Older people in Sweden experienced that using a new digital technology could at first be frightening or that extra effort was required to adopt a new strategy. Digital-pen users generally found the technology "a bit scary" but using a telehealth system did not frighten them [49]. Users of digital assistive devices in Sweden felt that adopting a new strategy needed extra effort [48].

Similarly to Sweden, older people from Germany experienced that telehealth systems had a positive impact on their lives. Participants using specially developed videophones between home and residential care centre stated that they felt less lonely and had more joy in life [54]. In contrast, a study from Finland, that investigated how older people experienced the use of technology, found no link between technology and

**Table 5** Results of individual sources of evidence from different European countries

Study	Aim of the study	Reported outcomes	Facilitators	Barriers
Stroetmann and Erkert 1999 [54]	To provide the capability for frail older people to live independently	The system was rated positively, impact on quality of life of the participants	Feeling of being in power over technology. Easy-to-use remote- control unit. Possibility for direct help, if needed	The system was not completely reliable. Technical problems
Marcellini et al. 2000 [43]	To examine the use of ticket machines, automatic teller machines and telephone cards by older people	The use of these technologies is low. Age is most important predictor factor of using the machines. Younger participants feel that such technology makes life easier	Technology makes life easier. Both social support and lack of social support. Easy to use technology	Technology makes life more difficult. Low education
Perle 2012 [51]	To compare the habits of older people and young people in using internet	Older persons had more specific problems (related to insufficient knowledge of the structure of the web and computer) than younger	Experienced older person teach other older people. User-friendly web-design. Repeated practice gives skills and confidence.	Knowledge is insufficient. No appropriate training. Teachers are too quick. Difficulties with new systems.
Wessmann et al. 2013 [53]	To investigate how older people experience the use of technology	No link was found between technology and quality of life. Age was related to the use of technology. There was a clear link between technology usage and level of education	High education. Younger age. More experience with technology. Financial benefit Safety factor Communication with family and friends	Low education. No need to use technology. Expensive. Need assistants when use it. Functional limitations due to age
Zsiga et al. 2013 [44]	To collect the opinions of the participants about the robot	Robot has potential to be useful for older individuals. Communication with the robot should be better. The robot helps to compensate memory loss	Gain a companion. Robot providing physical help in tasks. Robot sending an alarm signal. Providing reminder function. Video connection. Companionship.	Robot's camera might not respect their private life. The design of the device. It cannot replace people. Hard to understand.
La Tona et al. 2017 [55]	To validate the developed interfaces of robot	Good users' feeling towards the interfaces. The voice interference and alarm were found useful, while web pages and touch-screens commands were less appreciated	People can be monitored. Robot makes people more autonomous. Robot can monitor room and gives vocal feedback	Touchscreens are difficult to use. Difficulties remembering the commands. Robots appearance is unnatural
Adamssoo 2018 [52]	To find out what are older peoples' main concerns about using smartphones	Coping with digital devices is significantly affected by English language skills, high screen sensitivity, small text size, clumsiness of hands.	Technology gives a sense of security, contact with family, independence, helps to reach help. Help from family about how to use the device. The device is practical	No need for innovations. Memory difficulties. Device is too fast, small or expensive. Inaccurate motor skills. Little practice

quality of life, but found that technology could bring a new kind of comfort [53]. Results about exploring homecare robot operating suggested that robots had the potential to be useful for older individuals but could not replace people [44].

#### ***Technology is making life easier and the opposite***

In parallel to Sweden, older people in other European countries experienced both technology making life easier and the opposite. Some older people in Germany, Finland and Italy described their experience of using

**Table 6** Results of individual sources of evidence from Sweden

Study	Aim of the study	Reported outcomes	Facilitators	Barriers
Magnusson and Hanson 2005 [46]	To see whether the use of ICT systems will reduce the potential use of other services	Cost savings were achieved. Quality of life of the participants had increased through using the service	Contact with call centre enables feeling more secure. Contact with other families. Programs help to feel less anxious. Possibility to learn	It is not comparable with benefits of nursing home. Difficulties using technology
Nygård and Starkhammar 2007 [47]	To identify difficulties in the use of technology by persons with dementia	Difficulties with encompassing conditions that interfere with the use of the technology, limitations in the use of instructions and deficiencies in the communication between users and technology	Help from family. Practicing in home environment. Writing introductions down	Memory deficits. Deficits in attending to multiple aspects. Sensitivity to stress. Appearance of the devises
Rosenberg and Nygård 2011 [48]	To capture the experiences of bringing assistive technology into the life of person with dementia	Right placement of the device is important. Support could facilitate the use of the device in itself but user's maneuverability became so limited that using the device was no longer meaningful. Persons needed time to try out the devices	Understanding how to use the devices. The device has a meaning for the user. Support in using the device. Personal motivation	Using a new device is burdensome. The possible advantages did not outweigh the effort that would be involved. Difficulties remembering the instructions
Lind and Karlsson 2014 [49]	To describe the experiences in using telehealth system	The digital pen was found easy to use, it gave a sense of security. Even the "digitally illiterate" may use the Internet	Easy to handle. Helps to keep track of the patient's symptoms. Feeling being closer to the clinic. Getting help when using it	Technology is "a bit scary". No previous experience using similar technology. Not able to handle the system by themselves.
Lind et al. 2016 [50]	To report experiences of the implementation of a home telehealth system	System was easy to use and method saved time. The participants felt more secured and involved in their own care. The system helped to prevent hospitalisation	It saved time. Easy to contact clinicians. Gave sense of security and closeness to the clinic	Being too weak to use the system by himself. The tool not working
Dahlgren et al. 2017 [45]	To describe contact made by older people to Sweden's nationwide medical helpline	The utilisation rate of the service by older people was high. Women had higher incidence rate. The most common reason for contact was drug-related questions	Possibility to get answers to health-related questions. Possibility for administrative procedures (e.g. requesting a copy of their medical record)	Not discussed in the article

ticket machines, automatic teller machines and telephones in an outdoor environment as making life easier, while some felt the opposite [43]. As with older people in Sweden, participants in other European countries experienced that using a new digital technology could be frightening at first or that extra efforts were needed to adopt a new strategy. Zsiga and colleagues [44] discovered that homecare robots frightened older people, but not more so than any other new technology. Using a telehealth system in Germany unnerved participants because, in the beginning, they thought that the system was not completely reliable [54]. Smartphone users in Estonia felt that adopting a new strategy needed extra effort [52].

## 2. What are the main barriers for people 75 years and older in European countries concerning societal digital demands?

### **Difficulties using telehealth and other technology**

The results regarding the use of telehealth systems in Sweden found that the main barriers for older people could be being physically too weak to use the device by themselves or the tool not working properly [50]. ICT based support service users in Sweden also claimed that they had some difficulties in using the technology [46]. Other barriers were that the design of the devices limited the opportunities of placement due to electric cabling, and that using a new device was too burdensome [48]. Functional limitations due to age, including difficulties remembering the instructions, were pointed to as barriers by older people in Sweden [47, 48].

As with participants from Sweden, it was found among telehealth users in Germany and internet users in Estonia that technical problems might be seen as a barrier [51, 54]. Older people in Finland said that they often

needed assistance when using technology, but that they did not want to depend on others [53]. The appearance of the device was seen as an important barrier by older people in Austria, Hungary and Italy when considering using robots [44, 55]. Functional limitations due to age, including difficulty remembering the instructions, were pointed to as barriers by older citizens in Finland commenting about technology, participants using ambient intelligence architectures in Italy and smartphone users in Estonia [52, 53, 55]. Another barrier found by Marcelini and colleagues [43] was participants' personal opinions, that technological solutions made life more difficult, which led to less use.

#### **Concerns about privacy and the link between use of technology and education**

Older people considering using homecare robots were concerned that the robot's camera might not respect their privacy [44]. Conversely, Stroetmann and Erkert [54] found that older people have far less fear of being observed than researchers expected. In 2 studies, a link was found between education and technology usage. One study concluded that older people with lower education used less technology in general, and another study found that they used less automated technology in an outdoor environment [43, 53]. Other included studies did not contain information about technology and education.

3. *What are the main facilitators for people 75 years and older in European countries concerning societal digital demands?*

#### **Technology gives a sense of security**

In several studies, participants from Sweden mentioned that technology gave them a sense of security because it helped them to reach assistance [46, 49, 50]. Telehealth systems connected older people to medical workers [45, 46, 49, 50]. In Sweden, it was found that both social support and lack of social support facilitated the use of digital assistive devices [48]. Support from spouses when using a digital-pen system was also stated as being helpful [49]. Participants who believed that digital assistive devices would be really meaningful adopted them more easily [48].

As in Sweden, older people in other European countries stated that the opportunity to get in contact with someone, when using technology, was motivating. Homecare robots helped to start video connection with family members [44, 55], and telehealth systems gave an opportunity to get in contact with medical workers [54]. Further, older people from Estonia, Finland, Germany and Italy stated that technology gave them a sense of security because it

helped to reach assistance [44, 52–54]. In Finland, Germany and Italy, it was discovered that both social support and lack of social support facilitated the use of automated technology [43]. An Estonian study found that if one of the spouses was an experienced smartphone user, this was helpful for the other spouse [52].

#### **Personal positive opinion about the digital device could facilitate use of technology**

A personal positive opinion about the digital device could also be seen as a facilitator. Older people who were using more automated technology in an outdoor environment stated that such technology made life easier [54]. Adamssoo [52] found that older people in Estonia were interested in using smartphones if they found them to be useful.

#### **Discussion**

The purpose of this scoping review was to map a body of literature and summarise research findings concerning historical telehealth and digital development, focusing on the main barriers to, and facilitators of, societal digital demands and experiences over the last 20 years that people 75 years and older in European countries have been part of. Moreover, the goal was to identify research gaps in the existing literature in order to inform future research.

The findings of this review suggest that only a few of the identified studies have investigated European citizens 75 years and older separately. A majority of the studies meeting the inclusion criteria for concept and context were excluded because there were no separate results for that population. Of the 13 articles included just 5 focused only on citizens 75 years and older, 8 articles included other groups (such as spouses, younger age-group and caregivers) as well, but the results were given separately. As Europe is facing an ageing population, and as this provides a stimulus for developing new goods and telehealth services adapted to the needs of older people [1–3], it is essential to investigate older European citizens' experiences and needs in a digitally led society. This study confirms the findings from Nymberg et al. [56], that information from older people about their needs in telehealth interventions is important in order for successful implementation.

Of the 13 included studies, 6 were conducted in Sweden. Most likely, this can be explained by the Nordic countries being positioned as digital front-runners in a European context [57]. Strong research environments aimed at promoting research both into telehealth and ageing may help Sweden to stand out among other Nordic countries [58]. The Swedish Government has stated that digital skills are in their priority areas, and that the development of telehealth and ICTs supporting older

people is vital [3, 57]. That gives us the possibility of learning from the Nordic countries. However, only 2 of the 6 studies included and conducted in Sweden had their focus solely on citizens 75 years and older.

