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SOCIAL SERVICES, HEALTH AND SPORTS

VIRTUAL SUPPORT AND ITS BENEFITS AND CHALLENGES FOR PALLIATIVE, HOSPICE PATIENTS AND THEIR FAMILIES.

A narrative literature review

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SAVONIA UNIVERSITY OF APPLIED SCIENCES THESIS ABSTRACT

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Abstract

Globally, the dramatic increase in life-threatening illnesses and disorders has increased the demand for end-of-life care and bereavement assistance in nearly every country. Providers of palliative care have struggled to satisfy these demands. Numerous public health authorities in many countries tasked with disease management have lately restricted visits to patients in hospitals. As a result, in most situations, people die alone. This literature review aims to explore and describe the benefits, efficacy, and limitations of the application of virtual systems in the palliative line of medicine. Due to the intricacy of the patient's sickness, palliative care professionals find it difficult to give services to their clients. Still, the industry must try to get over this obstacle. Due to different constraints that limit direct interaction between patients and the outside world and others, patients often die alone in certain circumstances. Because of this, it has become overly important for hospice facilities to device ways of helping terminally ill patients to have a convenient setting when undergoing their treatment. Prioritizing virtual assistance and a virtual interface between patients, carers, and families during end-of-life care should also be a top priority for health institutions. Compared to in-person consultations, virtual platforms have been recognized as appropriate for outpatient and inpatient patients for the longest period. Virtual platforms have long been regarded as the most reliable alternative to in-person consultations for inpatient and home-based palliative care. Whilst virtual technology is quite effective in aiding patients in palliative care, few facilities have used technology to help patients deal with daily obstacles such as pain and concern over their health. When patients are alone in a hospital or hospice, a virtual inpatient and outpatient palliative care program may provide them with a unique opportunity to receive and enjoy positive interactions with their caregivers and families. This narrative review explores the benefits that can be derived from virtual palliative care regarding these crucial issues. The review will also highlight shortcomings while trying to address the challenges encountered.

Keywords: virtual, hospice, inpatient, outpatient, palliative care, telemedicine, video conferencing

Preface

During the academic years 2022–2023, this study was conducted under the Department of Social Services, Health, and Sports at Savonia University of Applied Sciences. My supervisors deserve the utmost gratitude for their continuous support and advice during this endeavour. Because of them, I had the opportunity and a nurturing environment to finish my work. The assurance that the work will be finished in its opportune time was constantly given. I thank them for their support towards my research topic and their encouragement to conduct in-depth research and make early preparations for the study. I am also grateful to them for giving me room to expand on this research in ways I never would have thought possible. Both of my supervisors have graciously shared a wealth of research information with me and have also often emphasized the value of finishing activities that have already been started. I also want to express my sincere gratitude for their helpful criticism. The result has been significantly enhanced by their effort and ideas. Without substantial teamwork, this study wouldn't have been possible. I am grateful to both my thesis supervisors, who helped with conceptualization and the actual work on this project by lending their best knowledge and time in generation of better ideas. I also wish to express my sincere gratitude to all of the other contributions.

The school librarian, provided me with meticulous assistance while I revised this thesis' materials and language, and I am very appreciative of it. Without keeping track of their working hours, they contributed to this thesis.

I thank the supervisor at my place work, for being an excellent clinical leader and doing everything she could to make sure that my theoretical knowledge could be put into practice. Thanks to the hospice and palliative care staff in Helsinki city hospital for creating a great environment for me to work and conduct this research at the same time.

Finally, I extend my sincere gratitude and dedicate this work to my precious Son, who has served as my pillar of support throughout the years. In addition to bringing joy into my life, my adored son's lively nature has helped me get through the lonely nights I spent writing these texts. I also want to express my sincere gratitude to my parents, Mr. and Mrs. Muchiri, as well as my brother Ken, for their support and direction throughout my life. I regret that my devoted husband was unable to view the completed project, for which he would be grateful.

LIST OF ABBREVIATIONS

ACP	Advanced Care Planning
ATM	Asynchronous Transfer Mode
DICOM	Digital Communication in Medicine
ECG	Electrocardiograms
ED	Emergency Department
EMR	Electronic Medical Record
EPR	Electronic Patient Record
EU	European Union
HILMO	National Care Registry
HIS	Health Information Systems
HL7	Health Level 7
ICT	Information and communication technologies
IHE	Integrated Healthcare Enterprise
ISDN	Integrated Services Digital Network
IT	Information Technology.
KANTA	National digital data system services
KELA	Finnish Social Insurance Institution
MOMEDA	Mobile Medical Data
MRI	Magnetic Resonance Images
MSAH	Ministry of Social Affairs and Health
NORDUnet	Nordic University network
PACS	Picture Archiving and Communication Systems
PC	Primary Care
PERFECT	Performance, Effectiveness and Cost of Treatment Episodes Project
PHR	Personal Health Record
SII	Social Insurance Institution (KELA)
THL	Finnish Institute for Health and Welfare
VR	Virtual reality

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1 INTRODUCTION

Palliative patients should be guaranteed a life with good pain management, less suffering, and mitigation from stress, regardless of whether they are on therapy or the care they are receiving has a palliative intent. There are many international reports of instances, where patients, including young people, are denied access to quality palliative care. Therefore, it is a global call and responsibility for governments to commit to improving access of palliative care by their citizens. The pertinent medical authorities must provide a platform for palliative care to be integrated into standard medical practice care and establish networks with health specialists in the health sector at the national level to advance the agenda locally where it matters (WHO, 2023; Wiener et al. 2008; Abdelhadi et al. 2023.)

Palliative care, according to the World Health Organization, is defined as an interdisciplinary specialty which enhances lives of patients with life threatening illnesses. Palliative care is typically provided by Primary Care (PC) units or PC consultation teams in inpatient healthcare services (Chang et al., 2021, 2 & 8). According to research, PC impacts patients' well-being by prolonging survival, improving life quality, or lowering the symptom burden. It is essential to have a comprehensive concept for people facing terminal illness, and seriously ill people to be counselled, treated, and accompanied to cope with the disease that is limiting their life. In most cases, the life-limiting disease often is associated with serious and often painful symptoms and ailments during the patient's ailing journey (Parker et al., 2007, 10.)

Only a small portion of the world’s population has access to specialized healthcare or the resources to effectively handle their health issues, thus we must employ various strategies to produce equitable health outcomes for everyone. Age, gender, ethnicity, geography, and financial status are some of the many factors linked to health disparities. This difference may be narrowed if a society's healthcare system improves and becomes more widely available. (WHO, 2018.) The importance of universal access to healthcare has been brought into sharper focus by recent developments in communications technology. Virtual health, or remote accessibility to health-related services, has become one of the topmost successful models for increasing health service accessibility due to its influence on medical treatment and healthcare delivery systems (Bhatt & Bathija 2018, 4).

The purpose of this thesis is to identify the qualities of virtual health systems that might make them useful in palliative care as well as to highlight and examine their limitations through a narrative literature review.

2 CONCEPTUAL FRAMEWORK

A book by Tarricone & Tsouros in 2008 drew a picture of how a growing population of terminal patients and the elderly in Europe made planning for the effective use of scarce and increasingly expensive health and care resources extremely difficult. Virtual care programs, which use digital technology to support assistive living, can address these problems (Tarricone & Tsouros, 2008, 7).

Vermesan & Friess in their publication, presents business cases demonstrating how virtual care technologies can provide adequate value for all health stakeholders involved, and encourages full deployment of virtual platforms in healthcare. The publication goes ahead in illustrating platforms that have been proven scalable and that have offered comprehensive digital services that can bring significant cost savings and efficiency in health care delivery in a country like Finland and all over Europe. However, they went further to emphasize the need for laying out ways in which nations that were not covered in the research, can leverage digitalization in healthcare for a new model of care interaction and delivery (Vermesan & Friess 2016, 11,36 -42).

2.1 Palliative Care

American National Consensus Project for Quality Palliative Care, defines palliative care as an intervention that promotes the living standards of both the patient and their families, by anticipating, reducing, and alleviating suffering. Palliative care addresses physical, intellectual, emotional, social, and spiritual requirements at all stages of a medical illness. Palliative care also encourages patients' freedom, information access, and preferences. (Friebert & Williams 2015, 2; Mercadante, Gregoretti & Cortegiani 2018, 1-2.)

Hospice care is a palliative model, widely regarded as the standard for premium caring and support for persons facing terminal illnesses. It provides skilled wellness services, pain management, and spiritual and psychological aid that is specially matched to the patient's requirements and preferences (Pyke-Grimm et al. 2021, 7).

2.2 Defining Virtual Care

In 2021, Jagannath et al., came forward with a very rich description of what any form of digital health e.g., virtual care should entail. They described it as any form of contact and engagement between a patient and their caregiver, taking place remotely, using any available digital or electronic means of communication to enhance or facilitate patient care's quality and efficacy (Jagannath et al. 2021, 1-6).

Fisk, Livingstone & Pit brought their own perspective by highlighting telehealth, telemedicine, telecare, technology-enabled health and digital health as a synonym that could be used interchangeably. With that in mind, virtual health also lands in these categories. These three researchers described telehealth as a part of digital health, but it is a broader concept covering the totality of technology-driven or remote healthcare (Fisk, Livingstone & Pit 2020, 2-3).

Chaet et al. had their contribution regarding the same in 2017, stating that virtual health is more accessible than we expect and encompasses more ideas than Telehealth. In their research, they explain that in virtual care, medical specialists collect patient data online and deliver care, providing greater transparency for patients and caregivers, including full disclosure of their treatment plans, prior clinical data, and other authorizations. Additionally, individuals control how, when, and where they are treated. The care comprises interactions with therapists, pharmacies, insurance companies, and other service providers and doctor-patient interactions. It also provides a range of mobile monitoring devices and wellness apps (Chaet et al. 2017, 1-2).

In their work, Graboyes, Bryan, Darcy & Berkowitz, outlined a simplified model to represent an entire healthcare industry, entailing on-site or virtually services. This model has been modified and edited to fit the context of this review.

