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The role and impact of digital transformation in the eldercare during covid-19

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ABSTRACT

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The main objective of this study is to focus on creating a role and impact of digital transformation in the Eldercare during COVID-19 Pandemic. This study was conducted with the collaboration from Satakunta University of Applied Sciences (SAMK).

The data collected for specific data for the research, the different data bases that are considered include SCOPUS, Cochrane, and Google Scholar are the databases used for collecting the data about the current study. The main reason for choosing these databases is because they include peer reviewed articles, and most of these databases are used by different researchers in their studies.

The pandemic triggered by the New Coronavirus (Covid-19) has caused social changes in the lives of the population, especially in vulnerable groups, such as the elderly, who have been keeping themselves in social isolation to avoid contamination. Faced with this scenario, the elderly expanded their forms of communication and adopted the use of digital technologies. Furthermore, faced with this situation, many elderly people who live alone in their homes or with their family members and those who live in long-stay institutions were surprised by the impossibility of receiving visits from family members and friends; some had their caregivers away to preserve the risk of contagion.

Thus, a change in routines and behaviours imposed by the pandemic required staying at home and environment, avoiding maximum exposure to the virus. The pandemic demonstrated the importance of adherence to new behaviours and life habits in different scenarios, pointing out issues that have become emerging for elderly care considering the adoption of different digital technologies.

This thesis was conducted using a scoping review considering a qualitative exploratory study with the aim of identifying the role and impact of digital transformation in eldercare during the COVID-19 pandemic. Moreover, the literature search was conducted using SCOPUS, Cochrane, and Google Scholar. The studies included in the review are all in English language considering the publishing year 2020 to 2022. Thus, the study concluded that the pandemic has shown that digital solutions can play a key role in supporting the delivery of elder care, both in terms of operational efficiency and in terms of care quality. The implementation of digital solutions has the potential to support care homes in meeting the challenges posed by the pandemic and to improve the quality of care for residents.

Keywords: Digital Marketing, Covid-19, Digital Transformation, Eldercare

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LIST OF SYMBOLS AND TERMS

SARS-CoV-2	Severe Acute Respiratory Syndrome
WHO	World Health Organization
NHS	National Health Service
ICUs	Intensive Care Units
WMD	Wearable Medical Devices
EU	European Union
HEDIS	Healthcare Effectiveness Data and Information Set
IoMT	Internet Of Medical Things
HIS	Healthcare Information System

1 INTRODUCTION

In this study, the aim is to analyse the role and the impact of digital transformation in eldercare during the COVID-19 pandemic. Throughout the era of the COVID-19 pandemic, change in the care of the elder has become a fundamental need. Elderly individuals were vulnerable to the COVID-19 pandemic, and they had to maintain social distancing (Argento et al., 2020, p. 880).

Like every disaster which has previously been reported in history, the COVID-19 pandemic has also spread destruction all around the world. The COVID-19 pandemic caused extraordinary economic and healthcare issues in different nations globally. Although, in this era of the COVID-19 pandemic, the situation for digital transformation has been favourable (Deusdad, 2020, p. 145). Furthermore, in this period, where people around the world are stuck in their homes, different digital technology devices have kept them connected (Argento et al., 2020, p. 880).

Moreover, digital transformation is simply utilising various digital technologies to generate new or modified present business procedures, customer experiences, and culture to encounter varying market and business needs (Fine & Tronto, 2020, p.307). Eldercare is a rather wide-ranging term, including all from nursing care and aided living to adult day care, home care, and hospital care (Greve et al., 2021, p.300).

Scheibe et al. (2022, p.1762) identified digital transformation in various sectors, but no research has been undertaken related to eldercare. Moreover, the main purpose of undertaking the research is to analyse the role and impact of digital transformation in eldercare during the COVID-19 pandemic. Moreover, Aarts et al. (2021, p.226) stated that digital transformation negatively impacts elder care because it makes the information complex and complicated, which

causes worries and challenges for elderly patients. This study was completed through the scoping literature review as it assist in recognising the research gaps within the study and highlight different areas which need more investigation. The reason for using a scoping review for this study is that it has the benefit of focusing on different information sources

2 DIGITAL TRANSFORMATION AND ELDERCARE DURING THE COVID-19 PANDEMIC

2.1 Elderly as a Population at Risk during COVID-19

As of January 2020, World Health Organization (WHO) issued a statement announcing the outbreak of the new coronavirus, Severe Acute Respiratory Syndrome Coronavirus-2 (SARS CoV-2) and pointed out the risk groups most susceptible to infection, among which it highlighted the elderly (Giritli Nygren et al., 2021). Elderly mortality rates in countries such as China and Italy arrived at alarming figures. In Italy, 42.2% of the patients who died were between 80–89 years, and 32.4% were between 70–79, attesting to their vulnerability (Nowicka et al., 2021).

Furthermore, faced with the advancing scenario of the pandemic, the protocols decreed social isolation for all and with stricter recommendations for the elderly and people included in the risk group (Aarts et al., 2021). Moreover, faced with this situation, many older people who live alone in their homes or with their family members and also those who live in long-stay institutions were surprised by the impossibility of receiving visits from family members and friends; some had their caregivers removed to preserve the risk of contagion. Finally, a change in routines and behaviours imposed by the pandemic required the stay-at-home and environment, avoiding maximum exposure to the virus (Argento et al., 2020).

Thus, as shown below in Figure 1, the pandemic has demonstrated the importance of adherence to new behaviours and life habits in different scenarios, pointing out issues that have become emerging in the care of the elderly. In Finland, according to Statista (2022), there were 1,303,133 people that were within the age group of 60-70 years and 330,685 people within the age group of above 80 and older that were most vulnerable in the face of the pandemic.

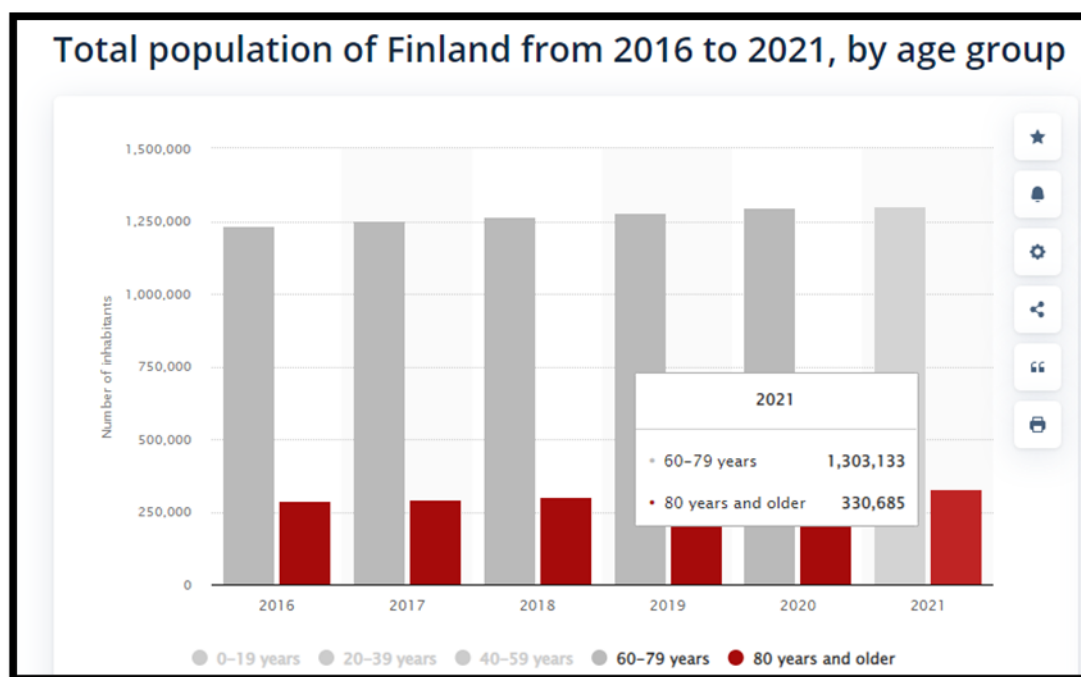


Figure 1: Total number of the older population in Finland

Source: Statista (2022)

Therefore, faced with this totally adverse scenario that many elders have come closer to digital technologies in order to overcome the barriers imposed by social distancing and guarantee access to family members, friends, different services and other contacts necessary for their quality of life (Nestor et al., 2021). The main motivation for choosing the topic of my current work is to deepen the study of this new reality of a generation of elderly care through different digital technologies during the face of the pandemic. In addition, analyse of the importance of these technologies in supporting care for the elderly is revealed in different scientific studies as key evidence that contribute to expanding the current topic in future practices.