The findings of this scoping review show that the most important facilitator for older people using telehealth and digital devices is that technology should be easy to use: 9 out of 13 studies (69%) stated this as being paramount. Interestingly, both social support and lack of social support were stated as facilitators of using new technology, including telehealth. Having someone next to you to help with obstacles while using technology was important for some older citizens, whilst lack of social support made lonely older people try out technology because they had no one else to do it for them. Other facilitators found, using telehealth and ICT, were the opportunity to get in touch with someone, new technology saving time, the digital device looking nice and having a meaning for the user. These results are in agreement with O'Connor et al. [59] that found individuals considering several different quality aspects of a digital health service before signing up to it. Older people in Sweden and other European countries have experienced that telehealth systems had a positive impact on their lives, but some digital devices might need to be adapted or combined with something else in order to be beneficial. Participants experienced both telehealth making life easier and the opposite. These findings suggest that telehealth and ICT usage by older people has different pathways and is in accordance with Peek et al. [60] who found that technology acquisition by seniors may be characterised as a heterogeneous process.

Mantovani and Turnheim [61] stated that, in Europe, older people are expected to embrace technological shifts just as much as other age-groups. The findings of this scoping review suggest that there are likely to be a range of barriers needing to be overcome if we want older people to use and benefit from telehealth and technological shifts. It was mentioned several times that functional limitations due to age, including difficulties remembering the instructions, were seen as an important barrier [47, 48, 52, 53]. It is also essential to ensure that the devices respect older persons' privacy, that usage would not need too much effort from people who are already fragile, and the design of the devices should not limit the opportunities of placement. The appearance of the devices is equally important, and the possible advantage of the new system should outweigh the effort involved in adopting a new strategy. Other barriers included telehealth not properly working, the system not being completely reliable and difficulties understanding the device. It is in accordance with research about telehealth adoption in 24 European countries that reports about the lack of technological skills among patients to

understand the devices [62]. Included studies gave no information about use of telehealth and ICT impacting older people's dignity.

The review found limited evidence that use of technology was connected to level of education, even though this was emphasised as a barrier in 2 of the studies. Earlier experience of using technology was also covered slightly in 2 studies, and little experience was not seen as an important barrier. The finding that earlier experience of using technology and level of education were not seen as dominant "push" facilitators to the use of new digital solutions might help to open a door for learning for those older people who would not dare to try telehealth and new devices because of a lack of previous experience.

As telehealth and ICT develops rapidly, additional and new research is required. The studies included in this review covered different types of telehealth, digital devices and technology. Some of devices in these studies are no longer in use as new modern technologies have replaced cable-tv-based telehealth videophone services, telephones that use telephone cards are barely seen and other of the technologies described might have been changed or upgraded. New telehealth systems and technical solutions are being developed constantly [3, 5]. Future research should cover the telehealth systems most relevant to this population today, but there is still potential to learn from previous studies. Fresh telehealth systems and technological solutions are always new for the user trying them for the first time, just as older solutions once used to be brand new. The learning patterns have similarities that can provide us with needed information. Technology acquisition by older people has many different pathways [60] and further research is necessary.

As the studies included gave little information about educational level and the usage of telehealth systems, this needs further investigation. Also, issues such as earlier experience using technology and access to the devices could be covered by future research. As both social support and the lack of social support have been seen as important facilitators of the adoption of new telehealth systems and other technology, they deserve attention in future research. In addition, qualitative studies could focus on what kind of social support is needed in order to facilitate the uptake of new telehealth systems. As life expectancy in Europe is expected to rise continually [2], there is a need for new and additional research concerning older European citizens.

### **Strengths and limitations**

Using a comprehensive, systematic search strategy based on a priori peer reviewed protocol to identify a diverse

range of studies with different designs, was a strength of this review. It was a strength that articles in 8 European languages were considered and sources in 3 languages were included to the final analysis. Furthermore, it should be acknowledged that unpublished literature was added and the data analysis process of this review followed Arksey and O` Malley` s suggestions [36]. Furthermore, this scoping review covered 20 years from January 1st 1998 to December 21st 2018, and additional search was conducted in October 2020, to see if there were any new sources meeting the inclusion criteria. However, corresponding limitations included the selection of studies including only persons 75 years and older or studies where separate results were given for that age-group. Findings from papers covering wider groups of older people with a mean age of 75 years or older may have provided additional insights into the range of barriers and facilitators concerning societal digital demands in citizens 75 years and older in European countries. Of the 13 included studies, 4 were identified through visual scanning of reference lists. Our search covered keywords only in English but 3 of the studies did not comprise English keywords and 1 covered keywords not used in our search strategy (distributed ambient intelligence, IoT robotics, modular user interface and smart buildings).

## Conclusions

Older people in Europe have experienced telehealth and ICT both as making life easier and simultaneously the opposite. It may give a sense of security but learning to use a new device often takes extra effort. There should be a balance between the potential benefits and the effort required. It was found that older people were more open to new devices if the possible advantage of the new technology outweighed the effort that would be involved in adopting a new strategy. A majority of the studies ( $n=9$ ; 69 %) stated the importance of telehealth and ICT being easy to use. The appearance of the devices was also important. As social support and lack of social support were both seen as important “push” facilitators of adapting telehealth systems and new digital devices, “push” and “pull” facilitators deserve closer attention in future research. The findings of this scoping review suggest that little research has investigated European citizens 75 years and older separately. The review found limited evidence of outcomes associated with usage of technology and level of education. Furthermore, issues of the accessibility of the devices were only partially covered in 1 of the included studies. Future research should cover these issues, as well as looking into what kind of social support is needed to facilitate the use of new telehealth systems among older citizens. As digital technology develops rapidly and life expectancy in Europe is expected to rise,

additional and further research is required in order to investigate and estimate the future needs of older people.

## Abbreviations

WHO: World Health Organization; ICT: information and communication technologies.

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## Authors` contributions

MR under the supervision of LU conceptualized the study. MR, LU, JB and IGK contributed to the study design, methodology and data abstraction form, KG contributed to reviewing the study design and methodology. MR and JB screened the studies, MR conducted the full-text review and data extraction with JB and LU acting as advisors. MR interpreted the results and wrote the first draft of the manuscript with LU acting as advisor. JB, IGK and KG read and provided substantial edits on the manuscript. All authors read and approved the final manuscript.

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## Availability of data and materials

All data generated or analysed during this study are included in this published article, or in primary research articles and studies to which references were made.

## Declarations

### Ethics approval and consent to participate

Not applicable.

### Consent for publication

Not applicable.

### Competing interests

The authors declare that they have no competing interests.

## Author details

<sup>1</sup>Faculty of Nursing and Health Sciences, Nord University, Bodø, Norway.

<sup>2</sup>Faculty of Nursing and Health Sciences, Nord University, Levanger, Norway.

<sup>3</sup>School of Health Sciences, University of Brighton, Brighton, United Kingdom.

<sup>4</sup>Danish Centre of Systematic Reviews, a Joanna Briggs Institute Centre of Excellence, Centre of Clinical Guidelines, Aalborg University, Aalborg, Denmark.

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# Older adults` sense of dignity in digitally led healthcare

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**Moonika Raja**  and **Lisbeth Uhrenfeldt** 

Nord University, Norway

**Kathleen T Galvin**

University of Brighton, UK

**Ingjerd G Kymre**

Nord University, Norway

## Abstract

**Background:** Health ministries in Europe are investing increasingly in innovative digital technologies. Older adults, who have not grown up with digital innovation, are expected to keep up with technological shifts as much as other age groups. This is ethically challenging, as it may threaten a sense of dignity and well-being in older adults.

**Research objective:** To clarify the phenomenon of sense of dignity experienced in older adults, concerning how their expectations and needs are met within the context of digitally led healthcare in Norway.

**Research design:** A Reflective Lifeworld Research design was chosen, and purposive, in-depth interviews were conducted.

**Participants and research context:** The participants were 13 adults 75 years and older from Northern Norway, living at home and not receiving consistent assistance.

**Ethical considerations:** Followed the principles of the Helsinki Declaration. This study was approved by the Social Science Data Services in Norway (project number 916119). Interviews were conducted carefully within a safe environment chosen by the participants.

**Findings:** Older adults experience that using new digital systems in healthcare makes them become dependent with experiences of helplessness. They feel an increased sense of dependency on other people, and that recognition can assail their experience of personal dignity. Older adults not only expect digitally led healthcare to give them a feeling of safety but also experience feeling insecure concerning privacy and loss of possibilities for dialogue with healthcare providers. They are met by demands from society, which they often struggle to achieve.

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## Corresponding author:

Moonika Raja, Faculty of Nursing and Health Sciences, Nord University, Postbox 1490, Bodø 8049, Norway.

Email: [Moonika.Raja@nord.no](mailto:Moonika.Raja@nord.no)

**Conclusion:** The phenomenon of sense of dignity experienced in older adults, concerning how their expectations and needs are met within digitally led healthcare, indicates a sense of feeling lost in the digital world. Further, innovative healthcare lacks focus on ethical performance. This impacts their perception of dignity, as loss of dignity is noticed especially in its rupture.

### Keywords

eHealth, ethics, healthcare provider, older adults, Reflective Lifeworld Research

## Introduction

The European Union's Charter of Fundamental Rights<sup>1</sup> underlines the ethical basis of older adults' dignity. Health ministries in Europe are investing increasingly in innovative systems of eHealth and digitalisation.<sup>2</sup> Although studies concerning digital inclusion, where healthcare is concerned, show that older citizens tend to lag behind in using and benefitting from innovative technology, older citizens in Europe are expected to embrace technological shifts just as much as other age groups.<sup>3,4</sup> These papers do not refer to specific age groups; however, the generation who have not grown up with digital innovation are expected to make an effort to keep up with demanding innovations. This might challenge how healthcare providers and policy makers relate to ethics in the implementation of new technologies.

## Background

Human dignity, the fundamental human right, is inviolable and our common goal is to respect and protect it.<sup>1</sup> The term dignity comes from Latin *dignitas*, appearing first in the writings of the Roman Stoics Cicero (106-43 BC) and Lucius Annaeus Seneca (4 BC-65 AD) and referring to worth and honour, values associated with being human.<sup>5</sup> People refer to dignity in multiple variations and situations. In the context of this study, dignity is understood as having many resonances in human life, it is in its variations a gathering of both common value and vulnerability.<sup>6</sup> Dignity is the affirmation of something valuable in oneself or another.<sup>6</sup> The rights and duties which emerge from an understanding of dignity belong to each individual.<sup>5</sup> Concurrently, it is an affirmation that can be ruptured, or restored in the interaction with others. It is a complex phenomenon that human beings refer to in a meaningful way.<sup>6</sup> Further, removing dignity and diminishing someone's sense of personhood is unethical.<sup>7</sup> There is reference to dignity also as a core value underlying medical practice.<sup>8</sup>

Life expectancy in Europe has increased over the past decades and is expected to continue rising.<sup>9</sup> Today, in Norway, over one in nine people are aged 70 years or more. It is assumed that roughly every 5<sup>th</sup> person will be over 70 years old by 2060.<sup>10</sup> Observers argue that ageing in Europe has implications for many sectors of society, including healthcare, providing a stimulus for developing innovative sustainable goods and services adapted to the needs of older citizens.<sup>9,11</sup>

Nordic countries are internationally recognised as leading the way in the innovative practice of digitally transforming older adults' healthcare to meet the challenges that all European countries are facing.<sup>12</sup> However, there is still a need to be vigilant about the ethical aspects of and the impact on the sense of human dignity inherent in this digital transformation.