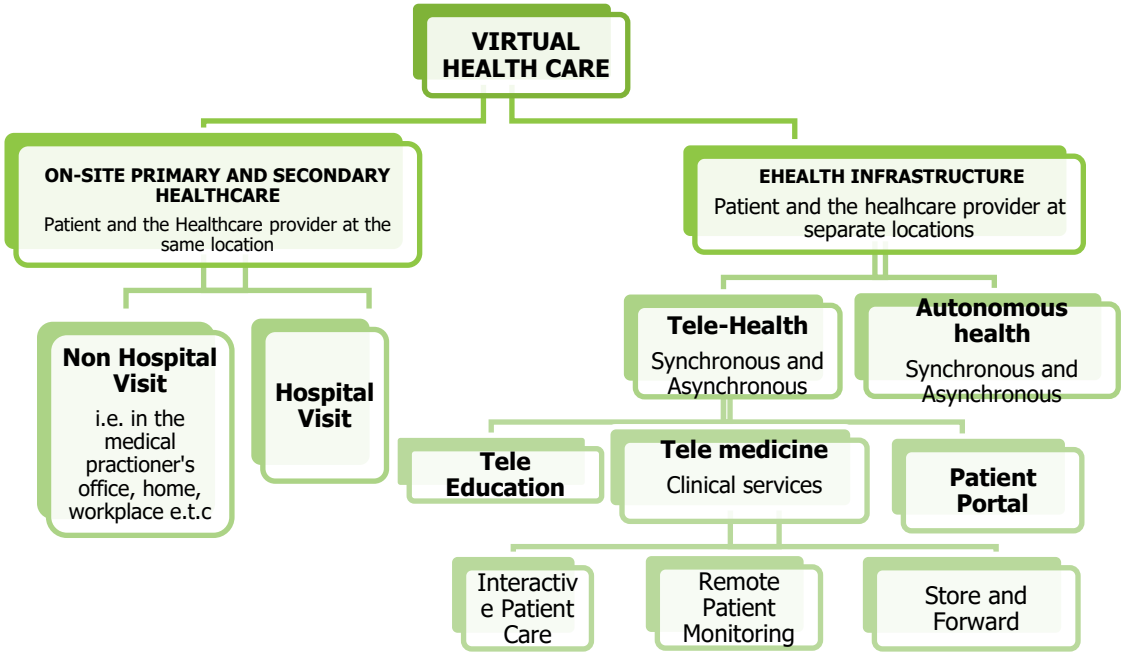

Figure 1: Taxonomy of Healthcare (Graboyes, Bryan, Darcy & Berkowitz, 2021). https://www.mercatus.org/economic-insights/expert-commentary/what-virtual-health-promise-technology-and-chaos-terminology. (Edited).

Graboyes, Bryan, Darcy & Berkowitz argued that Telehealth entails direct communication and interaction between the patient and the physician. In autonomous health, the interactions are mainly between the patient, system software, clinician, and computer program. In conclusion, the researcher differed with other researchers and suggested that Telehealth and Telemedicine are not words that can be used interchangeably; instead, telemedicine is a component of Telehealth and therefore, virtual healthcare is a form of healthcare made up of two elements, namely: Telehealth and Autonomous health (Graboyes, Bryan, Darcy & Berkowitz, 2021).

Automated systems are one aspect of autonomous health and integration of deep learning and intelligent systems to support medical monitoring and reporting, diagnosis, and treatment these advanced technology machines and tools can train, supervise, guide, or even treat patients. (Tavakoli, Carriere & Torabi 2020, 2-3).

Virtual health is described as a revolutionary way of delivering remote health services interaction between the healthcare practitioner and the patient in real time using electronic audio and visual means (Emily 2016, 8; Bokolo 2021, 1&4). Information is transmitted across communication networks in a virtual health system to monitor patient health status and provide clinical advice, consultations, treatment, education, and administrative services (Ye 2020, 3-4).

For the sake of consistency in this research, it was paramount to pick one definition and use it consistently. Vagg et al., defined virtual care as a contemporary term that lacks an official or a generally accepted definition, rather it's a form of healthcare that encompasses telehealth, telemedicine, and digital health. In their review, they noted that digital health sums up eHealth, telemedicine, and telehealth. In their opinion, the changing of terms being used to express the application of Information Communication Technologies (ICT) in healthcare is just a demonstration of how dynamic and progressive the field is (Vagg et al. 2021, 2, 6-8).

Primary health care (PHC) may benefit greatly from the use of virtual health, since it can remove geographical constraints to treatment, promote patient autonomy and self-management, decrease reliance on expensive and time-consuming referrals, and improve relationships between patients and their doctors (Alharbi et al. 2021, 1&5; Randhawa 2019, 1-2; Dahlgren et al. 2021, 1-2).

It has been suggested that a health system may benefit from a virtual health in the form of telemedicine in areas such as clinical education, diagnosis, illness prevention, and

treatment speed. In addition, virtual health services enhance knowledge and experience sharing between patients and family caregivers by establishing new channels of communication. This technology could help employ and retain physicians in outlying and rural areas through facilitating communication with their colleagues and providing opportunities for distance learning. Telemedicine has the potential to help the healthcare system overcome a lack of funding, personnel, and infrastructure. (Haleem et al. 2021, 1-4; Beheshti et al., 2022, 2).

Virtual health can be an option when a patient seeks a doctor's opinion on a non-emergency medical issue in primary care (PC). In places where accessing health care presents logistical challenges, it complements face-to-face consultation by providing prompt PC services (Jung et al., 2012, 1-2). Primary care, which serves as the general public's initial point of contact with the healthcare system attempts to ensure everyone has equal healthcare access (Horrocks, Anderson & Salisbury 2002, 1, 3 & 5).

The perception of this research is that adoption of a virtual palliative industry as a branch of medicine in a country like Finland can be a continuous and digitally connected mode of care provided through state-of-the-art technologies that will be outlined in this research. From all our discussions above, several aspects can be incorporated into the envisioned virtual platform, including but not limited to remote consultations, webcam visits, tele-monitoring, server-based communication, medication compliance and management, and other solutions geared towards providing solutions to clinicians or providers and patients.

A functional virtual platform has a driving capability of these four core principles: continuity, i.e., whether the patient receives care at home, in an outpatient setting, or a hospital; connectivity, i.e., comprising of server-based or non-server-based networks; coordination, i.e., integrating all entities involved and deriving value from the platform either directly or indirectly, and finally, care spectrum – changing patterns in health care i.e. shifting from inpatient to outpatient (Roman et al. 2015, 35-39).

2.3 The History and the Evolution of Virtual Health in Different Nations

Finland

Reponen recognized tele-radiology as the oldest known use of what would correspond to modern-day virtual health in Finland in 1970. According to Kouri et al., X-ray pictures were sent across 600 kilometers in 1969 between Oulu and Helsinki university cities using the Finnish broadcasting corporation's television network (Kouri et al. 2018, 6). The transmitted pictures were of sufficient technical quality for minimal diagnosis, but the

device's high price hindered its widespread deployment in clinical settings. Outlying medical facilities in Northern Lapland tested one-channel electrocardiograms (ECG) provided through a phone line simultaneously (Reponen 2010, 19; Kouri et al. 2018, 6). Kvist in an academic thesis, sought to describe how the rapid advancement in telecommunications at that time led to telemedicine applications. In their submission, exploitation of data transfer technology was being explored in healthcare, with data networks being the biggest asset for Finland. (Kvist 1996, 8).

According to Kouri et al., and Reponen et al., modern digital telemedicine networks were first established in Finland in the early 1990s. They described how Integrated Services Digital Network (ISDN) connections and digital telephones facilitated rapid data transmission and so became the network's lynchpin. The researchers also demonstrated how early use of Asynchronous Transfer Mode (ATM) technology facilitated rapid transfer of massive amounts of data, such as medical pictures. One excellent example is the simultaneous debut of digital Tele-Radiology networks at the university hospitals of Tampere Turku, and Oulu (Kouri et al. 2018, 6; Reponen 2010, 35; Kvist 1996, 10).).

Reponen's research highlighted the first major Tele-Radiology network, which served as a conduit for consultations between various hospitals and primary medical facilities. The Oulu University Hospital in Northern Finland erected the facility in 1996. (Reponen 2008, 1-2). Following up on this breakthrough, Kouri et al. emphasized the need of focusing on diverse healthcare aspects, especially in our sparsely populated country. They noted that Oulu University Hospital's development of the first video consultations for Tele-Psychiatry was highly opportune. They recorded the pioneering of Tele-Orthopedic consulting services at Pori Central Hospital, Pyhäjärvi Primary Health Center and Oulu University Hospital. The Central Hospital of Pori launched an online hub for the advancement of telemedicine, offering a range of options for patients. Lapland County established a Telemedicine consultation network in northern Finland that links the region's primary hospital in Rovaniemi with all the neighbourhood medical facilities (Kouri et al. 2018, 7).

Researchers from university hospitals in Oulu, Iceland, and Tromsö, Norway, developed a Tele-Radiology consultation network in 1992 using NORDUnet (Nordic University network), a component of the developing Internet (Reponen 2010, 49). Kouri et al. gave extensive information on this global telemedicine collaboration in 1992. This initiative allowed for frequent magnetic resonance imaging (MRI) consultations, and the network which made use of Internet technology before it was widely accessible became the first-ever global tele-radiology network (Kouri et al., 2018, 7)

Neurosurgery is one of the medical professions that currently need image data to deliver a consultation. Reponen et al. described in 1998 how a system built on a mobile digital GSM phone and a laptop computer was used in medical feasibility testing in 1995. In 1993, Oulu began developing mobile Tele-Radiology. They did, however, point out that the system's total size and weight needed to be reduced for it to be widely used. Then, in 1997, the newly created Nokia 9000 smartphone came to life, combining Tele-Radiology pictures for consultation into a portable device. After that, the development on the world's first medical smartphone application started (Reponen et al., 2010, 27; Kouri et al. 2018, 7).

With financing from the European Union, the first pocket-sized multimedia electronic patient record (EPR) terminal and mobile app for doctors were created as part of the Mobile Medical Data (MOMEDA) project between 1998 and 2000 (Kouri et al., 2018, 7-8). This strategy has transformed the idea of having information about patients available at the time of treatment, even when the patient is not in the hospital. The hospital electronic medical record (EPR) photographs were sent to the smartphone terminal in response to a consultation request. A smartphone might do all diagnostic image processing, and in the future, a hospital's cloud based EPR system may be accessed through a hospital's patients' own, encrypted web browsers (Reponen 2004, 1-2; Kouri et al., 2018, 8). Later, the Oulu University Hospital's neurosurgery department began using MOMEDA smartphone terminals in clinical settings, as mentioned by Reponen et al. (Reponen 2004, 7; Kouri et al. 2018, 8).

By the turn of the century, discrete Telemedicine solutions had given way to more comprehensive eHealth entities, claimed Hämäläinen et al. EPRs, together with PACS and laboratory systems, were created to underpin the delivery of these services. (Hämäläinen, Reponen, & Winblad, 2007, 27-29; Vehko, Ruotsalainen & Hyppönen 2018, 58). According to Reponen, EPR systems with integrated laboratory and imaging components were developed and purchased by public healthcare institutions. The review further noted that Oulu University Hospital developed a cutting-edge, private cloud-based and portal-type EPR with seamless integration of pictures and laboratory data before any other tertiary care center in Finland (Reponen 2004, 5). Vehko et al. reported that many Finnish cities have embraced digital technology, and other hospital districts were also quickly following suit with their own digital solutions. In the public healthcare care sector, all records, images, and laboratory data have been made accessible in digital format by 2007. The same held true for government-funded clinics providing primary care. By 2010, advanced EPR systems had been adopted by all significant private-sector service providers (Vehko, Ruotsalainen & Hyppönen 2018; 29,30,55,58, 71-72).

This leads us to conclude that the appropriate or necessary medical examinations can be handled by electronic consulting without the patient being moved to the medical facilities. It is fair to state that Finland's eHealth infrastructure was and continues to be built to enable virtual health.