Channa et al. (2021) defined SARS-CoV-2 as a disease that acts through infection at different levels in the respiratory system and in the human organism, reaching the most acute level that leads to impairment of the lung and consequent shortness of breath, leading to death. Due to the lack of studies on the disease and ways to combat the virus, the severity of the pandemic worsened, contributing to a change in the routine of hospitals and society. In addition, Irawaty (2020) claimed that this pandemic is one of the biggest health challenges worldwide in this century. As COVID-19 is a new disease, due to which there is insufficient scientific knowledge about it, and its rapid spread ability to cause death is most dangerous for vulnerable elderly people, therefore it was uncertain what are the best measures to be taken to combat it in different parts of the world.

Since the introduction of COVID-19 in Finland, local health authorities from different administrative departments (Federal Government, State and Municipal Governments) have taken a series of measures to control and prevent the disease (Ursin et al., 2020). Those standards vary from region to region, but all authorities chose the same measure of social distance. Furthermore, according to Wu and Yu (2021), most government officials decided to encourage this measure and adopted control strategies, such as the closure of schools, day-care centres and universities, non-essential commercial areas and public recreational areas. Therefore, a large part of the population joined the quarantine movement with the aim of preventing diseases and cooperating with the decline in the infection curve. As in this study, the aim is to analyse the overall role and the impact of digital transformation in eldercare during the COVID-19 pandemic.”

Thus, it must be understood that the scope of the pandemic caused a paradigm shift in the way of life and contact made between health professionals and patients. Moreover, the elderly population is the main part that is most affected by the virus. During the pandemic, the elder had to keep themselves isolated, with few social interactions with their family members and society. Therefore, in this context, it is important to understand the role and impact of digital transformation in eldercare (Edelman et al., 2020).

The study done by Aarts et al. (2021, p.226) demonstrated that COVID-19 was acknowledged as a worldwide pandemic on 11th March, in the year 2020. Moreover, even though the restriction of social distancing is the most effective means to encompass the spread-out of the COVID-19 virus, it was not easy to implement. This is because health experts needed direct interaction with the patients of COVID-19, placing them below a height of danger of being diseased themselves. Furthermore, the author argued that the health workers who were on the front line were specifically exposed throughout the COVID-19 pandemic due to their promise to cover the COVID-19 virus.

They further stated that from the day of 15 October, the year 2020, there were approximately 4,797 COVID-19-related cases aimed at nurses and doctors, along with approximately thousands of deaths of physicians. Additionally, physiological pressures and such kinds of healthcare emergencies have disturbed the consciousness of public health workers as well, as they have faced challenges such as professional pressure, anxiety from the COVID-19 virus and feeling helpless. Nowicka et al. (2021, p.480) stated that the COVID-19 pandemic has a nearby intended burden on the overall healthcare system. Globally, digital transformation has shaped a chance for the reduction of the influences of the COVID-19 pandemic. According to Tiirinki et al. (2020, p.650), digital transformation has also helped fight against the COVID-19 virus and confirmed the steadiness of facilities and elder health services.

According to the study by Chen (2020), the rate of cases of COVID-19 stands out primarily for reaching a risk group; among them are patients with chronic diseases such as diabetes, hypertension, asthma, Chronic Obstructive Pulmonary Disorder (COPD), transplantation or chemotherapy, kidney disease or dialysis, obesity (BMI \geq 40), smokers and the elderly. Sixty years old, pregnant women, postpartum women and children under five years old, men with advanced age and some previous morbidities seem to be related to the mortality of patients hospitalised for COVID-19.

In this context, with respect to the study done by Ammar et al. (2021), the accelerated growth of Finland's ageing has occurred on a significant scale and hence the impact on chronic and infectious diseases. It is known that loneliness and isolation among the elderly are worrying because they negatively impact their mental health and can lead to the cause of different diseases in them, such as cardiovascular problems, neurocognitive, and autoimmune risks. Moreover, the social distancing established by WHO and in force in the country affects the behaviour of citizens, whether elderly or not. This affects the metabolism of all organisms and regulates the most diverse systemic biological factors, still reaching physiological and psychological, so it is essential that health professionals know to assess how the virus affects the metabolism of the elderly and the physical and psychological consequences (Litchfield et al., 2021).

Meanwhile, Repo et al. (2022) stated that it is noteworthy that in Finland, the first record of the disease was made at the end of December 2019, and days later, it was declared an international public health emergency. Since then, the disease has developed rapidly, weakening the responsiveness of health systems in many countries, including the UK, and producing interventions that change people's daily lives significantly.

Moreover, it has been stated by Ranta et al. (2020) that due to the new coronavirus, 36% of Finland's elderly who still work to supplement their income have not been paid, or their income has dropped significantly. Among those who do not have an employment relationship, this number has risen to 55% (Llorente-Barroso et al., 2021). Furthermore, the crisis caused by the global COVID-19 pandemic has had a significant impact on Finland's economy and, in this case, also had a significant effect on the worldwide economy. Everything that happened was beyond the plan of ordinary people (Rantanen et al., 2021). In the context of this pandemic, adversity increases in all areas. According to Tiirinki et al. (2020), the closure of commerce and several other companies, as a preventive measure against the virus, has reached not only health issues but also the quality of life, social interaction, and an increase in poverty. In this

context, the elderly constitutes part of the population group which suffers from isolation due to the distance from their family and friends and the conviviality imposed by the Ministry of Health to prevent the disease (Moisio, 2020). Thus, the elderly are classified as a population at risk because the mortality rate from COVID-19 is higher than their counterparts. In this way, it is necessary to understand how nursing works in this context and classifies the impact of the pandemic on the care and health of the elderly (Erikson, 2021)

2.2 The Nurse in the identification of the impacts of the pandemic on the elderly patient care

In view of the research results, Ratten (2021) added that the importance of nursing during the COVID-19 pandemic should be highlighted since this professional category can provide its population with a culture and society based on clinical, biological, humanitarian and health principles. However, in this health crisis and in the national situation, the practice of assistance, nursing, and hospitality, especially for the elderly population, has become challenging for nurses (Aarts et al., 2021).

The opinions of the authors Scheibe et al. (2022) show that given the particularity provided by COVID-19, this group is always vulnerable throughout the ageing process, whether in terms of biological, social, cultural, or psychological factors. Therefore, nursing became the protagonist of health care for the elderly, putting into practice the clinical, preventive, and educational aims to improve the living conditions and quality of life of the elderly, in addition to contributing to a better chance in the pandemic (Nestor et al., 2021). Therefore, it can be proven that in this period of the COVID-19 pandemic, care is fundamental for the elderly population, thus highlighting all its protagonists. These professionals must readjust their practices and actions to care for the elderly in a qualified and safe way (Giritli Nygren et al., 2021).

Badawy et al. (2022) also pointed out that given the complexity of the ageing process, its own characteristics, combined with the high incidence of chronic

diseases and their effects, it is evident that special attention should be given to the elderly, including prevention, treatment, and rehabilitation, which is characteristic of the nursing work process. In addition to the complexity of the human ageing process, Irawaty (2020) believed that during the pandemic, the elderly require special care needs as they have their own characteristics and specialities

.Therefore, nursing professionals stand out for working in different aspects of serving the crowd, either through health promotion and prevention, monitoring, or professional care. Despite this, the disease infection of COVID19 is further evident in the elderly, which also shows that this pathology is getting worse, and the rate of mortality is higher (Venkitaraman, 2022). Therefore, care and assistance must be more effective and comprehensive through the nursing diagnosis adopted by nurses so that they receive care, seek to find specific problems, and find appropriate actions to guarantee significant results in the fight against COVID-19, aiming to improve the quality of life of the elderly, as they make part of the susceptible population that requires the support of multidisciplinary health teams (Erikson, 2021).