The history of Norwegian eHealth goes back to 1997 when the government published the eHealth strategy 'More health for each bit-information technology for a better health service',<sup>13</sup> and has been developing since. The digitalisation strategy in Norway, between 2017 and 2022, aims for all citizens to have safe and easy access to healthcare services.<sup>12</sup> A digitalised patient journal should be available in the Norwegian national eHealth portal. Including all the information about one's health, access to booking doctor's

appointments, easy access to E-consultations, E-prescriptions and information about available healthcare services.<sup>14</sup> These are elements which, hereinafter in the text, fall under the term digitally led healthcare.

Ethical principles that may affect human rights are important in healthcare.<sup>15</sup> Beauchamp and Childress<sup>16</sup> underline four of them: autonomy, beneficence, justice and nonmaleficence. In addition, avoiding harm, honesty, loyalty, privacy and utility are overall ethical principles in healthcare.<sup>17,18</sup> A recent integrative review study about ethical issues in eHealth use, found that important ethical aspects are privacy, justice, trust, beneficence and nonmaleficence.<sup>19</sup> Older citizens in Europe have faced ethical issues such as trust, privacy and beneficence when using innovative technology. Older adults from Austria, France and Hungary were confronted with an ethical issue, in being concerned that the homecare robot's camera might not respect their privacy.<sup>20</sup> Older people in Sweden faced the ethical issue of trusting the digital pen eHealth device because the users were too weak to use the tool by themselves, or it was not working.<sup>21</sup> It was found among older adults and their carers in Sweden using digital technology within homecare that the system was not comparable with benefits of nursing home.<sup>22</sup> Likewise Zsiga et al.<sup>20</sup> conclude, as might be anticipated, that homecare robots cannot replace people, which is an important human factors consideration with inherent ethical aspects.

Studies from Norway covering digital technology and including older people, focus on special technological solutions or cover only specific groups of people, such as individuals with a physical disability or cognitive impairment.<sup>23–25</sup> In Southwestern Norway, it was found that among adults 70 years and over, with a physical disability, self-efficacy significantly reduced their ability to use smart house technology and that earlier experience with devices had an effect on technology perception.<sup>23</sup> Older people in Norway consider technology as more useful for other older adults than for themselves, or as useful in the future.<sup>24</sup> Research conducted in Oslo about welfare technology, that included some older persons, suggested that systems that worked in the first time, may not work later since their health is in constant change and the function of technology is changing over time as well.<sup>26</sup> The studies cited from Norway about technology and eHealth systems, including older adults, do not address dignity or other ethical issues such as privacy, justice or trust.<sup>23–26</sup>

Skär and Söderberg<sup>27</sup> underline the importance of preserving patients' dignity and autonomy when using eHealth systems in healthcare. Preserving human dignity in the face of demanding digital innovations is a challenge and may impact older persons' individual experiences. In order to utilise future technology and digitally led healthcare adapted to the needs of older adults in a dignified way, one must first determine how existing solutions impact their sense of dignity. This study is part of a wider research<sup>28</sup> addressing barriers to, and facilitators of, societal digital demands in older adults.

## Aim

This study clarifies the phenomenon of sense of dignity experienced in older adults, concerning how their expectations and needs are met within the context of digitally led healthcare in Norway.

## Method

**Theoretical framework.** Since in this study dignity is understood as having many resonances in human life, it is important to illuminate contextual variations, which a phenomenological inductive perspective opens up for. The research design is framed by a phenomenological lifeworld perspective and Reflective Lifeworld Research (RLR), as described by Dahlberg et al.<sup>29</sup> The RLR has epistemological and ontological roots in the phenomenology of German and French philosophers.<sup>29</sup> Lifeworld is seen as the *horizon* of one's experiences, from which it is not possible to withdraw.<sup>30</sup> One is 'being-in-the-world' (*in-der-Welt-sein*), not merely in it spatially, but *belongs there*, and has access to the lifeworld through one's body.<sup>31,32</sup> The aim of RLR is to

describe the studied phenomenon as it is experienced by the participants. The phenomenological perspective helps to understand dignity from the value of relations, and as such it is suitable for this study.

**Recruitment.** A purposive sample of 13 older adults, 75 years or older, was recruited for individual interviews. The participants were Norwegian citizens living at home and not receiving consistent assistance. The flexible pension age in Norway is between 62 and 67 years, so 75 years marks about 10 years from their transition into retirement. This age-group has spent recent years away from the workplace digital transition and may not have experienced digitalisation in the way younger adults have.<sup>33</sup>

Participants were recruited from a local voluntary association established in their home city in Norway in 1996. It is based on the University of the Third Age, an organisation founded in France in the 1970s.<sup>34</sup> The first author first wrote to and then met with its committee. A gatekeeper from the organisation, who was not part of the research team, shared information to individuals who met the inclusion criteria.<sup>35</sup> To avoid any coercion, no contact was made with potential participants until they had been fully informed about the project.

**Data collection.** Data were gathered through individual in-depth purposive interviews in autumn 2020. It was during the second wave of Coronavirus SARS-CoV-2, and national infection control measures were in place. As little social contact as possible was recommended.<sup>36</sup> The interviews were held according to local infection control regulations. The participants were asked to describe their everyday experiences concerning technology, including digitally led healthcare in Norway. Contextual variations in their daily life were important as these variations of meaning in their experiences are helpful in seeing the phenomenon's structure.<sup>29</sup>

The interviews were carried out by the first author. They were conducted to explore: current experience of using digital technology, expectations and needs about digitally led healthcare in Norway. The interviews started with an opening question: 'When I say the word "technology" what comes to mind for you?' The participants were asked if they had ever used assistive devices and digital solutions offered by the healthcare system in Norway. In accordance with Dahlberg et al.,<sup>29</sup> probing questions were asked to obtain details, to gather descriptions of examples and to clarify unclear statements. Information about participants' age, gender, educational level and the experience from usage of digital tools was gathered.

**Data analysis.** The RLR analysis<sup>29</sup> was undertaken to clarify the essential characteristics of the phenomenon as faithfully as possible. RLR has lifeworld as a starting point in understanding meaningful experience. The meaning of an expression relates to the person and the context in which it is being expressed.<sup>37</sup> The essences are their phenomena and the phenomena are their essences, everything is experienced as something, and the essence cannot be separated from the phenomenon that it is the essence of. With this approach, the researchers in this study tried to uncover the phenomenon while staying open to participant's expressed meaning of their lifeworld.<sup>29</sup>

Following Dahlberg et al.,<sup>29</sup> the entire collection of interview texts was initially read to get a sense of a whole, and the parts were always seen in the terms of the whole. The descriptions were divided into units of meaning and meanings that seemed to belong to each other were temporarily put together in clusters by first and last author. These clusters were analysed in looking for intentionality and organised, then related to each other while looking for essential meanings that described the phenomenon. The constituents were formed inductively within a reflective understanding of intentionality in the participants' descriptions. The research process led to a new written understanding of the phenomenon's essential meaning described in terms of essence. Essence is uncovered by identification of its constituents, the meanings that constitute the actual essence.

In this study, the interviews were analysed with an open attitude from the researcher in terms of *bridling*. *Bridling* characterises a shift from a natural attitude into a phenomenological attitude of openness.<sup>29</sup> *Bridling* involves being present and questioning one's own understanding rather than taking it for granted. Gradually

evolving one's understanding, neither randomly nor too quickly.<sup>38</sup> The authors had their own preunderstandings overlaying their experience and different from those of the respondents, overlaying their lifeworlds. In this study, these preunderstandings were set aside through a kind of bridling, to allow the essential meaning of the phenomenon to stand out, without limiting the openness of the research.

*Ethical considerations.* This study was firstly approved (project number 916119) by Social Science Data Services in Norway (NSD). The study was, secondly, scrutinised by INNOVATEDIGNITY's Ethical Scrutiny and Advisory Board to assure its ethical quality and ability to contribute to the European Union's Horizon 2020 open access initiatives.<sup>35</sup> The data material was treated confidentially and anonymised according to the guidelines of the Norwegian National Committee for Research Ethics in the Social Sciences and the Humanities<sup>39</sup> and General Data Protection Regulation.<sup>40</sup> The research team did not contact potential participants until they had received written and oral information about anonymity and the possibility of withdrawing at any time. Ethical principles were considered since particular situations or characteristics of a person could place them as vulnerable and at risk of harm.<sup>41</sup> Safe environment was chosen by the participants, some had also a family member present during the interview. Information about purpose of the study, recording and data treatment was repeated immediately before interview and all participants gave written, informed consent before participation. The interviews were conducted carefully, following risk assessment, the interviewer paid close attention to the participant's reactions during the interview to avoid distress and allowed extra time.

## Results

This section shares the participants' (see [Table 1](#)) experiences about dignity in digitally led healthcare in Norway.

*The essential structure of meaning.* Older adults experience that using new digital systems in healthcare leads to them becoming dependent and gives rise to a sense of helplessness. They feel an increased sense of dependency on other people and that, in turn, assails their experience of personal dignity. Older people expect that digitally led healthcare will give a sense of safety, but it also produces a feeling of insecurity concerning privacy and loss of the relational aspect of having a productive dialogue with healthcare providers and being treated as individuals. Participants are subject to demands from society in terms of being expected to know how to use systems, and are thrown into situations where they have to acquire new skills promptly, which they often struggle to achieve.

Below, the constituents of the essential structure of the phenomenon are described ([Table 2](#)).

*Becoming dependent on help.* Older people describe becoming dependent on help due to experiencing obstacles when using digital technology. Loss of independence in healthcare context, that is continuously more digitised, can make them vulnerable and affect their experience of dignity. The participants describe experiencing obstacles, such as lack of basic knowledge and instructions, rapid changes in the program, technology not working and missing access to the systems. Having difficulties with booking doctor's appointments, checking test results or using videoconferencing with healthcare providers. *'And what it is for me and my generation. It is that we have mastered our things. We have been able to do what we should be able to. And suddenly we are so illiterate about it'*. Another participant shared experience of using eHealth system: *'Knowledge has come so fast. That we, who were older, we did not know about it until it was actually expected that we should be able to use all those systems'*. The participants have experienced that they are rendered passive and need help when expected to use new digital systems. They describe a sudden change from independence to becoming dependent on other people in the digital world impacting their feelings negatively. *'I do not want to ask for help. That does not feel good'*.