United States of America (USA).

More than 70% of medical institutions in the US communicate with patients using one or more forms of virtual health. According to a review by Hyder and Razzak, an analysis of data showed that, radiologists (39.5%), psychiatrists (27.8%), and cardiologists (24.1%) make up most of the frequent users of virtual care technology (Hyder & Razzak 2020, 2).

As part of Project Mercury, the National Aeronautics and Space Association (NASA) created one of the earliest telemedicine apps in 1960. It allowed doctors and a team of medical professionals to monitor the whole space crew while they were in flight. NASA issued personal health monitors to the astronauts to gather information about their medical histories while they studied the effects of the space environment on the human body. The continents of North America, Europe, Africa, and Oceania were covered by a total of 18 different medical observers. They were responsible for routinely evaluating the astronauts' health, keeping an eye on it, and protecting it by offering any required medical advice. Due their successful use of telecommunications to connect patients and healthcare professionals, the idea to improve the availability and accessibility of healthcare beyond what was previously thought conceivable was born. After realizing the enormous potential for improved connectivity that telemedicine offers, the US National Library of Medicine set aside a total of $42 million for a series of telemedicine initiatives running for a period of 19 years in medically marginalized, remote, urban outskirts, and suburban areas in 1966 (Hyder & Razzak 2020,2)

Numerous effective and functioning telemedicine and telehealth models exist in the United States and are demonstrating their great potential. In 2013, there were roughly 4 neurosurgeons for every 100,000 people in the country, and more than 700,000 strokes were treated yearly. Numerous hospitals and clinics created telemedicine techniques for stroke therapy, also known as tele-stroke, to overcome the insufficiency of neurosurgeons. By connecting with specialized neurosurgeons via tele-stroke, emergency departments can reduce their reliance on nearby specialists. Neurosurgeons can now recommend treatment to stroke patients and emergency room doctors more swiftly than before because to telemedicine (Aita et al. 2013, 1; Hyder & Razzak 2020, 2).

Since almost all radiography tests produce digital output (a process known as tele-radiology), telemedicine has also proven to be highly helpful for radiologists. In the US in 2014, tele-radiology accounted for over 50% of all telemedicine services. Digital images and test results from real-world or virtual exams may be sent to a radiologist, who can then inform the patient's doctor or other medical staff members about their findings (Weinstein et al., 2014, 1-5; Hyder & Razzak 2020, 2).

It is interesting to note that telemedicine is now being used by medical specialities like psychiatry, which have traditionally depended on face-to-face contact, to provide treatment of the same calibre. Approximately, 19.27 million Americans in 2016 sought mental health treatment. Tele-psychiatry's capacity to treat these people can have a big influence in addressing this need (Hasselberg, 2020, 1-2).

There have also been some successful implementations of home-based surveillance telemedicine and telehealth systems. As part of its Informatics for Diabetes Education and Telemedicine initiative, Columbia University built a home remote medical care unit. This device can do video conferences, gather medical data, share data with doctors, provide internet access to this clinical data, and provide online diabetes education. Similar innovations made to monitor the health of military veterans suffering from long-term ailments, including diabetes and depression have also delivered similar benefits and convenience to patients (Hyder & Razzak 2020, 2; Starren et al. 2022, 1-2).

During the COVID-19 pandemic, many hospitals and physician practices transitioned to telemedicine and eliminated all non-essential in-person appointments. According to NYU Langone Health, between March and April 2020, there was a sharp decline in visits to clinics and a huge rise in telemedicine appointments of up to 683%. Ordinary consultations were able to be done via phone with patient and doctor both at home, which was advantageous for people under quarantine (Mann et al., 2020, 1-2).

Canada

Virtual health is a familiar idea in Canada in form of telehealth. Government entities in Canada began investing in the research and development of telemedicine in the 1960s and 1980s. During that time, agencies looked for novel ways to offer quality medical care to rural people who would otherwise have been left out. Though reception rates vary by the medical field, Canada has historically been slower than other countries, such as the United States and the United Kingdom, in adopting telemedicine or other forms of digital health. Nonetheless, it is a highly sought service by most Canadians. Early breakthroughs in

Telehealth include using microwaves to send medical data such as X-rays between hospitals and providing telephone consultations. Electronic test reports, patient data, and remote monitoring have been the norm for decades. Modern technological advances continue to broaden the access and capacity of telemedicine in Canada and worldwide (Altharthi 2012, 95; Enroll, 2021).

The government solely runs the Canadian healthcare system. Thus, all private health providers or insurance companies are stripped of any direct health industry roles. Their only role is to fill in the blanks of the national government. The deployment and administration of a universal health plan, among other beneficial initiatives, is the jurisdiction the Canadian provinces and territories (Chua 2006, 1-2; Altharthi 2012, 93).

Most Canadians consider telemedicine a quick and simple way to get personalized healthcare. Approximately 70% of Canadians want to see some virtual healthcare become the norm, ranging from simply scheduling appointments online to having actual virtual appointments. Telemedicine in Canada has really evolved and is still progressing. However, there are various challenges to virtual care that the government is working to identify and overcome in order to improve and expand virtual services in Canada (Enroll, 2021)

Regardless of its drawbacks and faults, telemedicine is widely accessible in Canada in a wide range of options and is gaining popularity among people. The COVID-19 pandemic began in 2020 and was the major catalyst for the increase in virtual treatment. With the Covid-19 outbreak and difficulty accessing physical physician's offices and medical facilities, Canadians became more interested in virtual care due to shutdowns. Maple Corp, a renowned Canadian telehealth firm, had a significant increase in demand in March 2020. The company's statistics hit a record high by recording more than 3,000 visits daily. With that in mind, they are probably here to stay now that more providers have built virtual healthcare solutions. The pandemic may have boosted demand for virtual health, and its benefits are apparent. (Agarwal et al. 2020, 3; Enroll, 2021)

Several Canadian companies are becoming more cognizant of the benefits of virtual healthcare. As a result, the need to include virtual healthcare as part of group insurance coverage plans for employees is expanding (Normandeau, 2020)

Non-emergency virtual services from medical specialists are widely offered in Canada. As of 2021, the following are some of the best virtual care services in Canada:

Provincial Telehealth Services: Every province and territory in Canada, including Ontario, Alberta, and British Columbia, has some type of mandatory public health agency-run

telehealth program. The virtual care initiatives in the provinces vary by location but mainly connect people with medical professionals.

Felix: This Canadian digital healthcare provider offers access to lifestyle drugs. Citizens can get help with baldness, contraceptives, skin conditions such as acne, etc. For a $40 fee, the service includes a virtual consultation in which the client requesting services undergoes a survey about their medical history.

Maple: Maple can help anyone who needs to speak with a registered nurse or a doctor past normal working hours. Users use the internet to speak with a licensed doctor in two minutes or less, 24 hours a day, seven days a week.

The Ontario Telemedicine Network (OTN): This is a charitable organization that the Ontario government finances. Residents of Ontario can use their personal computer, tablet, or smartphone to set up virtual medical consultations or eVisits to videoconference with a credible healthcare expert ((Agarwal et al. 2020, 3; Steadham, 2023).

2.4 Virtual Palliative Care

Virtual palliative care is a contemporary and growing field in medicine. Virtual palliative technology was initially created in nations with limited access to healthcare due to resource poverty or physical distance. Recent technology advancements in digitalization and its inescapable usage during the COVID-19 pandemic period have been the other two key drivers of this style of care delivery. Furthermore, this technology is being increasingly used in highly urbanised countries due to its convenience (Ebneter et al. 2022, 1-2; Cherniwchan 2022, 1; Mills et al. 2021, 1-2).

The ability to access palliative care from home is the most substantial factor in acceptability of virtual care, although in most cases it is never considered as a need. In most of research, regarding this issue, patients who were surveyed concurred that digital health treatments are necessary to improve their quality of life at home, including the ability to schedule follow-up appointments without having to leave their homes. This is consistent with the typical desire in palliative care for at-home treatment, especially in circumstances of terminal illness (Cherniwchan 2022, 2).

3 OBJECTIVES

Through a narrative literature analysis and by responding to the following questions, the author wants to identify the characteristics of virtual health systems that make them advantageous to palliative care as well as to highlight and explore the limitations of the same.

1. What benefits and drawbacks can virtual systems in palliative care offer?

This study seeks to ascertain the roles that virtual platforms play in enhancing the treatment of palliative care patients while also emphasizing the challenges associated with deploying this type of technology with hospice patients. Conceptual and integrative literature research was chosen as the research methodology because it enables a deeper understanding of the materials gathered for the study.

Moreover, the study will also highlight why hospice providers should be important collaborators in developing, assessing, and applying any virtual technology for end care. The importance of evaluating how these technologies may be integrated seamlessly into physicians' current responsibilities without overloading them with unfiltered, unproven, and challenging-to-interpret information have also been tackled.

4 RESEARCH METHODS

This narrative literature review uses a simple review strategy to offer a fair assessment of what is currently known about virtual care and how it has been and can be implemented beneficially in palliative care. The narrative technique of executing this thesis has taken the approach of scrutinizing academic research papers concerned with the use of virtual health and thus deriving how the usage and integration of virtual technology may be utilized to deliver palliative care. Additionally, it focused its assessment on identifying enabling characteristics that promote the wider diffusion of effective treatment to end-of-life patients in a country's health sector.

This literature review study was conducted to objectively present existing information on virtual technology in healthcare and then base its summary on previously published research. The same will then be examined to demonstrate how virtual systems might be incorporated into palliative care. The following are the primary reasons for taking this approach: A literature review provides the reader with a comprehensive overview of the material and helps to put it into context (Snyder 2019, 1).

The publishing standards for literature reviews have undergone several changes recently, and this study has to keep abreast of these new developments. This study tried to adhere to the minimal acceptable standards for synthesizing narrative overviews of the utilized literature.

Policymakers in a health ecosystem need evidence to guide their choices in short time periods. In health policy and system development, narrative reviews are gaining prominence (Byrne 2016, 1; Ali et al. 2023, 3). Since the author of a literature review has already done most of the work, clinicians or other readers do not need to trawl the literature to find the answer to their clinical questions (Green et al. 2006, 2).

To arrange and manage their academic work, researchers can use a variety of techniques. The IMRAD model is one option. Introduction, methodology, results, and discussion are abbreviated as IMRAD. In an IMRAD model, the study is structured into four main segments. Figure 2 below describes these segments and their content.

The IMRAD style of research, helps the researcher to structure concepts and recall the main ideas; it eases the reviewer’s job during evaluation; and it facilitates the process of any reader in locating specific information without reading the full work. An ideal narrative literature review introduces the thesis briefly, establishes the presence of past research, describes the topic, and specifies the thesis objectives. The Methods section details how

the research was carried out. It argues for and defends why one approach was chosen over another, as well as how the data was gathered and analysed. The results of the literature search are clearly explained in the Results chapter. The results are discussed and deduced in greater depth in the Discussion chapter, strengths and weaknesses are acknowledged, and suggestions for future research given. (Wu 2011, 1-5).