In addition, Scheibe et al. (2022) added that it is essential to note that during the COVID-19 pandemic, the elderly population is part of the risk group for contracting the coronavirus. Therefore, measures such as social isolation have been guided as the primary strategy to avoid infection in these populations. Since then, the elderly have spent more time at home. Therefore, Channa et al. (2021), in their research, emphasised that in cases where care must be performed at home, if possible, the professional nurse must conduct an assessment to verify that the environment is suitable for continuity of care. It is also determined that it is necessary to establish communication between the nurse or health team and the patient and family members to ascertain the real needs and provide necessary guidelines and care.

The study by Litchfield et al. (2021) has revealed that patients and their families need to be aware of essential guidelines and recommendations to prevent and control infections, such as personal hygiene, the use of masks, hand washing, and the use of alcohol gel 70%. When COVID-19 infection is suspected, be as safe as possible to prevent the disease from spreading to family

members, implying that the COVID-19 pandemic has several effects on the health, social, family and economy of the elderly population. However, according to Deusdad (2020), this elderly group has a series of peculiarities that make them vulnerable to diseases caused by the new coronavirus and harm the family environment, such as difficulty in caring for children, lost social interactions and higher risk for depression. Therefore, it is imperative that the medical team is qualified not only to provide comprehensive and humanised care to patients but also to their entire families (Ratten, 2021). However, considering the Deusdad ideas above, Contreras et al. (2020) stated that nursing professionals can have a preponderant role in facing this phenomenon, considering the importance of its preventive attribution through health education and intervention and care for those affected by the disease (Edelman et al., 2020). Furthermore, Ammar et al. (2021) further noted that against this pandemic, nursing professionals seek to formulate safety management guidelines for the patient and for the professionals themselves, as they will not be affected by the disease and will not be infected by the virus.

2.3 Evolution of digital transformation in eldercare

Digital transformation is a cross-community, cross-industry chance in this current century. It makes the technologies able to assist with the evolution from the measured self to measured health. The role of digital transformation in eldercare throughout the COVID-19 pandemic is wide-ranging and can reduce turnover and burnout. WHO (2022) stated that employee burnout in self-governing helped memory and living care societies rise from approximately 17% initially in 2020 to around 27% in the initial two months of the year 2021. WHO demands burnout as a diagnosable “work-related phenomenon”, which is frequently frustrated through immoderation, simplicity around support and expectations.

Soto-Acosta (2020, p.263) claimed that digital transformation played another role in eldercare during COVID-19, creating extra layers of protection. In the era of the COVID-19 pandemic, there is a restriction on keeping social distance

from people. However, the elder who was at home in an ill condition needed some social care provider to take care of them. During that time, digital transformation played a role. With the transformed technology, the eldercare service provider gets the opportunity to maintain a social distance from the elderly patient as they are the most vulnerable to the COVID-19 virus.

Glesne (2016, p.8) demonstrated that eldercare experts similarly faced challenges such as loneliness, insomnia, mental depression and anxiety, and sleep illness as an outcome of excessive pressure due to the COVID-19 pandemic. Although, eldercare service providers were facing depression and anxiety attacks along with frustration because of the variations in the environment and the danger of getting infected through older people whom they were caring for and themselves. Argento et al. (2020, p.877) claimed that in the situation of the COVID-19 Pandemic, eldercare service providers were similarly restricted to upholding social distance between their older patient and also their family. These kinds of restrictions were the most significant challenges that the eldercare service providers faced, consequentially leading to more psychological suffering.

2.4 Digital technologies to support the care of the elderly.

With the advent of digital technologies, there has been a recent push globally to support the care of the elderly. Technologies have the potential to facilitate communication and coordination between family members, caregivers, and health care providers. Therefore, to explore how digital technologies can be used to support the care of the elderly. In this section, a review of the literature on digital technologies and their potential to support the care of the elderly is discussed.

2.4.1 Telehealth

With respect to the study done by Litchfield et al. (2021), with the COVID-19 pandemic, telehealth centres develop technical, scientific and administrative plans to execute, monitor, and evaluate the actions to offer teleconsulting, Tele-education and Telediagnosis for National health system (NHS) professionals and workers began to assume multiple roles and diversified in facing the pandemic. Among the positive aspects is the availability of this service for age groups at greater risk and vulnerability, such as the elderly.

According to Martins Van Jaarsveld (2020), telemedicine and telehealth were one of the solutions found by many countries to keep patients outside hospitals during the pandemic, retaining those asymptomatic or with moderate symptoms at home and referring the most severe cases to hospitals, allowing them to save time and avoid overloading the health service. Direct screening performed through telehealth, virtual contacts or software by telephone enable the classification of patients before they arrive at the health services (Conroy et al., 2020). The detection and registration of patient data with symptoms or temperature and symptoms may prevent hospital visits unnecessary for patients with mild symptoms (Deusdad, 2020).

Moreover, Chen (2020) claimed that teleconsultation for monitoring the elderly in the initial or mild stage makes it possible to receive care from a health professional with the respective guidelines for care to be carried out at home. This type of care can relieve the stress and panic of being symptomatic, in addition to helping overload health services. For the elderly who has already been diagnosed and is clinically stable, it contributes to the continuity of medical guidance and supervision for monitoring the parameters of health and illness (Ursin et al., 2020).

According to Irawaty (2020), older adults who have chronic diseases need to be accompanied, and telehealth is also a viable alternative that favours less exposure to the new coronavirus and allows monitoring of clinical conditions, especially for hypertensive and diabetic patients. Moreover, the author observed that telehealth allows for improving clinical decision-making processes

based on the development of digital monitoring programs, which enable nurses and doctors to monitor patients remotely in ICUs located in hospitals with difficult access.

2.4.2 Phone and email.

According to the study by Chen (2020), many elderly can be followed up via phone or e-mail for the purpose of data research clinicians. In the case of contact with people diagnosed with COVID-19, the elderly can be tracked by telephone for follow-up for 7 to 14 days to identify possible signs and symptoms related to the disease, for care guidance and referral, when necessary. This avoids the presence of the elderly in the health service, who constitute a potential risk of contamination.

Furthermore, Wu & Yu (2021) stated that early diagnosis of COVID-19 also uses the phone for the online medical chatbot. It is digital technology with the use of artificial intelligence software that simulates a conversation in order to recognise the symptoms of COVID-19; if necessary, this call has the intervention of a health professional to better identification of signs and symptoms and that the relevant guidelines are provided). Thus, telehealth, telephone and e-mail can contribute to the elderly in early diagnosis, care guidance, monitoring, remote treatment and reducing the impact of care on health indirectly related to COVID-19 and other diseases during the pandemic.

2.4.3 Twitter, WhatsApp and Facebook

Clausnitzer (2022) pointed out that in March 2020, in Finland, smartphone use during the pandemic showed that nine out of ten older people communicated through messages or e-mails. Of this amount, 28%% already had Facebook applications on their devices, despite not feeling completely secure about their use, as shown in Figure 2 below