**Table 1.** Information about the participants.

No	Gender	Age	Marital status and residence	Experience with eHealth
1	Female	75	Lives alone in an apartment	Many E-consultations with healthcare providers, some use of E-prescriptions, little use of eHealth portal
2	Female	75	Lives with spouse in a private house	Regular use of E-prescriptions, little use of eHealth portal
3	Female	77	Lives with spouse in a private house	Regular use of eHealth portal and E-prescriptions, some digital bookings of doctor's appointments
4	Male	79	Lives with spouse in a private house	Little use of eHealth portal
5	Female	79	Lives with spouse in a private house	Some digital bookings of doctor's appointments
6	Female	79	Lives alone in an apartment	Very little use of eHealth portal
7	Female	80	Lives with spouse in a private house	Some E-consultations with healthcare providers
8	Male	81	Lives with spouse in a private house	Some use of E-prescriptions, digital bookings of doctor's appointments (with help)
9	Female	81	Lives with spouse in a private house	Reads sometimes notices from healthcare providers in eHealth portal
10	Female	82	Lives alone in an apartment	Some digital bookings of doctor's appointments, some use of eHealth portal and E-prescriptions
11	Male	82	Lives with spouse in a private house	Have tried to use eHealth portal (did not succeed)
12	Male	82	Lives with spouse in a private house	Regular use of E-prescriptions
13	Female	89	Lives alone in a private house	Have tried to use eHealth portal (did not succeed)

**Table 2.** Constituents and the essential structure of meaning.

Constituents	The essential structure of meaning
Becoming dependent of help Importance of human contact and being treated as individuals Prerequisites to develop new skills while being thrown into unfamiliar digital world Insecurity concerning privacy in the digital world Paradoxically technology can give a feeling of safety	Older adults experience that using new digital systems in healthcare leads to them becoming dependent and gives rise to a sense of helplessness. They feel an increased sense of dependency on other people and that, in turn, assails their experience of personal dignity. Older people expect that digitally led healthcare will give a sense of safety, but it also produces a feeling of insecurity concerning privacy and loss of the relational aspect of having a productive dialogue with healthcare providers and being treated as individuals. Participants are subject to demands from society in terms of being expected to know how to use systems, and are thrown into situations where they have to acquire new skills promptly, which they often struggle to achieve



**Importance of human contact and being treated as individuals.** The importance of human contact and as such being treated as individuals, affects the experience of dignity. The need to hear human voice was expressed like this: *'I do not send an email to my doctor. I take my phone and I call. And I can hear a human being in the other end, and I ask for an appointment. And he asks what is the reason for coming. I feel like I need that'*. It is important to *hear* the other person's voice and feel someone's presence.

There are concerns about reduced human contact in healthcare systems and fear of what lies ahead. *'It is completely different to sit and talk to a doctor than to just get it with a robot voice in a way. So I think some of this is scary going forward'*. Another participant said: *'I am very skeptical of that replacement. How far can you get with replacing human contact with digital solutions? I do not find peace about it. What will there be offered by the health system in a few years?'* They expect that one does not make it so complicated that the human contact, and thereby being treated as individuals, disappears in the future.

**Prerequisites to develop new skills while being thrown into unfamiliar digital world.** The participants express that they are not immersed naturally but thrown into the digital world in a disruptive way and that affects their sense of dignity. They describe that the technological language and different icons in use in digital solutions are strange and alien to them. *'Very little language for us, which is simple enough to understand. But yes. It is not easy. They speak their language but it is not language that those who are not computer educated would understand'*. A word that has one meaning in everyday life can have a totally different meaning in technological terms, and understanding all those does not come naturally.

They describe that using digital technology is a demanding and overly rushed process. There are expectations towards older adults to have skills that they struggle to achieve and that affects their experience of dignity. Persons need to have time and take it at an appropriate tempo and have the possibility to try system out. People are different and need individual approaches. It is also important to write down the process step by step or get a manual and have follow-up guidance after a while. Experiences from using eHealth systems were: *'It is not like we learn it right away but someone comes back and asks how is it going and if you understand it. Then there must be tight follow-up'*. Another participant said: *'You have to do it yourself and have to say what you do and then you have to take notes because you forget too quickly. It takes time. So I would not forget it when they are gone. So it is very important that you also get a manual about it'*. Struggling constantly with an unfamiliar process can be humiliating and diminish agency and therefore impact the sense of dignity.

**Insecurity concerning privacy in the digital world.** The participants express that they lack information about eHealth systems, how these systems are used in healthcare and who has access to their personal data. Different concerns about lack of privacy affect their sense of dignity. On the one hand, that programmers' take over and user loses control. *'To think, where is the one who sits somewhere and controls it. Who overrides it and makes it more difficult?'* On the other hand, the participants express having little information about what kind of data will be in the system about their health and medical history. Unanswered questions about ethical issues concerning privacy were raised by the participants: Who, exactly has access to the information and when? What can their medical data be used for? Is it somehow possible to use the information against them? They do expect privacy about their health issues. *'I wish, it was still possible to have something that is private. That not everything is posted online and that there is still private room between a doctor and a patient'*. They feel that their privacy is exposed if it is included in data, but at the same time, technology can also give a feeling of safety. This range includes varying degrees of emphasis from the extreme to everyday securities and insecurities.

**Paradoxically technology can give a feeling of safety.** Having the possibility of contacting the health services if something happens and being followed up makes persons feel safe. That can help to enhance the feeling of

being worthy and thereby affect sense of dignity. Most of the participants had experienced that some of their close ones or themselves had a feeling of safety when using a safety alarm. Safety alarms were offered by the health system in cooperation with the local health service centre. A participant said: *'Once I came downstairs and I fell on that chair. And I thought that now I have to use an alarm. For now I do not know how to stand... and a lady came and helped me'*. If the person knows how to use eHealth systems or a digital aid, it is seen to be useful and helpful. For example, a safety alarm was considered easy to use and as giving a sense of safety.

## Discussion

The phenomenon of sense of dignity experienced in older adults, in how their expectations and needs are met within digitally led healthcare, indicates a sense of being bewildered in the digital world. To preserve human dignity in demanding digital innovations is challenging and includes facing ethical issues such as dependence, privacy, humility, vulnerability, need for human contact and being treated as individuals. The scope and importance of eHealth have increased in recent years and will continue to be an essential part of healthcare delivery. The essential key finding is that older people have a sense of becoming dependent in terms of situational helplessness when using new digital healthcare systems. The need to ask for help and a sense of failure may make older adults feel more vulnerable and even humiliated. This unfamiliar state may impact their sense of personal dignity, as dignity's path of loss is through vulnerability.<sup>7</sup> Preserving human dignity is therefore ethically important to older citizens, and reference is often made to dignity as a core value underlying medical practice.<sup>8</sup>

Older people are often met with demands from society in terms of being able to acquire new skills promptly. The ever-evolving nature of technology means that one needs ever increasing levels of digital literacy, to be able to trust the new systems and maintain a sense of inclusion. They are a heterogeneous group with regard to their digital technology use because their motivation, past employment and existing knowledge vary.<sup>42</sup> Those who participated in this research, do often struggle to achieve the levels of digital literacy needed. They must make an effort to learn new strategies or must depend on others. That might categorise them as somewhat vulnerable, potentially humiliated through impeded agency and thereby diminish in their sense of dignity. These potential consequences accord with studies of older adults needing educational support to be included in the digital society.<sup>43,44</sup> Similarly, a study about older adults' attitudes to eHealth in primary healthcare found that there is a need for a strong focus on information and support for older citizens concerning digital demands and eHealth.<sup>45</sup>

Older people express differences between quick and general help, and assistance that really helps to understand eHealth and improve digital skills. Achieving a new skill may increase the benefits of the new system and may impact the perception of dignity in a positive way. Younger adults are found to perform significantly better and learn more quickly than older adults.<sup>46</sup> Older adults underlined the importance of having the possibility of trying out the devices more than once by themselves, having enough time to contemplate and most importantly, having a manual to use when needed. In terms of learning, there are age-related differences and similarities in cerebellar and cortical brain function.<sup>46</sup> In addition to age-related differences to learning, the participants shared experiences about manuals that they did not understand because of unfamiliar icons and difficult technological language. It is important not only to offer help but make sure that assistance is suitable in order to improve older adults' digital skills. That can impact their independence and experience of dignity in a positive way.

The feeling of insecurity concerns the lost possibility for direct dialogue with healthcare providers. Likewise the contrast with the traditional healthcare delivery shows a lack of in-person face-to-face contact that digital healthcare seems to miss. Use of eHealth has the potential to misrepresent or represent incompletely the human aspect of medical communication.<sup>47</sup> The feeling of insecurity of being treated as individuals may impact older adults' perception of dignity. On the one hand, concerns arise about healthcare providers having the information they need to make well-grounded clinical decisions when they obtain

information through technologies. The ethics of digitally led healthcare should not focus on the patient as a collection of images or a data set but as a whole person.<sup>47</sup> Nurses using eHealth solutions are challenged in certain situations to not take the focus in healthcare away from the patient, they should ensure that care remains person-centred.<sup>48</sup> On the other hand, the participants expressed a need for in-person conversations, which underlines how they value the relational aspect and human contact to be treated as individuals. A previous study from Norway about use of welfare technology also claims that reducing social contact as a result of technology is something that worries healthcare providers.<sup>26</sup> In-person contact is important and may not be the same as when replaced by contact through technology. This may impact older adults' perception of dignity, as the understanding of dignity belongs to each individual.<sup>6</sup> It is underlined that nurses should ensure that technological devices should not replace human relationships.<sup>48</sup>

In this study the experiences of older people revealed a feeling of insecurity concerning privacy when using digital health systems. According to Kuziemski et al.<sup>49</sup> privacy issues are a major concern in eHealth systems, but the risk and extent of privacy issues differ according to the pattern of eHealth being used. It is important to be aware of these issues and have guidance on how to manage them. Some older citizens in Europe have also experienced concerns about eHealth systems, especially cameras, respecting their privacy, but conversely, others were much less worried about their privacy than researchers had assumed.<sup>50</sup> Older adults need more information about the systems, about who has access to their data and about how to use the systems safely. This can help to reduce hesitancy concerning privacy when using digital health systems and thereby help to improve persons' sense of dignity.

An expectation that digitally led healthcare will give a sense of safety in terms of human support when needed is strong. Safety includes achieving physical, social and psychological security, rights to be protected and fulfilled under international human rights.<sup>1</sup> That kind of security can improve older adults' well-being. Safety and dignity are interconnected in caring for older people.<sup>51</sup> Suitable help to use new technology and support through eHealth can provide safety and thereby improve older persons perception of personal control and security have impacts on a sense of dignity. It is important that older people are consulted in the extent of digitally led healthcare. Nurses should ensure that the use of technology is compatible with the safety, dignity and rights of users.<sup>48</sup> In this way future technical developments can also contribute to an emphasis on preserving agency and has relevance of dignity.

**Strengths and limitations.** Strength of this study was that the interviews uncovered rich and various data and gave new knowledge about the phenomenon. Also that the request for participation was not-binding, and participants were given the opportunity to avoid complicated travelling, which did not exclude anyone for this reason. The number of participants is considered sufficient and both genders were represented. Interviews were back translated to the original language and checked for accuracy. Credibility was addressed by two authors analysing the results.

It is a limitation that participants in this study were able to leave their homes and attend meetings at the local older adults' centre. Further research is needed into older citizens staying mostly at home and possibly experiencing functional limitations and other constraints due to their situation.

## **Conclusion**

The phenomenon of sense of dignity experienced in older adults, concerning how their expectations and needs are met within digitally led healthcare, indicates a sense of feeling lost in the digital world and this might be ethically challenging. It impacts their perception of dignified ageing. Loss of dignity by being thrown into a situation in this way is unethical and especially noticed in its rupture. Rupture because of being put into an unfamiliar world, need for human contact and insecurity concerning privacy in the digital world. The results of this research show that if older adults are better informed about technologies and provided with the

necessary digital skills, they see digitalisation more as an opportunity. There is a spectrum of variations of emphasis, on the one hand unfamiliar technology makes you insecure and increases a sense of vulnerability and lacks focus on ethical considerations when innovating healthcare digitally. On the other hand, digitalisation gives a sense of safety and opens up new opportunities. The phenomenological perspective helps us to understand dignity from the value of relations and how it can be ruptured in terms of being bewildered in the digital world. This tension illuminates ethical challenges that healthcare providers and policymakers should acknowledge for future innovations.