Figure 2. A representation of the IMRAD model

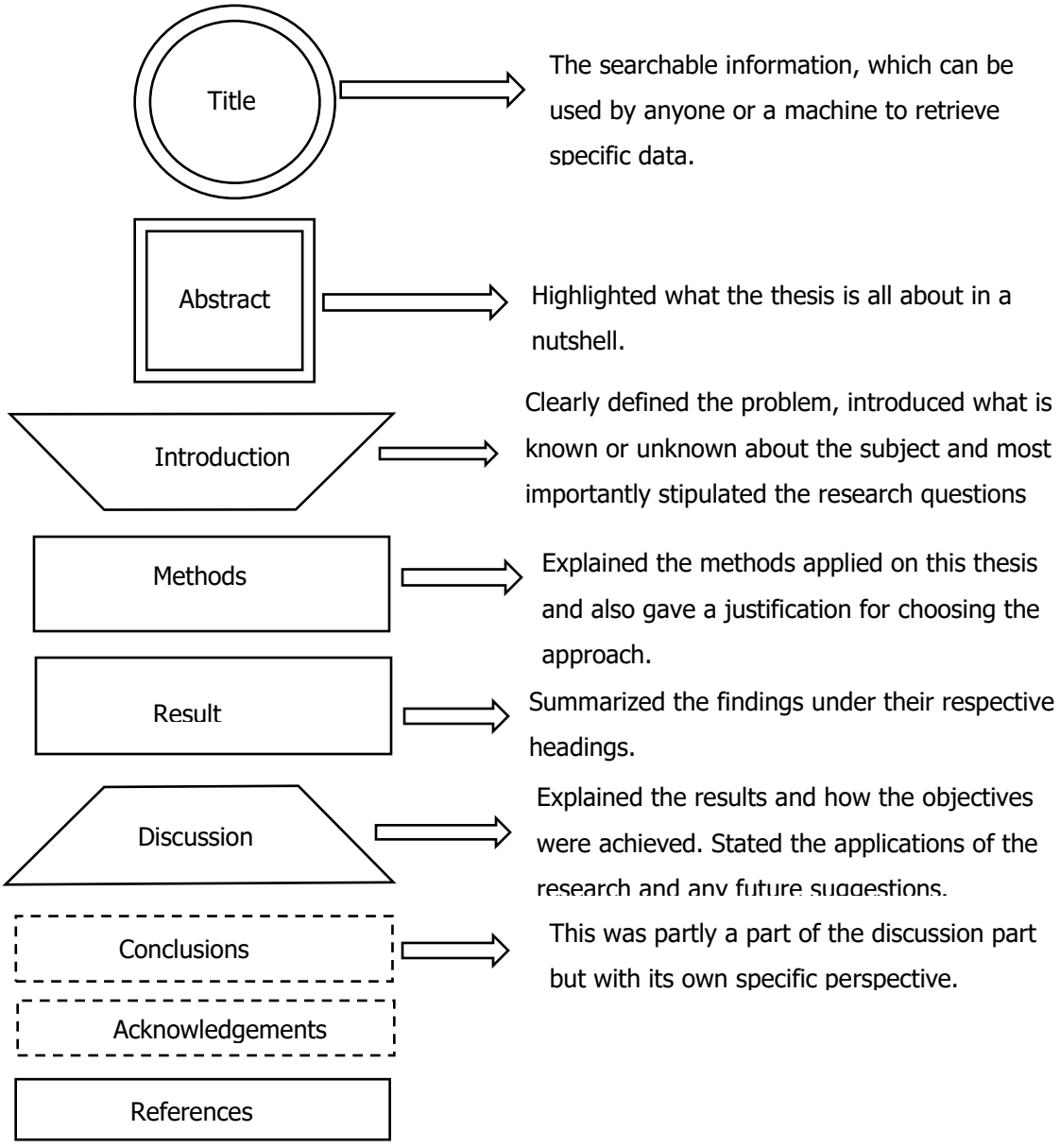

Fig. 2 Pictorial representation of the IMRAD style of research applied on this thesis.

4.1 Database Search and Keywords

Two bibliographic databases, PubMed and CINAHL, were examined to establish and identify the literature to August 2023, and a narrative synthesis of the results was then undertaken. The school librarian was of utmost help and was consulted twice regarding the narrative literature method. This review did not need any ethical clearance. The overarching goal of the review was to establish feasibility and efficacy of virtual technology in a palliative care context. Search terms used are detailed below.

Search terms for CINAHL include "Hospice and Palliative Nursing" OR "Hospice and Palliative Care Nursing" OR "Hospice Care" OR "Palliative Care" OR "Terminal Care" OR "Hospice Patients" AND ("Patient Education" OR "Patient Teaching" OR Counseling OR Guidance OR "Patient Information" OR "Social Support" OR "Social Support, Social" OR "Support, Psychosocial" OR "Family Support

Search terms for PubMed include "Hospice and Palliative Nursing", or "Hospice and Palliative Care, Nursing" or "Hospice Care" or "Palliative Care" or "Terminal Care" or "Hospice Patients" and "Patient Education" or "Patient Teaching," "Counseling," "Guidance," "Patient Information," "Social Support," "Support, Social," "Support, Psycho.

CINAHL generated 89 items, whereas PubMed produced 82. This analysis focuses mostly on virtual platforms for palliative care. To increase the range of publications accessible for assessment, the search parameters were expanded to include other digital advances in the health sector and health data collecting platforms. It was anticipated that these related ideas may be sources of additional information. The research papers were published in scholarly publications such as PubMed and CINAHL, see Table 1. Table 2 provides descriptive data for the 10 publications included in this review. The research trends pertaining to research questions will first be detailed to present the findings of this narrative literature review, including the disadvantages and advantages of virtual care when creating and organizing palliative and hospice care because virtual technology is now an international phenomenon.

However, Mills et al. found in their research that there isn't a lot of literature on the use of virtual technology principles in palliative healthcare (Mills et al. 2021, 1-2; Phongtankuel et al. 2018, 2).

Table 1. Research databases and articles found.

Research database	URL address	The number of articles found	Number of articles found between years (2005-2023), English language
CINAHL	https://web-p-ebscohost-com.ezproxy.savonia.fi/ehost/search/advanced?vid=0&sid=7b9bb3f4-f388-4942-82a7-78b69c59b57b%40redis	89	60
PubMed	https://pubmed-ncbi-nlm-nih-gov.ezproxy.savonia.fi/?otool=ifisvnalib	82	52

4.2 Eligibility criteria

The literature was reviewed for relevance by examining articles for matches with the key terms utilized, which were "virtual support", "palliative", "hospice patients", and "family". Duplicates were deleted. Articles were properly reviewed utilizing inclusion and exclusion criteria. Exclusion and inclusion criteria were used to discover a broad variety of empirical literature for virtual health in palliative and hospice patients and their families.

The titles and abstracts of the papers obtained from the databases listed were also rigorously examined to find any that would have matched the exclusion criteria. The entire texts of eligible papers were then chosen and examined. Articles were considered if they reported on the use of virtual health in a palliative population. To characterize this literature search, any research that defined patients as having a disease that was no longer curable or not getting curative therapy was included. Synonyms for this included 'end of life,' 'palliative,' and 'terminal'.

TABLE 2. Eligibility Criteria. Selection Standards

Inclusion Criteria	Exclusion Criteria
Articles about palliative care both in a hospice setting and home-based	Articles not related to palliative and hospice care.
Articles about benefits and challenges of any digitized mode of palliative care delivery i.e. tele-health, tele-medicine, M-health or Virtual health.	Articles that failed to mention the benefits and challenges of any digitized mode of palliative care delivery.
Articles about Research and development and improvements in technologies used in palliative care, both virtually and at the hospice premises.	Articles that did not discuss advancements and improvements in technologies used in palliative care, both virtually and at the hospice premises.

Articles about adoption and implementation of virtual and digital palliative care.	Articles that did not discuss about adoption and implementation of virtual and digital palliative care.
Articles accessible without subscription and fees	Articles not available without a subscription or payment
Full text articles	Articles without full text
Articles in English	Articles in other languages

4.3 Data Analysis

To acquire more in-depth data, the data was made expansive by considering not only one specific technology but rather any technological innovation that facilitates palliative care delivery virtually. The goal was to investigate in more depth the elements that influence the successful use of this virtual technology, as well as techniques for minimizing or eliminating the need for in-person treatment in order to improve the convenience of palliative care as well as increase and guarantee patient safety. The topic on benefits and challenges of Virtual health in Palliative care was chosen for this thesis because it is an important aspect of the global journey of hospital digitization.

Researchers utilize literature reviews to discover, justify, and update ideas and identify and prevent faults in previous research. The results of literature reviews may also be more conclusive than those of a single original research study because they provide a framework for validating hypotheses, insight into the dynamics underlying previous study findings, and validation of assumptions. Depending on the type of review, they could offer a very high level of proof for decisions involving clinical practice (Green et al. 2006, 2). However, one of the disadvantages of narrative reviews is the prejudice that is connected with them sometimes. An author must employ suitable writing and research techniques to reduce prejudice as much as possible. Greater neutrality elevates the worth and dependability of the research (Cherniwchan 2022, 2&5).

Due to its ability to provide an deep scrutiny of both current and past literature, narrative literature review research technique can be used for reliable health and medical research. This can be supported by the fact that, this type of review, analyses already published literature, suggesting that the research materials used, hold some degree of durability and, certainly, was subjected to a peer-review process (Grant & Booth 2009, 7).

Methods of conceptual and up-to-date reviews were used in this thesis, which are subsets of narrative review methodology that entails examining the general agreement of the literature on a certain study subject and investigating how this knowledge was formed.

The review displays the existing knowledge of an issue and advises if a greater understanding or consensus is required.

A comprehensive narrative review adds a new conclusion to the body of literature as opposed to the summary of the literature that is provided in the introduction or discussion sections of other research approaches. A writer of a literature review conducts research in the literature, gathers information from various sources, and compiles the findings of all pertinent sources into a single document. As a result, a substantial quantity of material is gathered and presented in such a manner that the reader completely comprehends the subject (Green et al. 2006, 2).

This thesis' primary theme is Virtual support for Palliative patients and possible benefits and shortcomings. Several fundamental focus points emerged from the articles selected. These key points addressed the overall position of virtual support available for palliative patients, their care givers and their families. The benefits and challenges of virtual support in a palliative setting were derived from 5 main themes namely: The major players and the general uptake and acceptability of virtual palliative in a health system, The vital execution factors to consider when developing a virtual palliative care platform, The standard technologies used in delivering virtual care, Plans for maximum utilization of the medical personnel to address the surge in demand for healthcare, and Challenges in the implementation of virtual palliative care. To provide a better overview of the data analysis process, the table below depicts the categorization of the five themes, sub-topics, and a precise description of these aspects (Table 4.)