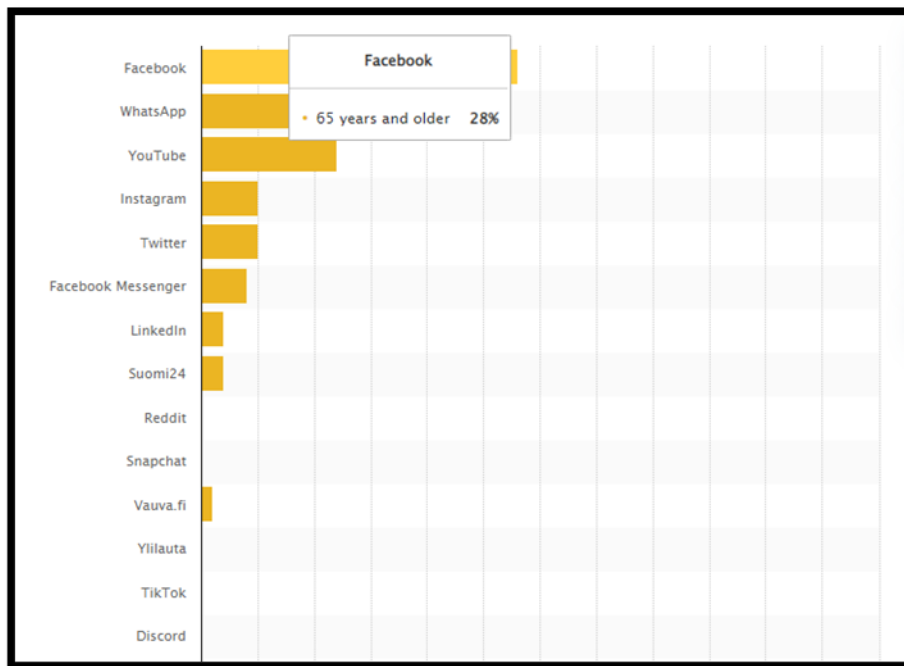


Figure 2: “Share of social media platforms used for sharing and discussing news in Finland in 2022, by age group” (Clausnitzer 2022)

Whereas Llorente-Barroso et al. (2021) discussed in their study that the social media communication phenomenon is worldwide, the video call by WhatsApp has brought generations and encouraged family members to monitor how an older person is dealing with social isolation. In addition, the most used social app, such as Facebook, has expanded networking for many older people during the pandemic allowing closer contact with loved ones and reducing possible anxiety and loneliness resulting from a lack of personal contact (Conroy et al., 2020).

In addition to this, Contreras et al. (2020) stated that the participation of the elderly in online communities generates psychological effects and reflections on offline social life resulting from this participation, with emphasis on the friendships made online that lead to face-to-face meetings. Furthermore, online communities can be used as a source of information and as a space to find people who are interested in the same activities and with whom they can exchange ideas, recommendations, and information, both related to the COVID-19 pandemic and other interests of the elderly population.

Furthermore, Nestor et al. (2021) claimed that health authorities have also used social media to provide information about COVID-19, clarify doubts and publicise government initiatives for the population during the pandemic. Arguably, Deusdad (2020) discussed that there is no control over the contents disclosed about COVID-19 due to the unlimited free access to social media. This contributes to the questioning of the reliability of the information and the scientific evidence available for professionals to refer to. In this context, clinical researchers can contribute during this pandemic using social media or other digital platforms to disseminate reliable information, accurate and precise, preventing the elderly and their families from receiving contradictory, confusing and false messages.

2.4.4 Online platforms

According to Badawy et al. (2022), social distancing can lead older people, especially those who live alone, to develop anxiety and aggravating depression. One of the ways to prevent these adverse events is using interventions to support mental health-based games for the elderly, aiming to establish cognitive relationships and solve problems. The author claimed that the role of the electronic sites of the Ministry of Health and state and municipal secretariats is also highlighted across the country, which has used official channels to provide reliable and up-to-date information for the population. These channels offer technical notes, educational videos; informational materials; diaries on confirmed and suspected cases and deaths; ICU admissions, patients on mechanical ventilation and availability of critical inputs (Giritli Nygren et al., 2021).

Some studies, like by Nowicka et al. (2021), have shown that in many countries, the use of applications has become important for older people in mental and physical health care, contributing to the reduction of sedentary behaviour. Burlacu et al. (2021) also highlighted that the digital applications aimed at supporting people with visual and hearing impairments through registered volunteers who communicate in several languages contribute to promoting quality of life and independence related to problems that may arise in carrying out

basic activities and instruments of daily life. There are also applications aimed at facilitating medication adherence through a timely alert system or the older person receiving a phone call from family members or health professionals being helpful at this time of a pandemic for those who may have some cognitive impairment (Contreras et al., 2020). In this context, Ursin et al. (2020) discussed that mobile technology, such as mobile applications, provided a potent and valuable tool in helping families and nursing professionals to stay in touch with elders and contribute to their well-being physical and mental of these individuals.

Faced with the pandemic, Edelman et al. (2020) noted that it is clear that the use of technologies facilitates everyday life by reducing many trips and bureaucracy when accessing services and information online. This contributes to the adoption of social distancing measures necessary to control the pandemic. In addition to those mentioned, there are applications for purchasing discounted medicines, food and drinks, the purchase and delivery of services, and those cost savings considering what the elderly population can use for several medications.

2.5 Challenges and possibilities of using digital technologies for the elderly in the context of the pandemic: implications for nursing care.

As per the research of the author Chen (2020), it is observed that digital technologies play an essential role in contributing to the fields of health and well-being, as well as the socialisation of the elderly. Its use can help the elderly to improve their quality of life, reduce loneliness and increase access to information, as well as the frequency of communication with family members during the COVID-19 pandemic. Therefore, Martins Van Jaarsveld (2020) highlighted that these perspectives are part of the new reality in which modern societies currently live, or that is, they are moving towards more and more technological transformations, but what is observed is that the access to digital technologies by the elderly do not happen in the same proportion. As indicated by Conroy et al. (2020), this new reality is opportune to discuss the implications for

nursing care, which traditionally involves the way of being cared for in face-to-face interaction. The advent of the pandemic has put the older person in focus, whether due to the need for protection, their condition as a risk group, frailty and even the issues of prejudice. Therefore, Llorente-Barroso et al. (2021) state that questioning the use of digital technologies in situations of support and care support is to appropriate their meaning and their reach in the preservation of the autonomy and independence of the elderly. The pandemic moment reinforced the need to review paradigms and, at the same time, re-signify the actions in the care of the elderly, respecting the plurality and envisioning both the present and the future scenarios. Thus, creating more accessibility to these technologies can bring new opportunities and, consequently, warmly support more active and healthy ageing.

Furthermore, Badawy et al. (2022) highlighted that the elderly could expand access to digital services and entertainment, maintain social relationships and be updated on what is happening in the world, in addition to being an essential tool only for work. Social exclusion and the number of older people living alone or exclusively accompanied by other elderly was already a phenomenon observed and growing sharply in recent decades, both in developed countries as well as in developing countries and with the distancing measures adopted to face the COVID-19 pandemic, this has become even more evident.

Ammar et al. (2021) emphasised that the transition to new digital technologies has disadvantaged less educated groups and those with more advanced ages. In addition to exclusion, evidence indicates that the pandemic has worsened conditions of abandonment of many older people, accentuating depression and even suicide (Giritli Nygren et al., 2021). In this sense, Contreras et al. (2020) showed that it is vital to rethink nursing care practices in facing the pandemic, which allows the continuous monitoring of the physical and mental health conditions of the elderly in the situation of vulnerability and social exclusion. Despite the difficulties that the elderly present in relation to the use of technological tools, feeling included in the digital world is very important and significant for their quality of life (Erikson, 2021).

Whereas, as per the study by Aarts et al. (2021), the use of technologies contributes to the well-being of the elderly by improving their self-esteem and by making them competent when using these tools. Some scientific investigations by Ratten (2021) point out barriers that prevent the elderly population from approaching and benefiting from the use of information and communication technologies. Among these barriers include the complexity of acquiring knowledge due to mental illness, hearing and insight problems etc.

Furthermore, Nowicka et al. (2021) highlighted that a significant obstacle to the use and appropriation of technologies by the elderly, which needs to be addressed, is related to negative attitudes resulting from fear, anxiety and lack of motivation, interest in learning something new and incorporate new habits. However, it is essential to work on the limiting beliefs that prevent the elderly, as well as nursing professionals and other professionals, from appropriating and accessing the digital technologies that are revolutionising healthcare professions in the face of the pandemic (Irawaty 2020).

3 PURPOSE, OBJECTIVES AND RESEARCH QUESTIONS

The spread of COVID-19 caused an uncontrolled worldwide fear, such as the fear of contamination by the virus, which can be transmitted socially, that can raise many uncertainties. Furthermore, there are new trends and technologies that are being adopted for the care of these elders. Therefore, in order to evaluate the role and impact of digital transformation in eldercare during the COVID-19 pandemic, there is a need to understand how using digital technologies can help these elderly people in dealing with different challenges and difficulties they face during the period of crisis. Also, to come up with a plan and knowhow of these technologies that can be implemented by institutions that can help to prevent such challenges in future.