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### ORCID iDs

Moonika Raja  <https://orcid.org/0000-0003-0711-357X>

Lisbeth Uhrenfeldt  <https://orcid.org/0000-0002-5672-1371>

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RESEARCH

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# National digital strategies and innovative eHealth policies concerning older adults' dignity: a document analysis in three Scandinavian countries

Moonika Raja<sup>1\*</sup>, Ingjerd G. Kymre<sup>1</sup>, Jorunn Bjerkan<sup>2</sup>, Kathleen T. Galvin<sup>3</sup> and Lisbeth Uhrenfeldt<sup>1,4,5</sup>

## Abstract

**Background** Scandinavian countries are internationally recognised for leading the way in older adult care and in digitally transforming healthcare. Dignity has become a central value in care for older adults in all three Scandinavian countries. Investigating documents about digitalisation in these countries can offer insights into how the dignity of older adults is impacted by digitally transforming healthcare. This study aims to provide knowledge about digital strategies and eHealth policies concerning older adults' dignity in three Scandinavian countries: Norway, Sweden and Denmark.

**Methods** National-level documents by the Norwegian Directorate of eHealth, the Norwegian Directorate of Health, the Swedish Ministry of Health and Social Affairs and the Danish Ministry of Health concerning older adults were used as data sources. In addition, a systematic search of databases, informed by the Joanna Briggs Institute framework for systematic reviews of text and opinion papers, was undertaken to find relevant papers. All extracts concerning national digital strategies or innovative eHealth policies were deductively coded. Thereafter, extracts concerning older adults were inductively coded using a thematic analytic approach.

**Results** A total of 26 sources satisfied the inclusion criteria, 14 governmental papers and 12 other papers. The three countries' national digital strategies focused on access to digital technologies and continuous learning for digital skills. The included papers describing national eHealth policies underlined the importance of placing the patient at the centre of healthcare and how digital systems can increase feelings of safety. Both types of documents concerned access to data, digital device security and the human dimension of care.

**Conclusion** The findings present evidence on Scandinavian countries' national digital strategies and innovative eHealth policies concerning older adults' dignity. The documents describe a lack of digital competence among older adults, resulting disengagement may put their well-being and human dignity at risk. Findings also underline the importance of security and at the same time the human dimension of care: Use of new digital systems must be meaningfully integrated into digital strategies and eHealth policies. All three Scandinavian countries strategies and policies underline the importance of equal access to healthcare services, as thus they promote a stance of dignified care.

\*Correspondence:

Moonika Raja

moonika.raja@nord.no; moonikaraja@gmail.com

Full list of author information is available at the end of the article



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**Keywords** Digital strategies, Dignity, Document analysis, eHealth, Older adults, Qualitative

## Background

The European Union's Charter of Fundamental Rights [1] places dignity as the foundation of all human rights. The term "dignity" comes from the Latin word *dignitas* and refers to values associated with being human, such as worthiness and honour [2]. Dignity is closely linked to an understanding of what makes a person feel human [3]. It is inviolable and must be protected and respected [1]. Dignity has many possible variations and nuances that human beings refer to in a meaningful way [4]. It is an affirmation that can be ruptured or lost through vulnerability [4]. When dignity is taken away, it would diminish one's personhood [5]. Dignity is referred to as a core value underlying medical practice and as a subjective experience which is related to autonomy and identity [3, 6]. The European Commission underlines the importance of delivering healthcare innovations in a dignified way [7].

Scandinavian countries (Norway, Sweden, and Denmark) are internationally recognised as digital frontrunners in the European and even global contexts [8, 9]. In Scandinavian countries, an important aim of policies relating to ageing is for people to remain in good physical and mental health for as long as possible [10]. Digital technologies have been part of the solution by providing sustainable care, but at the same time, the age-based digital divide has led to inequality for older adults around the world [11].

Welfare models in Scandinavian countries are based on citizens' high levels of education and long life expectancies, combined with investments in innovation and research [10]. Scandinavian welfare states can be characterised as providing high-quality services for all age groups, as regional and municipal authorities play a central role in the delivery of key services [12]. Healthcare in Scandinavian countries, as part of the Nordic welfare model, is underpinned by the basic values of compassion, tolerance and the conviction of equality [13]. Healthcare systems in Scandinavian countries are tax-funded. National, regional and municipal governments are responsible for the provision of care and may contract public and private providers [10].

Digital technologies are viewed in Scandinavian countries as tools to fulfil existing national healthcare responsibilities and realise local and regional goals [8]. All three Scandinavian countries have strong underlying digital strategies that support their digital healthcare policies and innovative plans [14–16]. The Norwegian Government follows strategies to

modernise, simplify and improve the public sector by using the opportunities that digitisation offers, and the main priorities are affected by international trends [14]. The Swedish Agency for Digital Government implements digital policies for their digital services to be based on users' needs, include digital identities and e-invoicing, and be accessible to everyone [15]. The Danish Agency for Digitalisation implements digital policies to use digital-ready legislation to support and benefit citizens in digital society and ensure that personal data is handled safely [16].

Scandinavian countries have a strong history of delivering digital health solutions that support and optimise their national healthcare systems [17]. Denmark has been at the forefront of the integration of digital healthcare for 20 years [18]. As early as 2010, the New York Times claimed that Denmark was leading the way in digital care [19]; the transformation has continued, and a decade later, a United Nations (UN) survey ranked Denmark first out of 193 Member States in terms of digital government [9].

Although there are geographical differences between the Scandinavian countries, there are many similarities between their digital healthcare strategies [17]. The Norwegian digitalisation strategy in healthcare between 2017 and 2022 has a vision of all citizens enjoying easy and safe access to healthcare services, including digitalised patient records available through a public eHealth portal, access to e-consultations and e-prescriptions, easy scheduling of doctor's appointments, and information about available healthcare services [20]. Sweden's digital healthcare strategy for 2025 is for all citizens to achieve good and equal healthcare, and to strengthen their own resources for participation in social life [21]. The Danish Digital Health Strategy between 2018 and 2022 is for citizens to experience the healthcare system as a coherent network based on a citizen-centric approach, with a focus on digitalisation and the use of health data in the context of direct treatment, care and prevention [22].

European countries provide one of the most distinctive examples of demographic ageing, and population projections suggest that the pace of ageing of Europe will quicken in the coming decades [23]. Today, over one in nine people in Norway are aged 70 years or older. The prognosis, based on medium fertility, life expectancy and net migration, is that roughly every fifth person in Norway will be over 70 years old by 2060 [24]. Sweden and Denmark also expect the largest



demographic population increase to be among older adults [25, 26]. In recent decades, population ageing has been one of the main demographic trends in the Scandinavian countries and this trend is projected to continue [10].

Population ageing is rapidly transforming society [23]. As it is a major development, how to respond to population ageing has emerged as a central question in public debate and on policy agenda [10]. An increasing number of older adults entails challenges for social policy and healthcare systems. Modern assistive technologies, in particular digital technologies, are being heralded as part of the solution to providing sustainable care. Countries are developing new digital goods and services that can be adapted to the needs of older adults [27–29].

Digital technologies can help provide sustainable care, but unfamiliar systems may impact older adults' dignity. From a phenomenological point of view, human dignity is the affirmation of something valuable in oneself or another and can be ruptured [4]; therefore, the challenge of keeping up with technological shifts may make older adults vulnerable and affect their dignity [30]. However, dignity has become a central value in care for older adults in all three Scandinavian countries [31–34]. Preserving human dignity in the demanding situation of digital innovations is challenging and involves facing issues such as dependence, privacy, vulnerability and the need to be treated as an individual [34]. Therefore, as digital innovations can impact older adults' dignity, attention should be directed to their potential for the delivery of dignified care [7]. In January 2011 a new policy to support older adults' rights to dignified care and well-being, "The guarantee of dignity", passed into legislation in Norway and Sweden [32–34]. The aim of the regulation is to ensure that care for older adults, whether home-based or institutional, is organised in a way that contributes to dignified, meaningful and secure ageing. In the Norwegian strategy, dignified care is interpreted as keeping a person safe and having meaning in their old age. Having living arrangements based on one's needs allows one to retain the ability to function in daily life [35]. In the Swedish strategy, dignified care underlines the importance of personal integrity, self-determination, participation and individualised care [36]. In the Danish strategy, the dignified care of older adults focuses on involving and empowering every citizen, according to their individual needs, to maintain their independence and gain control of their own life [37]. All three countries' strategies underline the importance of individualised dignified care for older people [35–37].

Documents, through a systematic approach, can help researchers uncover meaning, develop understanding, and discover insights relevant to the research problem.

They also provide background and context and serve as a means of tracking change and development [38]. A preliminary search of PubMed, CINAHL and Scopus gave few results about earlier research in Scandinavian countries concerning policy documents for healthcare systems. Some examples are by researchers Frennert, Triantafyllou and Dahlborg with colleagues [39–42]. However, these studies did not explore digital strategies and eHealth policy concerning the dignity of older adults. While a recent Scandinavian study investigated how the concept of "a patient" is constructed in central policy texts in these countries [39], it did not address eHealth, dignity or older adults.

### Aim

The aim of this study is to provide knowledge about digital strategies and eHealth policies concerning older adults' dignity in three Scandinavian countries: Norway, Sweden and Denmark. This study is guided by three research questions:

- 1) Which digital strategies concerning older adults are described in documents, including those by the Norwegian Directorate of eHealth, the Norwegian Directorate of Health, the Swedish Ministry of Health and Social Affairs, and the Danish Ministry of Health?
- 2) Which eHealth policies concerning older adults are described in documents, including those by the Norwegian Directorate of eHealth, the Norwegian Directorate of Health, the Swedish Ministry of Health and Social Affairs, and the Danish Ministry of Health?
- 3) Which national strategies for digital development and eHealth have innovative power in relation to the dignity of older adults?

### Methods

In this qualitative study the core values of dignity and a subjective experience of autonomy and identity are central to framework and lie behind our deductive analysis of how healthcare innovation is led by healthcare strategies and policies [3, 6]. Documents were gathered as a data source to discover insights guided by the research questions [38, 43]. In line with O'Leary [43], the document analysis process comprised the following steps: (a) planning; (b) gathering; (c) reviewing; (d) interrogating; (e) reflecting; and (f) analysing data. In the analysis, the data was first deductively coded, following Bowen [38], and thereafter extracts concerning older adults were inductively coded using a thematic analytic approach following Braun and Clarke [44].

**Planning, data gathering and reviewing**

The criteria for inclusion in the study was textual and opinion papers exploring national digital strategies and eHealth policies concerning older adults in Norway, Sweden or Denmark. National documents by the Norwegian Directorate of eHealth, the Norwegian Directorate of Health, the Swedish Ministry of Health and Social Affairs and the Danish Ministry of Health concerning older adults were used as data sources. Government reports, expert opinions, discussion papers and position papers published in Danish, English, Norwegian and Swedish were considered. In addition, a systematic search guided by the Joanna Briggs Institute (JBI) framework for systematic reviews of textual and opinion papers in databases was undertaken to find relevant papers [44]. According to JBI framework [45], reports from professional organizations, consensus guidelines, expert consensus, policy reviews, papers about case reports and studies including expert opinion were included. We began searching in 2021 and papers published from January 2016 were considered for inclusion, as the World Health Organisation (WHO) considers topical updates from the last five years about countries that have a comprehensive national health sector policy with goals and targets [46].