TABLE 3. Data analysis process of Virtual Support in Palliative Care

Main Drivers	Description of the main drivers in relation to the topic
The major players and the general uptake and acceptability of virtual palliative care in a palliative health system	How virtual connection solutions enables different types of patients to access and desire to go to hospice. Compared to the normal patient care, is there better consistency in care goals on an online monitoring platform.
The vital execution factors to consider when developing a virtual palliative care platform	Effects on Hospices, availability of support systems, Data privacy and security, legal issues, The already existing sector policies, Start-up funding and infrastructure requirements, cost aspects, quality of care, personnel training, workload, time, standardization of procedures, changes to medical practice, decision-making, the medical personnel patient, approval by all players, their opinions, expectations and their concerns.

The standard technologies used in delivering virtual care	Virtual consultations and patient visitations conducted on tablets and in some cases personal lap-tops, either in hospice or at home. Smartphone-based tele-palliative care simulations. The use of virtual reality (VR) systems. Virtual ICU for patients. Real-time electronic health care databases.
Plans for maximum utilization of the medical personnel to address the surge in demand for healthcare	This is the feasibility of a virtual palliative care system based on its ability to make the existing human resource meet the increased demand for palliative care.
Challenges in the implementation of virtual palliative care.	These are all the fundamental negative differences between in-person consultations and treatment and those made through a virtual platform.

5 RESEARCH RESULTS

This chapter discusses the feasibility of virtual palliative care based on broad research evaluations related to key aspects such as access, cost, quality, and health providers' and patients' satisfaction. All the findings from the various studies presented here will come together to form recommendations that will encourage the health industry to adopt a continuum of care that is supported by technology, including hospice care services, bereavement services, and services for palliative care and primary care. Generally, this review will reveal the promising potential of virtual based interventions for terminal conditions management.

The literature searches on Virtual Palliative platform searched for the terms "virtual support for palliative", "virtual hospice care for patients and their families" under basic search, it narrowed down to articles in English. Following the original keywords search, 171 articles were found. Applying the selection criteria stipulated above, 21 articles have been identified, of these; 9 articles have been read in full, subjectively analysed and then classified as the most relevant for this study. The most crucial and related ideas are well articulated and discussed in this review. The other articles have been partly used in this review since they emphasized on general care, not narrowing down to a palliative care system, thus making them unrelated to the topic of this thesis. The flow chart in Figure 2 specifies how the reviewed references were arrived at. The breakdown of the most relevant articles is presented below under Appendix 1.

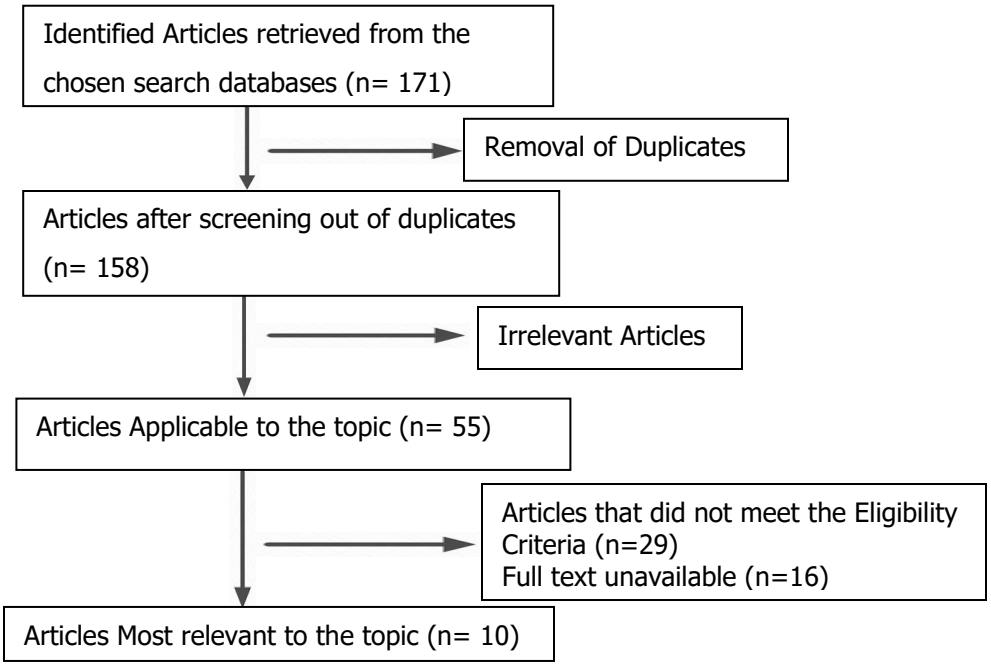

Figure 3. A flowchart of the article selection process

Most people who need palliative care are usually in a deteriorating health condition and they can experience an acute episode or a worsening of their symptoms anytime. The fragility of these patients necessitates vigilant monitoring designed to enable early detection of such occurrences, prepare for them in advance, and give them the attention they need.

Every good thing has its drawbacks and the same applies to virtual palliative care. Detailed discussion of when to favour in-person care instead of virtual care is also well highlighted. The main drawback discovered was that older patients and caregivers were lesser likely to be open to using apps, which could be related to older adults' slower adoption of smartphones than the younger generation. Although it has been made clear that there is a higher receptivity of virtual health, this was still the major limitation.

5.1 BENEFITS

5.1.1 Palliative Patients

Virtual health can be used as a means for all types of palliative patients, as well as the general public, to gain access to care and information. A virtual health platform could assist both the doctor and the terminal patient in understanding the nature of their condition, the expected outcomes and responses of the illness, potential adverse effects from therapy, and the doctor’s recommendation for routine check-ups. Once patients have attained this level of knowledge, virtual health technology may act as a platform for frequent decision-making that is shared between them and their doctors, empowering patients to be independent. Therefore, it is imperative that the details for each terminal medical condition be precise and case specific. This type of health structure can be utilized to provide health promotion and health education material to the general public, hospitals, and higher education institutions (Taylor & Pagliari 2018, 8; Hwei & Octavius 2021, 2).

According to a quantitative analysis by Sorwar et al., a patient's time spent accessing healthcare was reduced by more than 50% when a virtual platform was used in place of conventional health services. They also claimed that overall maintenance costs have been cut by up to 90% (Sorwar 2016, 6).

According to Bienfait et al., virtual consultation has been characterized as a tool for effectively treating patients, particularly during pandemics. Although remote consultation was originally documented in 1879, modern telemedicine began and grew in the late twentieth century. Virtual systems have also been used in cancer cases to offer supportive care, with results demonstrating high patient satisfaction (Gajarawala & Pelkowski 2021, 1; Fontenot 2022, 71; Bienfait et al. 2020, 11-13). Hospice care has grown significantly in the past 10 years, both in the number of programs offered and the patients and families it serves. Even better, hospice programs ensure

that individuals with life-limiting illnesses who require palliative care receive medical attention, pain management, and emotional and psychological support through their programs (Doolittle et al. 2019, 1-2).

Furthermore, Bienfait et al., notes that a scheduled periodic check-up would be perfect for detecting developing warning signs and the development of problems early on, allowing for mitigation or a corrective action. In Saudi Arabia, health-care providers credited the introduction of virtual technology into their healthcare system with improved treatment standards, better access to healthcare, and cost savings. (Bienfait et al. 2020, 11-13; El-Mahalli & Al-Qahtani 2012, 1&7). According to Hwei & Octavius research, the number of medical visits fell from twice weekly to once weekly. Palliative care is far less costly than standard medical care, saving each patient $5,000 yearly. In their review, they also discovered that in paediatric appointments, children and their parents enjoyed exceptional convenience in using virtual consultations. This also translated to 1000 dollars in saving per person for the same time (Hwei & Octavius 2021, 3).

According to Shore et al., virtual health can increase efficiency and lower research costs among rural, remote, and marginalized populations (Shore et al. 2007, 5).

Figure 3. An elderly patient using virtual reality glasses to see her spine while a female doctor explains (Source: https://www.istockphoto.com/photo/older-patient-using-virtual-reality-glasses-gm899346966-248164449: (Blancas 2017, CC BY-NC).

In their assessment, Koumakis et al. present My Pal, a virtual environment with three pieces of software that maintains continual end-user engagement. It includes seven tools for medical professionals, eleven tools for adult patients, and one mobile application with the remaining resources for the administrator. My Pal also offers support to young patients, including kids and teenagers. The app enables people with hematologic malignancies to record and report on their quality of life, adverse responses to medicines, and medication adherence to their treating doctors. Users may use the software to submit survey results, symptoms, and prescriptions, search verified medical literature, and see data via a wearable device (Koumakis et al. 2021, 5).

Adopting a virtual system has been found to be related to patients' basic personal health awareness, confidence in themselves to independently administer treatment to themselves, and their financial stability (Hjelm et al., 2005, 3). The virtual technology can be accessible to everyone, but its application is dependent on the patients' knowledge about the risks of their underlying condition. Once they are well-equipped with all the relevant information, they are more willing to take other initiatives to support their well-being and are convinced they have more control over their circumstances. Enlightening patients on their medical issues stimulates them to monitor their health journey, and they tend to communicate more with their physicians, minimizing the chance of sickness escalation. In their research, Hwei & Octavius noted that home telemetry may offer congestive heart failure patients more favourable clinical outcomes than conventional treatment. Additionally, it has been demonstrated that telemetry reduces casualty rates, emergency department visits, and admission rates (Hwei & Octavius 2021, 3).

Despite the significant paradigm shift that tele-ICU has brought to patient clinical outcomes, there are many ways that tele-ICU coverage is offered, which may improve patients' health and well-being. These are the two primary drivers of physician coverage, whether in urban or rural environments, public or private facilities. Patients receive typical bedside care through the tele-ICU while still receiving better, higher-quality care (Hwei & Octavius 2021, 3; Davis et al., 2015, 1, 4-5). The tele-ICU strategy may address insufficient access to critical care services, eliminate inequities by healthcare professionals, enhance the patient experience, and cut expenses as a part of the system that delivers essential care. Patients' safety and quality of life improve as technology progresses and becomes more widely accessible (Hwei & Octavius 2021, 3).

Tele-ophthalmology frequently improves healthcare equity in regions with fewer specialists by ensuring that a greater proportion of people are screened and diagnosed. There is also the possibility to incorporate an ophthalmic test into an Android or iOS application to assess a person's clarity of vision, which aids in the diagnosis and treatment of a variety of eye diseases.

This method assists patients in receiving the right care and recommendation to specialists as needed (Shahbaz & Salducci 2021, 3&6).

Bienfait et al. address the need to include a community component in palliative care applications as a web portal that includes an instant messaging capability, a forum, and the opportunity to transmit motivational messages amongst users. (Bienfait et al. 2020, 11).

5.1.2 Health Care Practitioners

In reference to a survey-based investigation on the use of tele-dermatology Hwei & Octavius discovered that referral patients received prompt consultation if they used tele-dermatology, compared to the conventional consultation. Tele-dermatology services, according to skin professionals, consumed less time than in-person sessions. The consulting experts were similarly happy with the use of tele-dermatology, and they all agreed that it sped up the triage process. In their research, these two researchers deduced and concluded that distant clinicians acknowledged this kind of medical practice as a technique to develop one's skills.
Generally, both orthopaedic experts and remote doctors were pleased with the technology (Hwei & Octavius 2021, 3).