Therefore, the main objective of this study mainly includes:

To identify the role of digital transformation in eldercare during the COVID-19 pandemic.

To identify the impact of digital transformations in eldercare during the COVID-19 pandemic. The following will be the research question for this study:

- What is the role of digital transformation in eldercare during the COVID-19 pandemic?
- What are the impacts of digital transformation in eldercare during the COVID-19 pandemic?

4 RESEARCH METHODOLOGY

4.1 Scoping review as the research method

Research design is a common approach selected by the researcher to mix various elements of research in a logical and comprehensive way. An exploratory research design was selected by the researcher for this study. This is because it has a procedure which discovers the research questions which have not been studied before in complexity. Moreover, an exploratory research design provides the researcher with a further understanding of the research problem. The method of data collection is simply a procedure of collecting and analysing data related to the research topic, which makes the researcher respond to the specific research question, test hypotheses, and assess consequences (Garg, 2016, p.640).

According to Pels et al. (2018), reviewing the literature while completing the study contains an outline, an assessment which means critique, and on summary of the present state of data specifically related to the topic of the study. There are different kinds of literature reviews, such as narrative literature reviews, critically appraised topics, scoping reviews, systematic literature reviews, and annotated bibliographies, which can be used to complete the study in a proper manner (Pani-Harreman et al., 2021, p.2046). For this study, the

scoping review was used because Pels et al. (2018) claimed that it could aid in inspecting the range, nature, and extent of the activities of the study.

Viscogliosi et al. (2020) claimed that a scoping review could be described as the kind of research mixture which proposes to plan the works on a specific research area or a topic of the study and give a chance to recognise the main perceptions, research gaps, and the sources and kinds of evidence to appraise research. Other than that, van der Gaag et al. (2022) argued that nowadays, the field of evidence mixture has seen the development of scoping appraisals, which are the same as systematic reviews in that the researcher follows an organised procedure. Consequently, scoping reviews nowadays can be seen as the most suitable and valid strategy in specific situations where particularly systematic reviews are incapable of encountering the essential requirements or objectives of the information utiliser.

4.2 Literature Search strategy

To collect the specific data for the research, the different data bases that are considered include SCOPUS, Cochrane, and Google Scholar are the databases used for collecting the data about the current study, as shown in Table 1 below. The main reason for choosing these databases is because they include peer-reviewed articles, and most of these databases are used by different researchers in their studies. The Scopus is known as the abstract and the citation database for peer-reviewed literature, different scientific journals, books and conference proceedings. It helps in delivering the research outputs for the different fields of science and other fields. At the same time, the Cochrane review is mainly defined as the systematic review of the healthcare and health policies that were published in the Cochrane Database of Systematic Reviews. And the last database is Google Scholar, which is known to be a free accessible web searching engine which mainly helps in indexing the full text and meta data over an array for the published formats and disciplines.

Table 1. Databases used for Article Searches

Databases	Justification
Google Scholar	Many researchers use this database as it provides information on almost every subject. Thousands of publications are present in google scholar as it provides relevant information on every topic. Therefore this database is used.
Scopus	Scopus is another database which many students, as well as professionals, use to carry out research as this database contains good information, so this is the reason for using this database
Cochrane	The Cochrane database includes different international publications from different academic disciplines. This is the reason for choosing this database.

Data sources were appropriately used in this study as it is related to healthcare. There are several healthcare-related databases that can be used to collect data for studies like this one. The search terms, which are indicated in Table 2, were combined to gather the data, for instance, (Older Adults OR Senior Citizens OR Old Age People) AND (Digitalisation OR Modernisation OR Technological innovation OR Digital Advancement) AND (Care of the Elderly OR Aged care) AND (pandemic OR outbreak OR epidemic OR coronavirus OR coronavirus disease OR SARS-CoV-2 disease).

Additionally, the Population, Exposure, Outcome (PEO) model was used in this study to find out the main search terms, which can be helpful in finding out more relevant and appropriate data. Moreover, the PEO model can provide assistance in defining the data which needs to be identified to obtain answers

to the set research questions with the help of collected data, as shown in Table 2. Through establishing a scientific question utilising the PEO model, the researcher utilised particular search terms to get support in finding clinically related evidence in the literature (McGowan et al., 2016, p.43).

Table 2. Search terms

PEO Model	Search Term	Alternative Term
Population	Elderly people	'Older Adults' OR 'Senior Citizens' OR 'Old Age People'
Exposure	Digital Transformation	Digitalization OR Modernization OR 'Technological innovation' OR 'Digital Advancement.'
Outcome	Elder care during COVID-19	'Care of the Elderly OR Aged care AND pandemic OR outbreak OR epidemic OR coronavirus OR coronavirus disease OR SARS-CoV-2 disease

The inclusion and exclusion criteria of the study can identify the type of studies which will be rejected or accepted (Patino & Ferreira, 2018, p.84). While conducting this study, different studies were selected to collect data about the topic of the study. Table 3 below shows the inclusion and exclusion criteria of the current study:

Table 3. Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Most relevant studies have been included.	The studies which were not relevant to the topic were excluded.
Only the studies published in the English language have been included (Yamasaki et al., 2015, p. 1407).	All those studies have been rejected which were not in the English language have been.
Only scientific and journal articles have been included in this study.	Other articles have been rejected.
Studies which were published from the year 2020 to the year 2022 have been included.	Studies which were published before the year 2020 were rejected (Patino & Ferreira, 2018, p.84).

4.3 Selection of the Studies

In this study, data analysis is mainly defined as the procedures that focus on the methodological implementation of the numerical and different rational methods that are highlighted in terms of collecting the data (Richards & Hemphill, 2018, p. 227). Moreover, the main purpose of conducting the data analysis is to analyse the different techniques since this study mainly focuses on the usage of the thematic data analysis technique.

The main purpose of using thematic analysis is to focus on analysing the collected data from the different selected studies. Along with this, the themes of this study are developed from the different codes which are found to be assigned using similar data patterns over the different selected studies. The thematic analysis technique also helps the researchers to have a more suitable and flexible interpretation of the overall data which is gathered while also

ensuring that the researchers should be able to gather the bunch of data while putting together the wide-range of themes (Clarke et al., 2015, p.248).

The sample selection was carried out in two phases. In phase 1, the titles were analysed, abstracts and keywords of the works were identified in the databases, and those that did not include the eldercare population were excluded.

At this stage also, duplicate studies were excluded. In phase 2, the studies were analysed by reading the texts in full and applying the inclusion and exclusion criteria (mentioned above). In addition, the “PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)” were used to assess the studies as per the inclusion and exclusion criterion (Garg, 2016). The PRISMA flow diagram for this process is given in Figure 3 below. A total of 10 studies were selected for the final results after the exclusion of other studies. Therefore 120 articles were found from the considered databases, as shown in Table 4. At the same time, 15 additional records were found from sources from other databases, Science Direct and Scopus.