To find governmental papers, a systematic search was conducted on the websites of the Norwegian Directorate of eHealth, the Norwegian Directorate of Health,

the Swedish Ministry of Health and Social Affairs and the Danish Ministry of Health. We used keywords in English and in relevant Scandinavian languages. To find other documents, a controlled vocabulary and keyword search was conducted using the following medical and social science electronic databases: CINAHL, MEDLINE via PubMed, ORIA and Google Scholar. The search strategies were drafted by the researchers in collaboration with a university librarian. The keywords used during the search are shown in Table 1. We used the main keywords throughout. Boolean logic containing combinations of MeSH Terms and Text Words was used [47].

In search strategy for databases, we used only English search terms, but in searches on governmental websites were also included terms in Norwegian, Swedish and Danish. The specific terms changed slightly depending on the database and website. The final search reports were exported into Rayyan [48]. After removing duplicates, all governmental papers were screened by two authors (MR and IGK) and the other texts were screened by two authors (MR and LU). Papers were included in the study according to the inclusion and exclusion criteria shown in Table 2. The reference lists of potential papers were visually scanned.

Included texts were reviewed critically using the JBI Critical Appraisal Checklist for Text and Opinion Papers [49]. The checklist included six questions concerning the source of the paper, the field of expertise, the focus and logic of the

**Table 1** Keywords used during the search

Keywords	Digital	Arrangements	Danish
	Digitalization	Methods	Denmark
	eHealth	Policies	Nordic
	Electronic health	Policy	Norwegian
	Health informatics	Strategies	Norway
	mHealth	Strategy	Scandinavia
	Network Assistive technology	Systems	Scandinavian
	Technology		Sweden
	Telehealth		Swedish
	Telemedicine		
MeSH terms (MEDLINE)	Digital technology	Methods	Denmark
	Technology	Policy	Norway
	Telemedicine		Scandinavian and Nordic Countries
Headings (CINAHL)	Assistive Technology	Health Policy	Sweden
	Digital technology	Public Policy	Denmark
	Health Informatics		Norway
	Health Information Networks		Scandinavia
	Telehealth		Sweden

**Table 2** Inclusion and exclusion criteria [45]

	Include	Exclude
Phenomena of interest	Publications that describe digital strategies and eHealth policies provided by national healthcare systems	Publications that do not describe digital strategies and eHealth policies provided by national healthcare systems
Context	About Norway, Sweden, Denmark, Scandinavian countries	Provide no separate information about Norway, Sweden, Denmark or Scandinavian countries
Types of publications	Government reports, expert opinion, discussion papers, reports from professional organizations, policy reviews, academic papers about case reports and studies including expert opinion	Statistical reports, epidemiological reports, other academic papers (not about case reports and studies including expert opinion)
Language	English, Norwegian, Swedish or Danish	Not in English, Norwegian, Swedish or Danish
Types of outcomes	Digital strategies and eHealth policies that impact older adults	Not about digital strategies and eHealth policies that impact older adults
Period	Published January 2016 and after	Published before January 2016

opinion, and references to extant literature. Each question was answered on a scale of Yes, No, Unclear or Not Applicable. Papers that received a “Yes” to 4 or more questions were included in the study.

#### Data interrogating, reflection and analysis

In accordance with O’Leary [43], background information on author, year, purpose and style was extracted. Pertinent information from data sources was identified and separated from that which was not pertinent [38]. Information that did not concern national digital strategies and eHealth policies for older adults, e.g. information about babies, childcare or private companies, was not considered pertinent and was not extracted. First, all pertinent extracts were deductively coded to distinguish between national digital strategies and innovative eHealth policies, according to the devised framework [38]. Then, under these two categories, inductive analysis was undertaken using a thematic analytic approach, with the themes capturing significant aspects of the data concerning research questions [44]. Each step of the analysis is illustrated in Table 3. Any discrepancies in the initial coding were discussed among the researchers until a consensus was reached. The analysis involved constantly moving back and forth between the entire data set, the coded extracts of the data, and the analysis of the data that emerged [50]. The final codes were subsequently categorised according to research questions into the three overarching categories: (a) national digital strategies; (b) innovative eHealth policies; and (c) digital strategies and eHealth policies concerning older adults’ dignity. These three categories were then organised into themes [44]. Descriptions of these are presented in the results section.

#### Results

In accordance with the inclusion criteria (Table 2), papers describing digital strategies and eHealth policies provided by national healthcare systems that impact older

adults in three Scandinavian countries — a total of 26 documents were included (see Fig. 1). Of these, 8 focus on Sweden, 6 on Norway, 5 on Denmark, 1 on Norway and Sweden and 6 on all three Scandinavian countries.

Of the 26 sources, 17 described strategies and policies that influence older adults [8, 17, 21, 22, 51–53, 56–65] and 9 focused directly on older adults [29, 37, 40, 41, 54, 66–69]. Background information on the author(s), year, style, country and purpose of each paper can be found in Table 4. Documents describing national digital strategies focused on access to digital technologies and continuous learning for digital skills. Documents describing national eHealth policies underlined the importance of the patient at the centre of healthcare and the feelings of safety that digital systems can provide. Both types of documents were concerned with digital device security, access to data, and the human dimension of relationships and care. The results below answer the three research questions with thematic findings on: a) national digital strategies concerning older adults, b) national eHealth policies concerning older adults and c) digital strategies and eHealth policies concerning older adults’ dignity.

#### National digital strategies concerning older adults

Documents about national digital strategies concerning older adults in the three Scandinavian countries focused on user access to digital technologies and continuous learning for digital skills.

#### Access to digital technologies

All three Scandinavian countries have adopted digital strategies and emphasise the importance of equal access to digital technologies [8, 21, 29, 63]. At the same time, it is essential to acknowledge that access to digital technologies is not equal. “There is a need for equal access to digital technologies” [63, p. 7]. In the context of the high rates of usage of digital technology in Scandinavian

**Table 3** A three-step movement from included documents to the final themes**Material from the documents:**

Digital solutions must be easy-to-use, quick and ensure high quality. A user friendly and simple digital public sector and better use of data [51]. Digital safety and security of businesses are essential to being able to exploit the opportunities offered by digitalisation [51]. For many patients and types of examinations it is not relevant to replace physical meetings with digital solutions [52]. Training programs for older users to master technological tools lead to additional benefits [29]. Therefore, it must be possible for digitisation to support those who can cope with and want a digitised health system, while simultaneously allotting time for patients, including at-risk elderly citizens, with a greater need for face-to-face interaction [22]. Cooperation with the private sector on digitalisation will be enhanced [53]. Other ethical issues in eHealth and elderly users are related to the potential replacing of offline services and personal face-to-face contact [54]. Assistive technologies can lead to gains in independence through human-non-human contact, but this in turn can have negative effects on the levels of social inclusion and human interaction [29].

**Step 1: Separating pertinent information from data sources****Pertinent information from data sources:**

Digital solutions must be easy-to-use, quick and ensure high quality. A user friendly and simple digital public sector and better use of data [51]. For many patients and types of examinations it is not relevant to replace physical meetings with digital solutions [52]. Training programs for older users to master technological tools lead to additional benefits [29]. Therefore, it must be possible for digitisation to support those who can cope with and want a digitised health system, while simultaneously allotting time for patients, including at-risk elderly citizens, with a greater need for face-to-face interaction [22]. Other ethical issues in eHealth and elderly users are related to the potential replacing of offline services and personal face-to-face contact [54]. Assistive technologies can lead to gains in independence through human-non-human contact, but this in turn can have negative effects on the levels of social inclusion and human interaction [29].

**Step 2: Deductive coding****Category digital strategies:**

Digital solutions must be easy-to-use, quick and ensure high quality. A user friendly and simple digital public sector and better use of data [51]. Training programs for older users to master technological tools lead to additional benefits [29].

**Category eHealth policies:**

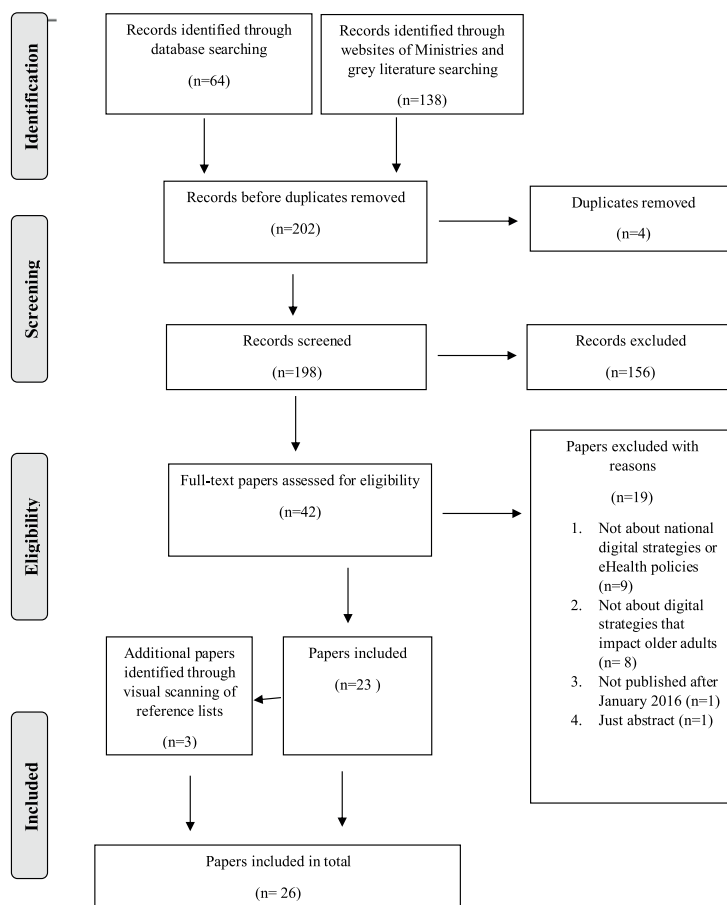
For many patients and many types of examinations, it is less relevant to replace physical meetings with digital solutions [52]. Therefore, it must be possible for digitisation to support those who can cope with and want a digitised health system, while simultaneously allotting time for patients, including at-risk elderly citizens, with a greater need for face-to-face interaction [22]. Other ethical issues in eHealth and elderly users are related to the potential replacing of offline services and personal face-to-face contact [54]. Assistive technologies can lead to gains in independence through human-non-human contact, but this in turn can have negative effects on the levels of social inclusion and human interaction [29].