Patients, medical professionals, students, and other doctors can all access information through tele-ophthalmology. It encourages easy access and knowledge sharing between new medical doctors in remote areas and professionals in medical facilities and institutions of higher learning. The adoption of technology also permits improved communication between medical staff and patients, which boosts patient compliance. (Shahbaz & Salducci 2021, 3-4).

Invasive tissue sampling is using virtual technologies. Pathologists may use Tele-cytopathology to digitally analyse microscopic needle biopsy procedures, removing the need for them to go to different locations. The Acibadem Health Group's experiments showed that various types of cell biology can be examined without incurring additional fees, resulting in both national and global levels of expert consultation and findings that can be compared to other cellular tests conducted in other institutions (Canberk et al. 2020, 8).

During surgery, automatic short texts to a patient's phone and application-based therapies have also yielded favourable outcomes. Patients frequently struggle to remember the specifics of post-surgical instructions for several reasons. Using applications that allow automated information distribution can be useful in providing reminders to patients at their convenience at home. This method improved healthcare outcomes by helping patients to stick to guidelines. This technology also allows healthcare providers to be well-versed in the patient's current medical condition and to track any current symptoms. Symptom surveillance via applications reduces the need for

medical appointments, promotes quick and early triage and presents medical warnings, and simplifies the tasks of healthcare personnel (Hwei & Octavius 2021, 4).

Funderskov et al. in their research mentioned that healthcare staff were satisfied with using videoconferencing in advanced palliative care since it enabled them to communicate with one another and sustain contact between patients and themselves. These virtual consultations also enabled doctors and other medical professionals to maintain contact with patients and their loved ones and brainstorm on potential future treatments centred on their ongoing progress. Through the video conference, the clinicians could easily analyse the patient's mental and physiological changes over time (Funderskov et al. 2019, 14-16).

5.1.3 Hospices and Hospitals

A comprehensive evaluation by Lu et al.'s, guided Hwei's & Octavius's idea that the adoption of SMS and application-based therapies has the potential to save significant money because emergency room visits have been reduced. App solutions addressed their difficulties; thus, the patients did not need to return to the hospital. To save time and money, less complicated signs and symptoms in low-risk patients were tackled as well without the need for doctor appointments. Furthermore, monitoring of high-risk patients, definitely results in financial savings because it will also enables the early diagnosis of potential side effects. (Hwei & Octavius 2021, 4).

According to a Maarop research, virtual consultation deployment in Malaysia provided several advantages to doctors, institutions, and patients. The advantages were then classified as either helpful or necessary. Assistive benefits include the efficient use of virtual technology to support consultations and medical recommendations. In contrast, critical benefits include the efficient use of technology to assist medical facilities and health care institutions in providing medical services to vulnerable and critically ailing patients. Medical institutions demonstrated the capacity to assist sensitive patients through virtual consultations without waiting for a specific expert to react to an emergency call (Maarop 2011, 1, 2, 7&13).

Figure 4. A Pediatrician sets-up Virtual monitoring parameters for a Cardiology patient for a better Centralized Patient Management.
(Source: https://www.istockphoto.com/portfolio/SvitlanaHulko?mediatype=photography (Hulko 2023, CC BY-NC).

5.2 DISADVANTAGES

5.2.1 Palliative Patients

Despite being extremely beneficial, virtual technology in the health sectors comes with its drawbacks. It is impossible to ignore the gradual decline in patient-doctor relationship. It may be difficult for palliative patients with disabilities to use virtual health technologies, such as limited hearing or vision. Elderly people who grew up perceiving the monitor as a television experience are less likely to think their doctor has listened to and observed them attentively. It could be challenging for the patient to offer sensible feedback as a result. Virtual consultations may delay a physical examination by the doctor while creating the picture that a comprehensive consultation has been done (Hwei & Octavius 2021, 4).

Logistics issues in tele-ophthalmology, technical problems, and poor communication may result in fewer effective services. The accuracy of a patient's diagnosis and potential course of therapy may also change. Data privacy concerns have also been raised (Shahbaz & Salducci 2021, 3). Using text messages or applications for alerts may cause user fatigue, in which patients stop interacting with the interface or, worse, stop using it entirely (Hwei & Octavius 2021, 3).

In their review, Gajarawala & Pelkowski acknowledged that virtual technology poses greater privacy and security threats than face-to-face sessions. Standards and laws safeguard virtual platforms, yet even so, no platform is impenetrably secure. Some online healthcare privacy and security terms and conditions must be accepted by both the user (patients) and the service provider (healthcare workers). Virtual health developers must always accept responsibility for

ensuring legislative compliance, patient privacy, and network safety. The accuracy with which data is sent may have an influence on medical professionals' diagnosis and treatment. They also discussed the validity and reliability of sensory tests as well as the accuracy of physical function assessments, noting that both are significantly impacted by Internet bandwidth (Gajarawala & Pelkowski, 2021, 3).

5.2.2 Health Care Practitioners

Hjelm expressed worry that when healthcare workers in rural regions seek the advice of an expert in a bigger city, it can be seen as a threat to their current job or self-reliance, or even worse, they might be thought of as inexperienced novices. The calibre of clinical data that may be found online is also a problem. The material may include textbook-style data created by medical schools and institutes, abstracts from or articles published in scientific journals, and health brochures and articles authored by individuals and groups. According to the study, these features may be problematic since the material might be erroneous, biased, or even deceptive (Hjelm 2005, 10).

Virtual tracking of symptoms and follow-up treatments can be draining on the medical team because certain patients may issue false alerts requesting rapid response to situations that are not emergencies (Hwei & Octavius 2021, 5).

In relation to malpractice liability, Gajarawala and Pelkowski raise a number of issues, including the need for supervision of non-physician care providers, informed consent, clearly defined protocols and procedures for medical actions that uphold acceptable standards of care, and the availability of insurance coverage for medical malpractice. As the use of virtual health expands, so will the danger of fraud and abuse, needing strict laws to maintain the operations as lawful and proper. Another issue that has to be addressed is the prescription of certain controlled drugs. For particular conditions in certain countries, a doctor may immediately write a prescription during a one-on-one appointment, but not during a virtual consultation (Gajarawala & Pelkowski, 2021, 3-4; Hwei & Octavius 2021, 5). Regardless of the severity of the situation, controlled pharmaceuticals must be given, distributed, or supplied with a valid prescription (Gajarawala & Pelkowski, 2021, 4).

Adhikari et al. used virtual consultation to demonstrate how Opioid delivery is still a concern in India and other countries. The virtual prescribing of drugs on Schedule X, which includes narcotics, is prohibited in India by the Ministry of Health and Family Welfare. Contrarily, there is a sizable number of cancer patients whose daily lives would be negatively affected if they did not have access to opioids on a prescription-only basis. To guarantee that patients' basic right to a

life free from suffering is not violated, these limitations must be adjusted straight away (Adhikari et al. 2021, 6).

In Finland, the main documentation required is a patient's Kela card, a type of government-issued identity, or a patient guide supplied by their physician. In the My Kanta service, patients may also view their prescription information. Patients with long-term or chronic conditions who require regular prescriptions after relocating to Finland need to present their old prescriptions to their physician, who will consider them during their consultation and ensure that they receive the appropriate level of care (Kuusisto et al. 2022, 11-12).

5.2.3 Hospices and Hospitals

Setting up virtual healthcare may pose problems for hospices and other health care facilities in terms of virtual systems planning and development, compliance with telecommunication laws and regulations, reimbursement systems, certification and accreditation, medical malpractice culpability, and information integrity. There may also be issues persuading healthcare staff to adjust their current work practices to transit to the virtual systems (Hjelm 2005, 10).

Some of the escalating issues with tele-ICU programs are listed in Hwei's & Octavius' review. Malpractice by remote healthcare workers has become a worrying issue. On top of the vital healthcare aspects such as licensing, accreditation, and insuring against malpractice liability more weight needs to be put on jurisdiction and clinical practice regulation (Hwei & Octavius 2021,5).

Lack of funding has also become an issue in the adoption of virtual health in hospices and other medical facilities because funding may only cover specific aspects of virtual healthcare. Yet, many components must be executed in the medical practice (Hwei & Octavius 2021,5-6).

5.3 Summary of the Results

The upsurge and shift in the dissemination and effectiveness of palliative care may be attributed to early matching of patients' care with curative treatment. This is supported by research demonstrating measurable increases in patients' quality of life when they get early palliative care. (Temel et al. 2010, 1&7).

The creation of a virtual palliative platform must be done so cautiously considering the issues discussed under this review. It will need to be very versatile if it is to be used as a quick and a digital route for prescriptions, consultations, and care delivery. A good prescription is really one that is created after discussing with the patient and is, by definition, suitable for the clinical circumstances of the patient. It calls for a continual evaluation of the administration and dose of any proposed treatments. Since this is the case, the electronic storage of prescriptions should be simple to update and alter as needed (Kuusisto et al. 2022, 11-12).

According to the WHO, palliative patient sensitization aims at assisting patients in acquiring or maintaining the skills required to monitor their condition in the best manner possible, to enable the cope with their chronic condition. Patients under hospice care, could highly benefit from rehabilitative patient education (WHO 2003, 43-44).

As one of the characteristics of virtual health care, patients' sense of ownership over their own treatment, makes self-management to be highly favoured by patients. The patient could be less worried if they have complete flexibility in symptom management. The ability to get in touch with a licensed medical professional would then be preferred due to the potential of abrupt onset of severe symptoms, which may sometimes end in an unbearable acute episode. There is always a high probability of this occurring in palliative care facilities. Remote monitoring by a physician or nurse seems to comfort patients, as per all reviewed studies in regard to that matter.

6 DISCUSSION

This narrative literature review used a narration style to describe the outcomes and limitations of several virtual palliative care strategies. In general the studies evaluated reported nearly equivalent ideas as well as improved standards of living and other beneficial aspects similar to in-person care delivery. This was determined to be true especially when any remote technology is utilized to supplement rather than face-off in-person care. According to the studies, virtual platforms appear to be safe and helpful in palliative care with no negative or detrimental results for its users

The findings of this study are consistent with the findings of most previous studies on the subject. Despite problems and concerns, reviews on modern methods of delivering palliative care to rural populations showed virtual health to be very practical and beneficial (Shahbaz & Salducci 2021, 3-4, Shore et al. 2007, 5, Hwei & Octavius 2021, 3). A critical review of the use of M-Health in monitoring patients with chronic diseases and its application in palliative care found that this digital form of care, significantly improved thetreatmentment experience as well as the living standards of cancer patients when compared to the usual face-to-face care (Adhikari et al. 2021, 6, Bienfait et al. 2020, 12).

Another extensive study echoed the fact that, virtual care boosts family caregivers' experience and improves management all long-term health conditions and hospice care in general (Haleem et al. 2021, 1-4). A review of the literature on patients', medical personnel's, and hospitals' perspectives on telemedicine discovered that virtual palliative consultancy and appointments outperformed standard care in terms of functionality while also reducing hospital visits and admissions (Hwei & Octavius 2021, 1-4).