Table 4. Number of records on data bases

	The number of articles found
PubMed	29
Cochrane	21
Scopus	20
Google Scholar	60
Total	120

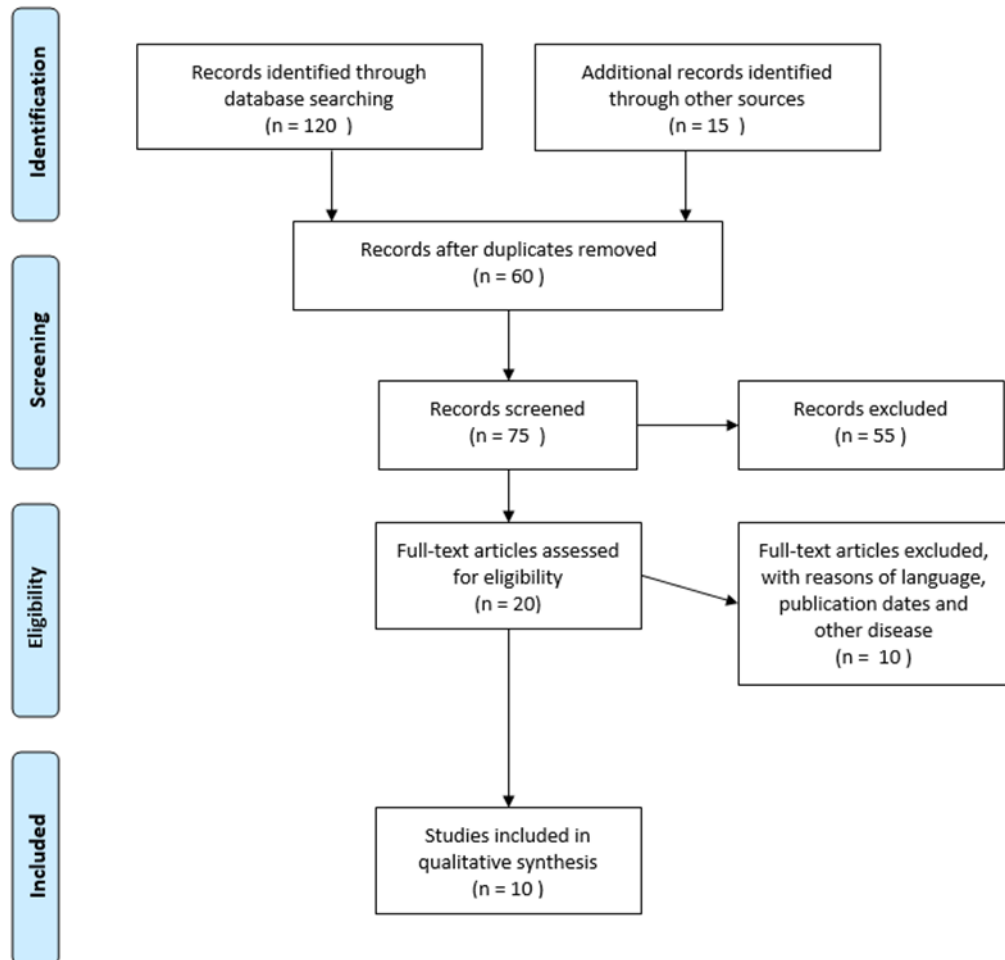


Figure 3. PRISMA Chart

4.4 Critical Appraisal of the selected studies

For evaluating the methodological quality of the studies, “the Johanna Briggs (JBI) Critical Appraisal Checklist for Qualitative Research” was used (Jun et al., 2021). This list contains ten criteria to evaluate each study, as attached in Appendix B. All ten studies have been evaluated according to these standards while considering their limitations and the researcher’s lack of professional research experience and knowledge, as the researcher of the current study is someone without a form research background with limited expertise. However, to overcome these issues, all the studies included in the work are peer-reviewed and published in respectable scholarly journals. The evaluation of all the selected articles is attached in Appendix C.

5 RESULTS

Selection Process

The articles chosen for the study were based on both quantitative and qualitative articles. All the articles considered were published in disciplines such as the journal of environmental research and public health, the journal of ageing & social policy and the Journals of Gerontology. Furthermore, all articles included in the review were all peer-reviewed and were based on the publishing year of 2020 to 2022. The data for this study were analysed using thematic analysis, which focuses on making the themes which mainly relate to the aim and objectives while also focusing on demonstrating the importance of the themes relating to the study.

5.1 Theme 1: The role of digital transformation in eldercare during the COVID-19 pandemic

The study conducted by Scheibe et al. (2022), it has been investigated that there is a correlation between employee age, resilience, job demands and resources, and self-regulation during COVID-19 using an online survey with a closed series of questions. Results showed older employees had higher scores in terms of how resilient they are than younger employees; this result remained valid even when controlling for other factors (gender and ex-pat status). Additionally, the studies highlighted that high resilience levels were linked to high job resource levels, such as improved job security and access to equipment.

The role of digital transformation in eldercare during the COVID-19 pandemic mainly includes efficiency, as the main aim of digital transformation is to increase the efficiency of the health services provided to the eldercare during COVID-19. IT also helps in improving the quality of care while it also helps in reducing the eldercare cost and also improving quality. The services provided

are also compared for the patients, which is also directed towards the other places that help in providing quality services. The digitalisation transformation also helps in empowering consumers and patients also. Mobile health, or m-health, is defined as the major component of e-health. M-health is mainly defined as medical and public health applications which are mainly powered through the use of mobile devices as there are around 2.5 billion people that are mainly using m-health, which also includes patients and different healthcare providers.

In contrast, there was no clear connection between the two in regard to demanding situations at work. Further examination revealed that age had little bearing on how much time or energy people spent working, only having an impact on workplace productivity if it impacted their ability to complete tasks. However, it does prove that being older also has its own set of stresses, including eldercare responsibilities which will affect one's ability to stay resilient. The findings showed that age-related advantages in well-being are predicted to persist through a COVID-19 pandemic, while demands such as workloads, childcare, and eldercare demands do not predict resilience. Resilience was seen among older workers who reframed the crisis as an opportunity for personal growth while they continued to make use of their resources in uniquely beneficial ways that also benefitted younger co-workers.

Nowicka et al. (2021) study noted that with the increasing number of ageing persons being admitted to institutions or home care due to COVID-19, many elderly citizens require additional social and healthcare workers at home. In addition, it is hard for these individuals to work outside the country because they are considered at high risk for infection. A solution would be giving them temporary worker visas so they can do their jobs without fear of passing on anything else. An alternative solution might be having governments find ways to train an adequate number of nurses who deal with elderly patients in an effort to reduce the wait time for people who need help. These ideas may make up part of what needs to happen to combat this serious issue which can lead otherwise healthy elders into early demise all because there are not enough

employees who can implement or use or have an awareness of the available technologies for elder care.

The study by Song, Qian & Pickard (2021) investigated how community-based eldercare services reacted to the COVID-19 pandemic restrictions. Strategies are examined for their strengths and challenges. A qualitative study using semi-structured interviews was conducted individually with eleven social service staff from various eldercare services (CES) in China.

The finding of the study showed that two main forms of adaptations emerged by these CES during COVID-19. Firstly, increased engagement with clients/relevant stakeholders and, secondly, increased use of telecommunication modalities. The author further highlighted that benefits include an enhanced sense of connection among service users, which strengthens both personal bonds and sense of belonging; new opportunities for evaluating business models through expanded clientele reach; increasing visibility due to technological connectivity, which aids outreach efforts; yet there remained difficulty implementing supportive workplace practices, resource constraints and work stressors management as well.

The finding of Turja et al. (2022), on the other hand, discussed that robots have been being introduced to the welfare sector for quite a long time now. Moreover, previous observations based on a larger-scale survey study in 2016 show that while robots are helpful in certain telecare tasks, the use of robots may be incompatible with the workers' personal values. The study presents the second wave of this survey data from 2020, where the author found that their views have now changed for the better, including higher expectations when it comes to employing care robots and fewer worries about them interfering with one's personal values. Furthermore, if the elder wants care workers to see potential in these new technologies, they will need to uphold ethical standards within an environment of respectfulness, compassion, and trustworthiness. Moreover, when it comes down to robotising an area of service or profession, whether it is within one's own profession or another, then personal values tend to matter a lot when predicting how people feel about any given task they might undertake.

Turja et al. (2022) showed that if colleagues accepted the use of care robots ethically (subjective norm) and professionally (compatibility with professional ethics), respondents were more likely to expect more from the usefulness of telehealth robots and a higher perception of compatibility between personal values and the use of robots. Fear of robot-induced technological was negatively correlated with COVID-19 stress, meaning that those who reported COVID-related stress were less concerned about losing their jobs due to robots.

5.2 Theme 2: The impacts of digital transformation in eldercare during the COVID-19 pandemic

As per the study by Noone et al. (2020), the COVID-19 pandemic that spread rapidly across the globe restricted face-to-face interactions, and this led to unfavourable consequences for the older population in that they were left lonely and isolated, contributing to poor mental and physical health. Thus the author considering an element of a video call that connects a person with someone using an internet connection, states that this technology can help alleviate some of the burdens often faced by seniors who are looking for ways in which they can stay connected without worry.