**Step 3: Inductive coding****Final theme in the results:**

From these extracts under category eHealth policies (together with other relevant extracts) immersed theme "Access to data and the human dimension of care". Digital solutions are not always the best, especially if they risk replacing all face-to-face contacts with digital solutions, this can have negative effects on levels of social inclusion and human interaction. Reduced social stimulus could lead to person's need for human contact not being met, and thereby affect human dignity in a negative way.

countries, taking services online has sometimes been seen as synonymous, to an extent, with making services more accessible to all citizens, but this is not, in fact, the case [8]. In Scandinavian countries, there is a digital divide related to socio-economic status, age, gender, and health, as well as disparities between urban and rural areas concerning the availability of digital infrastructure and the adoption of digital technologies [8, 63]. Several documents indicate that a large proportion of citizens lack the infrastructure and skills required for

full participation in digital life. There is still great potential for older people to benefit from digital technologies, as the three Scandinavian countries are among the top-ranked in Europe in the rate of older people who report having above-basic overall digital skills [53, 68]. For instance, while more than 40% of the EU population aged 65–74 had never used a computer according to survey results in 2017, the corresponding rates were only 5% in Norway and Sweden and 11% in Denmark [68]. A lack of digital technology skills and knowledge in rural areas



**Fig. 1** PRISMA flow diagram illustrating the search strategy. This flow diagram provides the phases of paper identification and selection, which resulted in the identification of 26 papers that were deemed eligible for inclusion in the study. Prepared in accordance with Tricco et al. [55]

limits the possibilities for innovative service provision and customer use [40, 58, 64, 67].

### Continuous learning for digital skills

The development of innovative digital solutions that support demographic challenges is advanced in Scandinavian countries and requires continuous learning to keep up [8, 9, 42, 57]. Documents included suggest that programmes aiming to support and increase digital competence can help older adults adapt better to

the digital environment [21]. “Digital solutions must be easy-to-use, quick and ensure high quality” [42, p. 14]. Citizens should be equipped to operate in the digital environment [9, 17, 41, 51, 64]. In reports on European countries, including Scandinavian countries, it becomes obvious that older adults’ participation in society requires far more than just a simple technological fix [29]. Digital strategies in the three Scandinavian countries include programmes aiming to support and increase the digital competence of older adults [29, 41, 56, 69]. Included documents indicate that training

**Table 4** Background information on authors, year, style and purpose of the paper

Governmental Documents					
	Author(s) and country	Year	Purpose of the paper	Style	About
1	The Government/ Local Government Denmark/Danish Regions; Denmark [51]	2016	To present the digital strategy 2016–2020	Publication for public	Digital strategies
2	Ministry of Health and Social Affairs; Sweden [21]	2016	To present the Swedish common vision for eHealth 2025	Publication for public	eHealth policies
3	Ministry of Social Affairs; Sweden [66]	2017	To present the national quality plan for older peoples care	Policy document	eHealth policies
4	Danish Ministry of Health; Denmark [22]	2018	To present the digital health strategy 2018–2022	Publication for public	eHealth policies
5	Norwegian Ministry of Health and Care Services; Norway [67]	2018	To present the quality reform for older persons: <i>Live Your Whole Life</i>	Publication for public	eHealth policies
6	Healthcare Denmark, Danish Ministry of Health; Denmark [37]	2019	To present the Danish approach to coherent care of older people and solutions that help to improve quality of life for older citizens	Publication for public	eHealth policies
7	Norwegian Ministry of Health and Care Services; Norway [52]	2019	To present a national health and hospital plan	Policy document	eHealth policies
8	Norwegian Center for E-health Research; Norway [69]	2019	To report outcomes of the national project <i>Social, digital contact to mobilise against loneliness among older people</i>	Report	Digital strategies
9	National Board of Health and Welfare; Sweden [56]	2019	To present a strategic plan to support good care that is close to patients	Policy document	eHealth policies
10	Ministry of Local Government and Modernisation; Norway [53]	2019	To present the digital strategy for the public sector 2019–2025	Publication for public	Digital strategies
11	Norwegian Ministry of Health and Care Services; Norway [57]	2020	To present a summary of the national health and hospital plan	Summary of policy document	eHealth policies
12	Ministry of Enterprise and Innovation; Sweden [58]	2020	To present Sweden's national life science strategy	Publication for public	eHealth strategies
13	Norwegian Directorate of Health; Norway [59]	2021	To present overview and new knowledge from the national welfare technology program	Report	eHealth policies
14	Danish Ministry of Health, Healthcare Denmark; Denmark [60]	2021	To present the Danish super-hospital programme	Publication for public	eHealth policies
<b>Other Documents</b>					
	<b>Author(s) and country(ies) represented</b>	<b>Year</b>	<b>Purpose of the paper</b>	<b>Style</b>	<b>About</b>
1	Larsen, Sørensen, Petersen and Kjeldsen, Denmark [61]	2016	To present results from a multi-stakeholder project that developed a new concept, a "shared service centre" for telemedicine that is envisioned as working across different telemedical initiatives to support the implementation and wider adoption of telemedicine	Article	eHealth policies
2	Essen, Scandura, Humphrey, Johansen, Kierkegaard, Koskinen, Liaw, Odeh, Ross, Ancker, Norway, Sweden and Denmark [62]	2018	To compare patient-accessible electronic health records policy and services in ten countries	Article	eHealth policies
3	Nordic Innovation, Norway, Sweden and Denmark [17]	2018	To provide information about Nordic Countries' digitally-led healthcare	Publication for public	eHealth policies

**Table 4** (continued)

<b>Governmental Documents</b>						
4	Randall, Berlina, Teräs and Rinne; Nordregio, Norway, Sweden and Denmark [63]	2018	To report the preliminary findings of a literature and policy review that was conducted as part of the in-depth study: <i>Digitalization as a tool for sustainable Nordic regional development</i>	Report	Digital strategies	
5	Hägglund, DesRoches, Petersen and Scandurra, Sweden [64]	2019	To bring attention to patients' limited access to health records	Editorial	eHealth policies	
6	Limen, Hill-Cawthorne, Niezen and Tennøe; European Parliamentary Technology Assessment, Norway and Sweden [29]	2019	To provide an up-to-date international overview of policies linked to the topic of technologies in older people's care	Report	Digital strategies and eHealth policies	
7	Randall and Berling; Nordregio, Norway, Sweden and Denmark [8]	2019	To summarise the work and results achieved within the study on digitalisation titled <i>Governing the digital transition in Nordic regions: The human element</i>	Report	Digital strategies	
8	Fremert, Sweden [40]	2019	To illustrate how technological change and municipal employment of welfare technologies is employed in Sweden	Article	eHealth policies	
9	Schliemann, Danielsen, Virtanen, Vuokko, Hardardottir, Alsafer, Aksnes, Eklof and Ericsson, Norway, Sweden and Denmark [65]	2019	To summarise the discussions that took place in a seminar in Copenhagen in late 2018 on eHealth standardisation in Nordic countries	Report	eHealth policies	
10	Fremert, Sweden [41]	2020	To explore how welfare technologies are implemented in Swedish practices of caring for older people	Article	eHealth policies	
11	Sfjernberg, Sigurjonsdottir, Meijer; Nordregio, Norway, Sweden, Denmark [68]	2021	To examine policies and initiatives to promote the silver economy and the closely related concepts of healthy ageing, active ageing and age-friendliness	Report	Digital strategies and eHealth policies	
12	Valokivi, Carlo, Kvist and Outila, Sweden [54]	2021	To analyse policy documents	Article	eHealth policies	

programmes which enable older adults to master technological tools can provide additional benefits, such as larger social networks and reduced loneliness [29, 69].

#### **National eHealth policies concerning older adults**

Documents about national eHealth policies concerning older adults in the three Scandinavian countries underline the importance of the patient at the centre of healthcare and the aspect of how digital systems can increase feelings of safety.

#### ***Patients at the centre of healthcare***

The aim of digitalisation is to provide patients more opportunities to participate more fully in their own healthcare, seeking to put the patient at the centre of care and engaging them as equal stakeholders within the care continuum [17, 52, 56, 57]. This is intended to bring healthcare providers and patients closer together. The voice of patients is important in interactions with healthcare providers, but also in the development of eHealth systems [17, 29, 53, 54, 67]. “It is obvious to ask the question: “What is important to you?” when decisions must be made. The patient is an active participant” [52, p. 18]. The documents we surveyed emphasise that strategies for the implementation of technologies should address the individual’s conditions and needs and how eHealth can meet those particular needs [29, 66, 67]. eHealth solutions can help to maintain older adults’ quality of life, integrity, independence and mastery [29, 58, 67]. Digitalisation enables more tasks to be performed close to patients, looking at each person as a whole, not just at their individual diagnoses [8, 22, 52].

#### ***Digital systems increase feelings of safety***

Digital systems crucially help provide feelings of safety [22, 29, 52, 56, 59]. User-friendly care technologies, including safety alarms, electronic door locks, remote health monitoring, GPS monitoring and mobile applications, can offer support in different ways. GPS monitoring can prevent older adults from getting hurt if they get lost, and GPS alarms allow individuals with dementia to decide where and when they want to take walks outside [29, 56]. Monitoring can also provide a sense of peace and safety for relatives of older adults, who experience reduced stress because the users are more independent [29, 59]. “With the use of security cameras at night and automatic medicine dispensers, the individual becomes less dependent on healthcare providers making visits to the home” [56, p. 28]. The Norwegian National Health and Hospital Plan claims that digital

access to medical records strengthens patient safety, as it makes it possible for patients to see who has viewed information about them [52].

#### **Digital strategies and eHealth policies concerning older adults’ dignity**

The three Scandinavian countries’ documents on digital strategies and eHealth policies concerning older adults’ dignity highlighted the importance of digital device security, user access to data and the human dimension of care.

#### ***Digital device security***

All three Scandinavian countries emphasise the importance of security in their digital strategies and eHealth policies [8, 22, 51, 53, 63]. Companies, organisations and individuals should trust and be comfortable with the use of digital services [22, 29, 53, 63]. “The aim is that patients should experience the health system as a coherent and trustworthy health network for all that is both inherently digital and inherently personal” [22, p. 4]. Device security can help to reduce the barriers to the adoption of technological solutions [64, 69]. Included document dealing with technologies in care for older adults reveals that digital devices connected to the Internet with poor security may be vulnerable to hacking, which entails a risk to video and voice recordings, and the possibility of the device being controlled remotely by an attacker [29]. Surveyed documents from all the three Scandinavian countries suggest that attention to digital safety and the security of individuals is essential when exploiting the opportunities offered by new technologies and digital devices [8, 22, 29, 53, 69].

#### ***Access to data and the human dimension of care***

Surveyed documents reveal a lack of coherence among healthcare sectors and digital systems in different regions, even in the same Scandinavian country [29, 61, 62, 64]. In Norway and Sweden, two sets of patient-accessible electronic health records are available, and the data cannot be transferred between those two services in one country. Patients receiving care in different regions therefore need to use several systems to access their data in its entirety [62, 64]. In contrast, Denmark uses a one-service-one-login approach and aims to make data available for everyone involved in a treatment [17, 62, 65]. Included documents add that there is a lack of digital competence among older adults and patients may have problems using digital healthcare systems [40, 52, 64].

Furthermore, the documents reviewed for this study claim that technology cannot replace the human dimension of care [29, 52, 54, 68]. Digital solutions are not always the best, especially if they risk replacing all



face-to-face contacts with digital solutions, this can have negative effects on levels of social inclusion and human interaction [29, 52, 54, 68]. “For many patients and many types of examinations, it is less relevant to replace in-person meetings with digital solutions” [52, p. 95]. Reduced social stimulus could lead to person’s need for human contact not be met, and thereby affect human dignity in a negative way.

## Discussion

This study reviewed documents describing national digital strategies and eHealth policies in three Scandinavian countries. The purpose was to provide insights relevant to research questions about digital strategies and eHealth policies concerning older adults’ dignity in three Scandinavian countries: Norway, Sweden and Denmark.