The disadvantages of virtual care addressed in this study include technological obstacles, ethical issues, and operational constraints. Such issues and barriers ought to be addressed by including and regularly soliciting feedback from both the direct users of the virtual platforms and the secondary users i.e. hospitals, in the design and delivery of this digital care, notably if it relates to palliative care.

There is currently a scarcity of analytical studies on effective use of virtual platforms in palliative care, which can be attributable to ethical and logical problems about access, obtaining a reliable study population, and obtaining consent. It was clear that the majority of existing research do not examine the subsequent consequences of implementing virtual care interventions. With this in mind, further study is required to close the gap in determining the value of virtual care treatments in diverse chronic medical illnesses, age groups, and delivery models by employing various research methods. Future research should look into additional innovations and

new care delivery systems being employed in this field of medicine in order to uncover new ways to address hospice and palliative care.

Due to the urgent and time-sensitive nature of this study, a few drawbacks ought to be emphasized. Given that the research conducted was not fully extensive, it should therefore, not be considered as a complete outlook on this subject. Another issue is that, the data was only examined by one author, thereby posing the risk of potentially disqualifying valid research due to a personal error. Despite this, these technical constraints should be weighed against the benefits of the way the research has been delivered and other aspects that have contributed to the excellence of this work. This method of conducting a literature review is consistent with the methodology and approved guidelines for narrative reviews.

In a nut shell, the access to virtual palliative care is constantly improving. Just like the evidence presented by in this research, several years ago, virtual care was just a good idea. Today, palliative care providers continuously utilize virtual care technologies for their patients and caregivers. However, access to virtual technology is not universal, and thus more research into the impact of virtual care on the lifespan of patients in palliative care is necessary.

Home-based care for palliative patients need infrastructure to be in place to support this technology based care since it features large video files sharing or streaming. Rural or remote communities may not have the infrastructure, such as internet bandwidth or cellular networks, to support this type of care. This is the biggest challenge and can be classified as the major limitation of virtual palliative care, since it hinders inclusivity.

6.1 Ethical Issues

Ethics is a moral perspective, and it may be shown, for example, when someone thinks about his own and other people's conduct, or when they think about what is permitted and why. In a research context, ethics is described as being aware of the rights of others.

The principles of research ethics include standards for data validity, standards for respecting the rights of study subjects (people), and standards for interactions amongst researchers (Kulkarni 2021, 1; (Parveen 2017, 1).

As a result, at every level of the research process, the researchers must be mindful of ethical considerations. Put differently, ethical considerations must be made at every phase of the process, from planning to data collecting to analysis to reporting. Every stage of the study process will pose their own ethical challenges. Furthermore, any research must take ethical considerations into account, with the main issue being how the researcher will protect the rights of the target population or the used articles in the case of a review (Dobakhti 2020, 20).

When conducting a study, there are a few crucial things that the researchers must keep in mind. Regarding this, some of the key aspects being fraud and deception, privacy, confidentiality, and anonymity. One way to define privacy is the difference between an individual's public and private lives. It is crucial, therefore, to respect the respondents' private lives when doing publications or other means of information broadcasting (Merriam1998, 217; Dobakhti 2020, 20-21). In this research work, it was mandatory or otherwise illegal to include pictures and photos that are not allowed to use by Creative Commons License (CC-BY License)

The ethical guidelines for thesis writing at Savonia University of Applied Sciences and guidance from Savonia thesis supervisors are followed in the composition of this thesis. The reference works and studies that are cited or mentioned in the thesis are not represented as the author's own work, and references and details about their accessibility are correctly provided.

When evaluating the objectivity and reliability of this study, it was important to make a distinction between the reliability and objectivity of the research material selection, i.e., did the researcher comprehend and choose the study's articles objectively or did he or she filter them through his or her own frame of reference and background? Although some of the author's ideas in the thesis were undoubtedly personal opinions due to, for instance, the author's personal history of working with palliative patients in her career, the author tried to research the subject and analyse the study material as objectively as she could.

The books and articles utilized to build this thesis used English language. In this thesis, the whole process of content analysis, from its inception to its conclusions is fully discussed. The author of this investigation is satisfied that saturation was attained. In a qualitative study, saturation refers to the point at which the research material begins to recur and no new information pertinent to the research topic is revealed by introducing additional material (Saunders et al. 2018, 8).

In conlusion, what has been picked from this whole research process is that in quantitative research very little ethical dispute exists since the data is collective and expressed numerically but qualitative approaches raises a number of ethical concerns since they engage directly with people, their beliefs, and their actions. This makes it essential for data to be gathered and analyzed impartially.

Every effort was made to avoid influencing or changing the authors’ opinions or comments in light of the researchers' personal objectives. The researcher controlled and limited their own biases as well as maintained objectivity and loyalty to research ethics and made it a top priority.

6.2 Strengths and Weaknesses

Narrative literature reviews provide a clear understanding of the growing number of original works of both specialists and non-experts in all fields. Due to their continuous demand for accurate and current information and their limited time, many physicians rely more heavily on literature reviews. Reviewed articles can also assist professionals and gatekeepers of different sectors, in identifying gaps in their own knowledge on a specific subject. Also, researchers who have no or little previous experience on an issue also opt for literature reviews. Other potential beneficiaries of this method of research include researchers who want to quickly evaluate the results of high volume analyses and students who use literature reviews as starting point into a new field.

Narrative reviews remains the most frequent form of literature review, due to its ability to offer broad and flexible literature coverage to deal with evolving knowledge and concepts

Conceptualizing a thesis is a difficult process, particularly for people who are not familiar with the many methods and abilities needed to create a narrative review. Since the author in this instance lacked extensive knowledge of how to perform a literature review, it's possible that this had an impact on the work's ability to evolve. To demonstrate this restriction, the first step was carried out using several independent, undocumented research projects, which helped the author get a better understanding of both the subject and the process of doing research in the first place.

English, which was selected as the medium of communication, it`s not the author's native language. Her comprehension and compositive abilities in the latter language cannot be compared to that of a native speaker, although the author is an international student who has completed all her coursework in other nations (including Finland). The author had an option to assess and include research that were carried out in Finnish, however her proficiency in Finnish language is even less developed than what she has so far managed to do with her English linguistics skill set.

Despite this, the author has acted in her own best interests by exercising extreme caution in the examination and interpretation of the thesis study.

The urge to use databases has been one of this work's major technical limitation. Due to the non-open-source availability, which conflicted with one of the key criteria of this study, several research articles had to be eliminated. The limitations of this investigation also included a time component. Finally, this thesis only focused on advantages and dis-advantages of virtual technology in palliative and hospice care. However, a more thorough examination of the latter may have expanded the scope of the research questions.

6.3 Validity of the thesis and Professional growth

The process of examining, ascertaining, confirming, and validating is known as verification. Verification in qualitative research refers to the steps undertaken to gradually ensure validity and reliability, thus enhancing the integrity of the research. By finding and fixing mistakes early enough, before they get ingrained into the work and compromise the analysis, these techniques are integrated into each stage of the study to create a strong result (Bygstad & Munkvold 2007, 2-4)

Research loses its usefulness and becomes fictitious when it is not rigorously conducted. Thus, any research methodologies used should pay close attention to validity and reliability. A researcher must maintain validity throughout the entire study. The principles behind any research are based on the concept that validity is a function of the trustworthiness, usefulness, and reliability invested into the study by the researcher (Morse et al. 2002, 2-5).

With this in mind, it is the responsibility of the researcher to install and ensure validity into the different stages of the research from data collection, to data analysis and finally in interpretation. Validity pertains to the degree to which our research is credible, accurate, and capable of assessing the things it claims to assess (Porter 2007, 1-2).

This study has employed credible and quality methods to collect data. All the conclusions drawn in this research are based on the information obtained using these methods. This piece of research can also be deemed reliable as its results are consistent, dependable and replicable.

When it comes to professional growth, in many respects, doing the research for writing my thesis has aided in my professional and personal development. Since virtual technology in palliative care is a broad discipline with several subfields, it was difficult to define the issue and choose pertinent data. According to the thesis study, there aren't many studies looking at the benefits and drawbacks of virtual technology in palliative care. My comprehension of the kind of data that would be required for virtual technology in palliative care as well as the advantages and difficulties of these technologies increased throughout my research of the subject. Being a healthcare professional has also given me a greater understanding of the virtual healthcare, which is incredibly helpful in my career. Due to my lack of prior extensive expertise with narrative reviews and qualitative research methodologies, my research and project management abilities were also improved. Planning, time management, collaboration with a variety of partners, and familiarization with the standards for academic report writing were additional prerequisites for the thesis preparation. Due to the project's unprecedented outlook, everything was difficult and at times overwhelming. However, I am happy with the outcomes and the fact that I pushed myself

throughout the process. I am also certain that I can utilize similar project management techniques in my future work.

It is crucial to take a critical look at the completed work, and there are several things I would do differently if I were to begin a similar kind of project. As these two procedures need a lot of effort and investigation, I would begin including my supervisors early and focus more on meticulously finding publications.

The purpose of this study was to describe how virtual technologies can be used in palliative care and what benefits and challenges they bring when using them. Since there haven't been many studies of this kind in Finland, this one may serve as a conversation starter with palliative care professionals. Professional expertise and first-hand knowledge of managing terminal conditions would also be very helpful. The cost-benefit analysis of healthcare technology also requires more academic research, and possibly universities and university hospitals might step up their efforts to support this work. For efficient and fact-based decision making in the development of healthcare technology, studies are also required.

The necessity for open dialogue and cross-disciplinary collaboration in palliative and hospice care institutions should be harnessed. Collaboration and the sharing of best practices among hospitals and healthcare units could undoubtedly be expanded and improved because this study has shown that policies and practices regarding the use of digital treatment technologies vary significantly depending on the medical facility and healthcare unit i.e. basic or specialized.

There is always room for improvement when it comes to the training of both palliative care professionals and palliative patients regarding the use of virtual technology. The technology vendors must provide more specialized training for palliative carers.

For palliative patients, it's important to inspire them rather than merely provide them with self-care tools. One approach to product development would be to include elements like gamification and interactive teaching in self-care apps.

In this study, remote monitoring and patient consultations were briefly highlighted as additional types of virtual healthcare technologies, although their diverse applications and efficacy in palliative care in Finland might be the subject of a separate research. Overall, additional study on patients utilizing virtual technologies is needed to gather information on any long-term impact of these tools on the physical and emotional health of end-of-life patients and their families.

6.4 Further Development

The benefit of virtual technology as a common means of healthcare delivery could not be precisely quantified due to the limited availability of the literature, as was previously indicated. To

pinpoint the precise benefits of different virtual technology typologies and the technology's impact on the subject scenario, in this case palliative care, more research should be done in the form of both quantitative and qualitative studies.