Therefore, the research aims to find out if those over 60 years old who use video calls ever felt lonelier than those who do not; while also evaluating its effects on symptoms of depression and quality of life. In addition, the method includes studies that randomly allocate seniors to different groups, such as video calls, other methods of staying in contact with friends and family, or no particular way at all (control group), with the goal of gauging whether they affect levels of loneliness or social isolation. As part of this study, the population included senior citizens aged 65 years old or higher. After reviewing three studies with 201 participants, all taking place in Taiwanese nursing homes between 2010 and 2020, the author found that video calls were only minimally effective when it came to reducing the feeling of loneliness or depressive symptoms for

these older adults. However, elderly people who used video shares experienced an improvement in their mood, leading up to a small drop in depressive symptom severity versus those receiving usual care. For other measures, such as quality of life, however, there was little to no effect seen regardless of the time length studied.

According to MacLeavy (2021), COVID-19 has sparked a fresh conversation in regard to social welfare. As per the result of the study with an ageing population, the UK is not alone in the challenges faced when it comes to providing care for people who cannot take care of themselves. Based on previous research highlighting various ways technology can enable humans to share labour for occupations that are already overcoming staff shortages, funding cuts and a general lack of interest in hiring foreign workers due to rising xenophobia, the study proposes novel ideas about how people might use new technologies when it comes to taking care of themselves before anyone else does it for them. By engaging in qualitative study methods, the author opens up conversations surrounding what is known about paying/unpaid labour practices and considers what potentially could come next if COVID-19 does not end soon or any such crisis reappears in future. Understanding the connection between sensory dimensions of care will be critical as governments plan out their responses to these emerging trends.

The study by Kańtoch & Kańtoch (2020) evaluated that Wearable Medical Devices are changing the way in which people receive healthcare and offer a promising source for novel telemedical services. This study explored seeking medical attention from Poland's population over 65 years old. There were 146 participants who completed questionnaires about their lives, thoughts on what they needed from telemedicine services, how aware they currently were of it, and how interested they would be if there were a device that could actually do it all. However, most people were unaware (56.8%) of these possible sources of help. However, the findings suggest a lack of awareness of telemedical services and the opportunities offered by wearable tele medical devices.

The study done by Kaplan (2020) reported how essential Information Technology has been throughout the COVID-19 pandemic. Telehealth and telemedicine services, in particular, have served their promise by allowing patients to receive support and care remotely, making it easier for them as well. From 2020 onwards, society professionals, governments and scholars studied ethical dilemmas associated with telemedicine and telehealth foremost concerns from studying this literature are quality of care, accessibility, consent, and privacy. The goal of the research is to identify, summarise, and explore all possible ethical risks involved in using IT, specifically when applied to healthcare, such as through telecommunications system usage (EU Guidelines). Through research involving the integration of literature found through the examination of 19 pieces of work, the study aims to provide a synthesis which will assist those deciding whether information technology is appropriate for their own practices.

A synthesis matrix was developed and issued that is used to classify elements such as “Quality of Care, Consent and Autonomy, Access to Care and Technology, Legal and Regulatory Concerns, Clinician Responsibilities, Patient Responsibilities, Changed Relationships-Commercialization; Policy Concerns; Information Needs for Patients and Practitioners; Evaluation Considerations-Evaluation Methods”. The literature primarily focused on Quality of Care/Quality Assessment Tools (e.g., HEDIS), access (e.g., Physicians’ Meaningful Use Requirements), Consent (Implications of Informed Consent), Privacy Issues—Data Sharing Disclosures; Patient Data Practices Fiduciary Duty). Other identified considerations were little discussed, including Usability Factors; Tailoring Services to Individual Patients; Curriculum Development and Training of Practitioners. These new emerging topics include Interoperability Concerns for Healthcare Information Technologies, Data Availability Issues Regarding Security and Informatics Infrastructure Requirements. According to Bakshi & Bhattacharyya (2021), as the world’s population ages and technology continue to develop, it is necessary for countries to consider the benefits of adopting modern technology. However, this poses a new set of problems involving technological isolation and how society views old age. For example, while there are studies looking at how COVID-19 has negatively impacted older people

socially by segregating them from others, there are few studies which investigate both sides of this situation considering the isolated seniors feel due to isolation. The study included qualitative in-depth interviews of 30 professionals aged at least sixty, all residing in a metropolitan city located east of India, who showed signs of isolation. The results showed that all the participants kept their traditional norms when it came to face-to-face interactions and relied on their touchscreen devices or keyboards to keep up daily communication, work from home, or find important resources.

Furthermore, besides studying these participants' reasons for adopting ICT (Information Communication Technologies), the study also highlighted some key blocks such as unattractive attitudes about new technology, bad past experiences with new technology, worries about cyber security (issues related to internet use) - such as being easily hacked or sharing too much personal information through e-mail messages; difficult instructions when using new technologies; and an unsupportive learning environment. It is crucial for us to accommodate these variables because only through recognising these nuances can we create an inclusive technological society which caters specifically towards this community's needs.

Hemmati & Rahmani's (2022) study showed that newer innovations in the medical field are developing at a rapid rate; such changes include introducing new technologies to simplify and accelerate procedures for better accuracy. These advances will have an impact on stopping COVID-19 from spreading across the world by connecting everything from watches, phones, or tablets to hospital equipment, all acting together as one large interconnected system called the 'Internet of Medical Things (IoMT).

6. DISCUSSION

6.1 Theme 1: The role of digital transformation in eldercare during the COVID-19 pandemic

The finding of the study by Nowicka et al. (2021) noted that with the increasing ageing population, many elderly citizens require additional social and healthcare workers at home. It is hard for these individuals to work overseas because they are considered at high risk for infection. A solution would be giving them temporary worker visas so they can do their jobs without fear of passing on anything else. An alternative solution might be having governments find ways to train an adequate number of nurses who deal with elderly patients in an effort to reduce the long wait time for people who need help. These ideas may make up part of what needs to happen to combat this serious issue which can lead otherwise healthy elders into early demise, all because there are not enough healthcare workers who can implement or use or have an awareness about available technologies for elder care.

WHO (2022) stated that digital transformation is a cross-communal and cross-industry opportunity in this century. This makes technology capable of assisting in the evolution from measurable self to measurable health. The role of digital transformation in elderly care during the COVID-19 pandemic is significant and can reduce employee turnover and burnout. Furthermore, self-management employee burnout helped society increase memory and concern for life from about 17% in early 2020 to about 27% in the first two months of 2021. The WHO requires that burnout be diagnosable. A “work-related phenomenon” that is often frustrating due to overwork, lack of support and expectations (WHO, 2022).

Soto Acosta's (2020) findings argued that digital transformation had played another role in elderly care during COVID-19 by creating additional layers of protection. In the era of the COVID-19 pandemic, there is a restriction on maintaining social distance from people. However, the elderly man, who was at home in a serious condition, needed social assistance. At that time, digital transformation played its part. The transformed technology allows an aged care provider to maintain social distancing with older patients, as they are the most vulnerable to the COVID-19 virus.

Glesne's (2016) finding demonstrated that aged care professionals also face problems such as loneliness, insomnia, mental depression and anxiety, as well as sleep disturbances due to excessive pressure due to the COVID-19 pandemic. However, aged care providers experience bouts of depression and anxiety, as well as frustration with environmental differences and the risk of infection through the elderly they care for and themselves. Argento et al. (2020) results showed that, in the context of the COVID-19 pandemic, aged care providers have also been limited in maintaining social distancing between their elderly patients and their families. These kinds of restrictions were the most serious problems faced by caregivers of the elderly, resulting in even more psychological suffering.

Furthermore, the study by Scheibe et al. (2022) investigated the correlation between employee age, resilience, job demands, and self-regulation during COVID-19. The results showed that older employees had higher scores in terms of how resilient they are than younger employees; this result remained valid even when controlling for other factors (gender and ex-pat status). Additionally, the study highlighted that high resilience levels were linked to high job resource levels, such as improved job security and access to equipment. In contrast, there was no clear connection between the two regarding demanding situations at work.