The findings concerning older adults’ unequal access to digital services are in accordance with European studies from the last five years that also indicate a health and age-related digital divide [70, 71]. Such findings do not appear to evidence the impact of the principle of equality that informs the Nordic welfare model [13] and the UN sustainability goals for ensuring equal opportunities for all [72]. All three Scandinavian countries have programs designed to support and increase the digital literacy of older adults. This is important, as research suggests that older adults need educational support to be included in the digital society [73, 74]. Nevertheless, a recent study claims that Norwegian older adults experience that there are expectations towards them to have digital skills that they struggle to achieve and that affects their experience of dignity [34]. Our document analysis revealed many national policies make claims that programmes aiming to support and increase digital competence will help older adults to better adapt to the digital environment. The Scandinavian countries supportive programs has the European Commission’s aim for shaping Europe’s digital future for every citizen to benefit from digitised society, however this strategy needs local policies and collaboration with end-users to fully success [75]. Good practice of care involves ensuring people always feel valued when using healthcare services and that they are treated with respect, dignity and compassion [76]. National eHealth policy impacts the users of digital systems. The need to ask for help when trying to use eHealth systems may make older adults feel more vulnerable, and this can in turn, affect their experience of dignity, as dignity is in its variations a gathering of both common values and vulnerability [4, 34]. Dignity can be lost through vulnerability, and the need to ask for help may impact an older adult’s dignity in a negative way.

Another important challenge when using digital technology in healthcare systems is the human dimension of

care. This includes dimensions where a person experiences that they feel human in the interaction with technology. Our findings on this issue are in line with the Code of Ethics for Nurses, which state that it is vital to make sure that technological devices do not replace human relationships [77]. The results indicate about policies considering that digital healthcare may be too easily substituted for in-person face-to-face contact, and this in turn can have negative effects on social inclusion. Social connections are essential for mental and physical health and well-being and these considerations support Scandinavian ageing-related policies for each individual to be supported to remain in good physical and mental health for as long as possible [10]. This is in accordance with the 3<sup>rd</sup> UN sustainability goal to ensure healthy lives and promote well-being for all at all ages [72]. As eHealth has the potential to misrepresent or incompletely represent the human aspect of medical communication [78], we acknowledge the importance of discussions of this issue in the eHealth policies of the Scandinavian countries. A person has a need for human contact, there is a risk it not being met if social stimulus is reduced. This may lead to suffering among older adults by affecting their sense of dignity. Person’s sense of dignity can be promoted through human relationships, social inclusion and positive relationships with healthcare providers [79].

The results of this study show that the reviewed documents underline the importance of security in national digital strategies and eHealth systems. Our findings offer an overview of eHealth policies consequences for the user; eHealth systems that are vulnerable to hacking may make users insecure. The issue of trust in digital technology and eHealth systems has been recent topic of discussion in Scandinavian countries. Older people in Sweden have had problems trusting the eHealth tool because it has not always worked properly [80]. Older adults in Norway have found that they cannot always rely on eHealth systems, as they lack information about how the systems are used in healthcare and who has access to their personal data [34]. Such feelings of insecurity when using national eHealth systems may impact older adults’ dignity. Systems that are capable of processing personal data will be subjected to regulation under the EU General Data Protection Regulation, which requires data protection safeguards to be built into technology early in the development process and helps users to increase their trust in technology [81]. Our findings elucidate the importance of digital security in national digital strategies and eHealth policies, whereby feelings of security may affect older adults’ dignity in a positive way.

This study shows how national eHealth policies in three Scandinavian countries aim to give patients more opportunities to participate in their own healthcare.

This is in accordance with World Health Organization's claim that eHealth can be used to increase the level at which patients engage with their care [82]. The policies thereby underline the centrality of individuals' conditions and needs when implementing new technologies in healthcare. This is in line with Foster and Sethares's [83] claim that it is important to keep the patient's perspective at the forefront if we want older adults to adopt eHealth systems. The findings of this study also reveal, how including older people in the process may influence policy-making and care. Engagement between research and policy is driven by systematic factors [84]. Nevertheless, the results do not reveal practical steps for achieving this goal, including what kind of regulatory regimes should apply to corporate service providers or which ministries are best placed to have responsibility for these issues. Reviews from the last decade show that the true needs of older people as end-users have been poorly understood when ensuring that digital technologies and eHealth systems meet their needs [85–88]. The inclusion of older adults' voices and needs during the implementation of eHealth systems may impact their experience of dignity in a positive way, as dignity is the affirmation of something valuable in oneself or another [4].

On the other hand, giving older adults a voice is not a complete solution when implementing new technologies and improving healthcare, as health promotion is about more than just offering more choices [89]. Sometimes patients are necessarily rendered passive due to their situation, or health condition and technological systems have to be able balance service user agency and the new demands for agency placed on the older person by technology itself. In other words, a balance has to be struck between meeting the older person in their needs and making use of technology to facilitate, but an instrumental shift to technology as an *either* technology *or* human contact is not sufficient and can add to the problems technology is trying to solve. While putting the patient at the centre of the care contributes to a wider range of choices, choice alone does not meaningfully address well-being resources and absence of well-being needs [90]. In healthcare policy, making a patient's autonomy too pervasive may also affect their dignity [89]. If it becomes too dominant that patients should be their own masters, then it may risk obstructions to the help the patient needs. eHealth systems offer more and more empowerment, but they may not be the full solution as patients' deeper existential issues must also be taken care of [90]. In addition, technology can inadvertently marginalise older adults. This is in accordance with the studied strategies and policies and their

focus on the importance of equal access to healthcare services, and the 10<sup>th</sup> UN sustainability goal to reduce inequalities both within and among countries [72].

### Strengths and limitations

It is a strength of this study that papers in all three Scandinavian languages and in English were considered for inclusion. While the authors include native speakers of Danish, Norwegian and English and four can read and/or speak Swedish, our collective skills in the latter are less developed, hence there was special attention paid to the documents in Swedish to capture all the relevant data. The use of a comprehensive, systematic search strategy and including documents according to the JBI framework [45] in this study can also be seen as a strength. It provided transparency to this process for the authors and is thereby considered as a strength. We added six analytic steps suggested by O'Leary to secure further analytical depth to the study [43].

The reviewed documents provided background information that helped us to understand the roots of specific issues and indicated the conditions that influence the phenomena under investigation [38]. Although documents can be a rich source of data, researchers should examine documents with a critical eye [38]; thus, it is a strength of this study that the included texts were not only reviewed by three of the authors but also critically reviewed using the JBI Critical Appraisal Checklist for Text and Opinion Papers [49]. Furthermore, this study offers new insights into digital strategies and eHealth policies concerning older adults' dignity in three Scandinavian countries. However, corresponding limitations include not seeking to differentiate the three countries' digital strategies and eHealth policies concerning older adults' dignity, which could be further research and the challenges presented by document analysis as a research method. For example, non-academic documents are produced for purposes other than research and do not reflect a research agenda, meaning that they do not always provide sufficient detail [38]. Although document analysis is often combined with other qualitative research methods [38], this study used only one method. Nonetheless, the findings of this document analysis add to the available evidence about the three Scandinavian countries' national digital strategies and innovative eHealth policies with aspects concerning older adults' dignity.

### Conclusions

This document analysis presents the three Scandinavian countries' national digital strategies and innovative eHealth policies concerning older adults' dignity. All three countries in this study underline the importance of security in their digital services. The documents we

reviewed describe a lack of digital competence among older adults. Support for digital competence is needed, otherwise older adults may encounter increasing marginalisation, loss of agency, and perceived stereotypically as ‘a problem group’ when using digital healthcare systems. There is a risk that the need to ask for help to use eHealth systems may cause suffering among older adults. This complex issue may affect their experience of sense of their personal dignity, of their affiliation to society. It is time to increase our understanding of human dignity in this arena and focus on older adults’ needs as ‘end-users’ if we want them to gain from digital solutions and eHealth systems. On the other hand, patient empowerment in this arena and the use of eHealth systems alone cannot be the full solution to safeguarding older adults’ dignity. New digital services must be meaningfully integrated into countries’ digital strategies and eHealth policies, which requires investigation that goes beyond as ‘end-user’ experiences of technology to provide an understanding of how we can support human dignity through technology—an area that has so far received little attention. To the extent the three Scandinavian countries national healthcare strategies and policies for digital development and eHealth have innovative power in relation to the dignity of older adults, the most clearly are that they all emphasize the importance of equal access to healthcare services. With that, the 10<sup>th</sup> UN sustainability goal to reduce inequality is followed, which states a powerful argument for national and local policy making. As thus they promote a stance of dignified care.

#### Abbreviations

WHO	World Health Organization
JBI	Joanna Briggs Institute
UN	United Nations

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#### Authors’ contributions

MR planned the study together with LU, MR, IGK, JB and LU were part of the data collection and the analysis. MR, IGK and LU screened the studies. MR conducted data extraction with IGK and LU acting as advisors. KG critically reviewed the study content. MR wrote the first draft of the manuscript with LU acting as advisor. IGK, JB and KG read and provided substantial edits to the manuscript. All authors read and approved the final manuscript.

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#### Availability of data and materials

All data generated or analysed during this study are included in this published article.

#### Declarations

##### Ethics approval and consent to participate

Not applicable.

##### Consent for publication

Not applicable.

##### Competing interests

The authors declare no competing interests.

#### Author details

<sup>1</sup>Faculty of Nursing and Health Sciences, Nord University, Bodø, Norway.

<sup>2</sup>Faculty of Nursing and Health Sciences, Nord University, Levanger, Norway.

<sup>3</sup>School of Sport and Health Sciences, University of Brighton, Brighton, UK.

<sup>4</sup>Orthopedic Surgery, Kolding Hospital, Kolding, Denmark. <sup>5</sup>Institute of Regional Health Research, Southern Danish University, Odense, Denmark.

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The overall aim of this research is to address societal digital demands and needs in healthcare services in order to view the dignity of adults aged 75 years and older.

Three subordinate aims are explored by three corresponding studies. The three studies are linked to each other in a hermeneutic circle, wherein each study deepens our understanding of societal digital demands and older adults' needs and dignity in the context of healthcare.

The synthesized results suggest that when older adults need to use new technology and digital healthcare services, different aspects impact their dignity in both positive and negative ways. Older adults experience a sense of being lost in a digital world, and this impacts their perception of dignified ageing. Technology cannot offer the human dimension of care and each study addresses the importance of human contact in healthcare services. Older adults need someone's help when using new technology and eHealth systems, and continuous learning is necessary. Older adults have concerns about new technology violating their privacy. While new digital technology can increase older adults' feelings of vulnerability and insecurity, integrating it into healthcare systems opens up new opportunities and gives older adults a sense of safety.

This dissertation offers new knowledge about perspectives concerning societal digital demands and needs in healthcare services and how this relates to adults aged 75 years or older and their dignity. It offers a valuable scientific contribution in that it elucidates the gaps between digital strategies and eHealth policies and older adults' needs as users. It calls attention to important aspects to consider when implementing changes in eHealth policies the way that older adults could benefit from the systems in a dignified way. This dissertation lays a good foundation for further research. The results are relevant for policy makers, healthcare providers, older adults and their families.