Additionally, a systematic review might assist to clarify the relationship between technology and palliative care, particularly given that this study was carried out by a single, semi-experienced researcher using readily accessible data that mostly came from only two sources PubMed and Cinahl. Perhaps the hypothetical systematic review could be carried out by three researchers working together, each of whom is from one of the three nations (Finland, USA, and Canada) that received the highest score for the scientific material essential to this topic. This would provide an additional assurance for the reliability of the retrieved information.

Involving local researchers who will have access to each national database in turn will allow them to further collaborate or even dispute the findings of this restricted study. It is anticipated that there will be more papers produced in each local language than there are in English alone.

Finally, as was previously noted, the researcher who wrote this report has some research expertise. The creation of a thesis is a learning process, however even if the researcher has worked hard to acquire new ideas and increase her skills, this work still has limitations that are obvious to more knowledgeable eyes. The author is aware of this fact; hence she could recommend repeating this research while taking the most recent data into account.

7 Conclusion

There is evidence that virtual health is now a growing phenomenon. According to Dolan et al. (2021, 3-5), this change is the result of the recently discovered technologies because their use in healthcare has given palliative patients the chance to receive modernized, practical, high-quality care while also having their safety guaranteed. The results of all the research that was done to evaluate every virtual system that is available in the healthcare ecosystem, point to these conclusions; that there isn't enough research available, meaning, virtual-based healthcare ideas are still novel in Europe. However, there is relevance in this study's design, and it encourages the advancement of more research on this subject. Technology is now a need, a challenge, and a chance that must be taken advantage of.

This research may also validate use of virtual health as an adjunct to conventional care in hospice facilities, independent of the underlying technology. However, there is no proof to back up the claim that virtual health can handle all aspects of palliative care.

In addition to playing a crucial role in the adoption of virtual technologies in healthcare delivery, palliative care practitioners are also in charge of incorporating the technology into their routine tasks. Medical experts must seek technology advancement in unison so that any adverse effects resulting from unfamiliarity with current virtual health tools do not impede the healing process.

Health professionals should actively look for new virtual health methods based on the potential evolution of technology in the healthcare industry. They should not, therefore, be constrained by the current templates to eventually catch up with the most recent technological trends.

The palliative virtual systems from the previous century do not satisfy the needs of the modern healthcare system. There is a chance that even fewer individuals may choose to adopt virtual care because they do not find it sufficiently alluring if the European health system does not continue to adapt to the most current standards of digital health.

The European continent has partially standardised the requirements for the fundamental care of palliative patients on a technological level because it implied that all hospitals should invest in IT infrastructure and technical preparation to facilitate the various tasks that health personnel can perform conveniently. It is completely up to each hospice or hospital to decide how to build up their systems whatever they deem proper.

The results of this study show that the use of technology in general healthcare is often underreported, and that digital platforms from which virtual technology may be advanced and incorporated into palliative care have been strongly emphasized in this research. Since this is a narrative literature review, it was crucial that every article used discusses the need for further

research on virtual palliative care, since this thesis intended to highlight this need but lacked similar studies.

Because of the growing advantages that come from its use, new technologies will continue to be incorporated into healthcare. It is solely up to all parties involved to monitor this industry's development, meet the needs of a changing society, put its discoveries into practice for the greater good, and adjust from the traditional approaches in healthcare. Unfortunately, this transformation won't take place on its own, so it will be up to hospices, hospitals, and medical staff to provide better virtual health programs and specialized care, respectively. Therefore, if this leads to the question “why everyone lacks access to specialized and competent healthcare”, then we may finally have an answer.

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APPENDICES

APPENDIX 1. Most relevant research articles selected

Author(s) and Year of Publication	**Title**	**Findings**
Hwei, L. R. Y., & Octavius, G. S. 2021.	Potential advantages and disadvantages of telemedicine: A literature review from the perspectives of patients, medical personnel, and hospitals	Telemedicine has many advantages, but still telemedicine applications have several problems that prevent them from being used effectively. Findings showed that, it is critical for health stakeholders to collaborate, in order to establish, deploy, and enhance telemedicine so as to better serve the requirements of patients.
Gajarawala, S. N., & Pelkowski, J. N. 2021.	Telehealth Benefits and Barriers	Medical training, virtual monitoring of patients, diagnosis and treatment via teleconferencing, mobile health applications, and electronic sharing of images and medical reports are the major areas where the benefits and grey areas of tele-health have been identified. Increases in the

		uptake of ICT in health care, as well as greater accessibility to medical services, have spurred tele-health rapid expansion, enabling unprecedented connections between physicians and patients. A vast array of medical disciplines, specializations and activities involving patient-doctor interactions are included in tele-health.
Bienfait, F., Petit, M., Pardenaud, R., Guineberteau, C., & Pignon, A. 2020.	Applying M-Health to Palliative Care: A Systematic Review on the Use of M-Health in Monitoring Patients with Chronic Diseases and its Transposition in Palliative Care.	With m-Health, contemporary technological advancements give supplemental tools that are of great significance to achieving a virtual platform in the health ecosystem. This technology has the potential to be useful by strengthening the hospices' response during home or sometimes dire cases of palliative care. Health practitioners appear to want the development of live monitoring and control of the symptoms. However, it must be critical to remember that the deployment of these platforms should not be done at the expense of the foundation principles of palliative care.
El-Mahalli, A. A., & Al-Qahtani, M. F. 2012.	Successes and challenges in the implementation and application of telemedicine in the eastern province of Saudi Arabia. Perspectives in health information management.	In country like Saudi Arabia, the embracing of the existing telemedicine systems was low. However, from the study, it was evident that non-digitized hospital, expressed an interest in knowing and introducing telemedicine services. There were credible correlations between real telemedicine deployment, occupation and the level of expertise in hospitals that adopted telemedicine. Health institutions that were not using telemedicine had a more positive opinion of its benefits than those already with a telemedicine system in place. Improved patient care and management, more access to healthcare, and higher-quality care were the three advantages that adopters most frequently noted.
Koumakis L, Schera F, Parker H, Bonotis P, Chatzimina M, Argyropaidas P, Zacharioudakis G, Schäfer M, Kakalou C, Karamanidou	Fostering Palliative Care Through Digital Intervention: A Platform for Adult Patients With Hematologic Malignancies.	MyPal is a contemporary and state-of-the art applications that is intended to bring a paradigm shift in care delivery. It is equipped with tools that promote preventive, pre-emptive, and predictive medical decisions. It comprises of tools such as: communication tools, Decision aids, and

C, Didi J, Kazantzaki E, Scarfo L, Marias K, Natsiavas P		Emergency event warning systems and tools for tracking and reporting pharmacological adverse events to aid in identifying clinical problems. With this, comes a better outpatient care and a timely and precise patient-physician communication. Tools provide an avenue for a global eHealth intervention and a seamless platform for capturing patients' symptoms and effectively communicating them to the relevant care providers. Undoubtedly, a great user experience that guarantees platform engagement depends on communication with the end user through clear-cut menus, clear visual prompts, and notifications.
Hjelm NM. 2005	Benefits and drawbacks of telemedicine.	A number interesting advantages of telemedicine can be anticipated, including: enhanced accessibility to knowledge: increased and better delivery of previously unavailable care; improved higher learning; better oversight of testing and examining programs; and lower medical expenses. Despite telemedicine undoubtedly offering multiple advantages, it also has some drawbacks. The following are the most likely: an absence of the special bond that exists between a care giver and their patient; a disintegration in collaboration between professionals in the medical field; issues about the reliability of medical data; and administrative barriers.
Funderskov, K. F., Boe Danbjørg, D., Jess, M., Munk, L., Olsen Zwisler, A. D., & Dieperink, K. B. 2019.	Telemedicine in specialized palliative care: Healthcare professionals' and their perspectives on video consultations	The study looked into how healthcare practitioners in the specialized palliative care used virtual consultations. It identified that using remote consultations facilitated meaningful patient and family engagement by allowing them to express their opinions and raise concerns with doctors and other health care providers. It was also beneficial to healthcare workers because it allowed them to work more closely together and paved way for discussion between medical specialists and patients.

Maarop N. 2011	Tele-consultation technology and its benefits: In the case of public hospitals in Malaysia.	The research confirmed that virtual services has enhanced health care delivery in remote regions by allowing patients to schedule appointments with specialists remotely. One of the most notable findings of the research was that store-and-forward online consultation turned out to be practical and useful in an emergency situation. Overall, the findings of this study was that, virtual services is a viable method of providing improved medical care.
Kuusisto A, Saranto K, Korhonen P, Haavisto E. 2023	Quality of information transferred to palliative care.	The study acknowledges that the driving factor for high quality palliative care is access and smooth utility of medical histories from previous palliative care units. Well informed medical decisions, rely on quality transfer of information. It is a personal responsibility for palliative care givers to provide quality medical data and the also to choose an electronic mode of transfer that guarantees that the information remains unchanged regardless who accesses it within the system.

APPENDIX 2: Article Summaries

Article	Country	Methodology	Highlights of Findings
1. (J. Nicholas Dionne-Odom et al., 2021)	America	Qualitative	Caregivers frequently required assistance with coordinating care services and managing a loved one's medical condition and symptoms (51%), (21%), as well as creating future or advance care plans (17%).
2. (Jennifer, D-P et al., 2020)	America	Qualitative	Mhealth in palliative care needs to be made aware of mobile functionality, depersonalized assessment, and care.
3. (Lefteris, K et al.,2021)	Italy, Greece, Czech and Sweden	Qualitative	The patient's age, the clinical manifestation of their condition, and the range of their symptoms are all important considerations in a patient-centered approach to palliative care. My main objective is to precisely describe the symptoms of cancer patients in order to give a patient-centered strategy for palliative treatment.
4. (N, Fridriksdottir et al., 2018)	Iceland	Qualitative	Web-based therapies for cancer symptom management have promising promise.
5. (Gary, C-D et al., 2019)	America	Quantitative	Telehospice calls have been shown to save hospice services money, and findings indicate that they may increase communication and relationships between staff, patients, and patient families.

6. (Bienfait,F et al., 2020)	France	Qualitative	Mhealth application development might become a complementary monitoring tool during palliative care. The effect of a method in a supplemental monitoring tool during palliative care.
7. (Shreya D-A et al., 2021)	India	Quantitative	When treating patients with Covid-19, telemedicine offers a useful platform for assessing chronic pain and delivering supportive symptom treatment.
8. (Smith, S-K et al., 2018)	America	Qualitative	Reimagine has an effect on sadness and tiredness symptoms in breast cancer survivors. Online programs may be a viable and successful alternative to in-person help. More study with a bigger and more diversified sample size is advised.
9. (Hawkins JP et al., 2020)	United Kingdom	Quantitative	A virtual visit could benefit patients and health providers; however, in some instances, face-to-face consultations are required.
10. (Dolan et al., 2021)	Australia	Qualitative	Studies have shown that virtual care can improve quality of life when it is used to supplement face-to-face palliative care rather than to replace it. Virtual care modalities shown in research to be safe and effective in palliative and end-of-life care, with no negative side effects, when used as a supplement to in-person care.