However, being older also has its own set of stresses, including eldercare responsibilities which will affect one's ability to stay resilient. The study also showed age-related advantages in well-being are predicted to persist through a COVID-19 pandemic, while demands such as workloads, childcare, and

eldercare demands do not predict resilience. Resilience was seen among older workers who reframed the crisis as an opportunity for personal growth while they continued to make use of their resources in uniquely beneficial ways that also benefitted younger co-workers. Moreover, Chen's (2020) study finding argued that teleconsultations for the care of the elderly in the initial or mild stages allow them to get the help of a healthcare professional with appropriate advice at home. This type of care can relieve stress and panic over symptoms and help overwhelm health services. For older people who are already diagnosed and clinically stable, this facilitates continuity of treatment and follow-up to monitor health and disease parameters.

The study by Song et al. (2021) investigated how community-based eldercare services reacted to the COVID-19 pandemic restrictions. Based on semi-structured interviews, a qualitative investigation using eleven social service staff from various community-based eldercare services in China was conducted. The finding of the study indicated that two main forms of adaptation emerged from these community-based eldercare services during COVID-19, including increased engagement with clients/relevant stakeholders and increased use of telecommunication modalities.

The author further highlighted that the benefits of social media include an enhanced sense of connection among service users, which strengthens both personal bonds and a sense of belonging; new opportunities for evaluating business models through expanded clientele reach; increasing visibility due to technological connectivity, which aids outreach efforts; and the challenge of implementing supportive workplace practices due to resource constraints and work stressors.

According to Badawi et al. (2022), social distancing can lead older people, especially those who live alone, to develop anxiety or worsen depression. One way to prevent these adverse events is through the use of interventions to support mental health-based play for the elderly aimed at establishing cognitive relationships and problem-solving. Giritli Nygren et al. (2021) argued that throughout the country, the electronic websites of the Ministry of Health and state and municipal secretariats also play a role, using official channels to provide reliable and up-to-date information to the population. These channels offer

technical notes, educational videos; information materials; diaries of confirmed and suspected cases and deaths; ICU admission ventilated patients, and the presence of critical entrances.

Turja et al. (2022) findings based on a larger-scale survey study in 2016 show that while robots are helpful in certain telecare tasks, the use of robots may be incompatible with the workers' values. The study presents the second wave of this survey data from 2020, where the author found that their views have now changed for the better, including higher expectations when it comes to employing care robots and fewer worries about them interfering with one's values. Furthermore, if the elder wants care workers to see potential in these new technologies, they will need to uphold ethical standards within an environment of respectfulness, compassion, and trustworthiness. Turja et al. (2022) have also found that when it comes down to robotising an area of service or profession, whether it is within one's own profession or another, then personal values tend to matter a lot when predicting how people feel about any given task they might undertake.

6.2 Theme 2: The impacts of digital transformation in eldercare during the COVID-19 pandemic

According to a study by author Chen (2020), digital technologies play an important role in improving health and well-being, as well as in the socialization of older people. Its use can help older people improve their quality of life, reduce loneliness, increase access to information, and increase the frequency of communication with family members during the COVID-19 pandemic. Similarly, Martins van Jaarsveld (2020) emphasized that these perspectives are part of the new reality in which modern societies currently live, i.e. they are moving towards becoming more technologically advanced and ageing, but what is observed is that access to the digital elderly is not limited. According to Conroy et al. (2020), this new reality is relevant to discussing the implications of nursing, which traditionally involves face-to-face care. The onset of the pandemic drew attention to the elderly due to their need for protection, insecurity, weakness, or even prejudice.

As per a study by Noone et al. (2020), the COVID-19 pandemic that spread rapidly across the globe restricted face-to-face interactions, and this led to unfavourable consequences for the older population in that they were left lonely and isolated, contributing to poor mental and physical health. Thus, an element of a computer programme that connects a person with someone using an internet connection has been considered, which the author states can help alleviate some of the burdens often faced by seniors who are looking for ways in which they can stay connected without worry.

Therefore, it is to be researched if those over 60 years old who use video calls ever felt lonelier than those who do not, while also their effect on symptoms of depression and quality of life are to be evaluated. As part of this study, the population included seniors aged 65 years old or higher. Three studies with 201 participants, all taking place in Taiwanese nursing homes between 2010 and 2020, found video calls only minimally effective for decreasing the feeling of loneliness or depressive symptoms for senior citizens. While video shares had little to no effect on the quality of life, those who used video shared experienced an improvement in their mood, leading up to a small decrease in depressive symptom severity versus those who usually received care.

Whereas according to Aarts et al. (2021), the use of technology contributes to the well-being of older people by increasing their self-esteem and sense of competence in using these tools. Some research by Ratten (2021) points to barriers that prevent older people from getting close to and using it. Such barriers include difficulties in gaining knowledge due to mental illness, problems with hearing and intuition, etc.

Furthermore, the study by Kańtoch & Kańtoch (2020) evaluated that Wearable Medical Devices are changing the way in which people receive healthcare and offer a promising source for novel telemedical services. This study explored seeking medical attention from Poland's population over 65 years old. There were 146 participants who completed questionnaires about their lives, thoughts on what they needed from telemedicine services, how aware they currently were of it, and how interested they would be if there were a device that could actually do it all. Though most people were unaware (56.8%) of

these possible sources of help. However, the findings suggest a lack of awareness of telemedical services and the opportunities offered by wearable telemedical devices, which furthermore suggests more marketing research is required to determine optimal uses and implementation of these devices in the future to promote greater public perception.

In addition, Nowicka et al. (2021) emphasized that the main obstacle to the use and appropriation of technology by older people, which needs to be addressed, is associated with negative attitudes resulting from fear, anxiety and lack of motivation, interest in learning something new and inculcating new habits. However, it is important to work on limiting beliefs that prevent older people, as well as nurses and other professionals, from appropriating and accessing digital technologies that are revolutionizing the medical profession in the face of a pandemic.

Other studies, such as Irawaty (2020), showed that in many countries, the use of apps has become important for older people in providing psychological and physical care, contributing to a reduction in sedentary lifestyles. Burlacu et al. (2021) also emphasized that apps that support people with visual and hearing impairments through registered volunteers who communicate in multiple languages contribute to increased quality of life and independence with respect to challenges that may arise in performing essential everyday activities. There are also apps designed to facilitate treatment adherence by providing an early warning system or receiving an older person's phone call from family members or healthcare professionals to help those who may have some cognitive impairment during a pandemic. In this context, Ursin et al. (2020) discussed that mobile technologies such as mobile apps are powerful and valuable tools to help families and caregivers keep in touch with older people and promote their physical and mental well-being.

Bakshi & Bhattacharyya (2021) reported that as the world's population ages and technology continues to develop, countries need to consider the benefits of adopting modern technology. However, this may pose a new set of problems

involving technological isolation, which negatively impacts older people socially by segregating them from others. Furthermore, this study also looks at how COVID-19 has significantly contributed to technological isolation amongst elderly people by using a qualitative in-depth interview approach with 30 professionals aged in their 60s.

The results showed that all participants kept their traditional norms when it came to face-to-face interactions and relied on their touchscreen devices or keyboards to keep up daily communication and work from home. Besides studying these participants' reasons for adopting ICT, the research also highlighted some key blocks such as unattractive attitudes about new technology, bad past experiences with new technology, worries about cyber security such as being easily hacked or sharing too much personal information through e-mail messages; difficult instructions when using new technologies; and an un-supportive learning environment. It is crucial for us to accommodate these variables because only through recognising these nuances can we create an inclusive technological society which caters specifically towards this community's needs.

In addition to this, Contreras et al. (2020) stated that older people's participation in online communities generates psychological effects and reflections on offline social life resulting from this participation, with a focus on online friendships that lead to face-to-face encounters. In addition, online communities can be used as a source of information and as a place to find people who are interested in the same activity and with whom they can exchange ideas, recommendations, and information, both in relation to the COVID-19 pandemic and in other interests. The elderly population. In addition, Nestor et al. (2021) argued that health authorities have also used social media to provide information about COVID-19, clarify doubts, and inform the public about government initiatives during the pandemic. In addition to this, these advances are carried around every day and connect people with the world, so it does not only make sense that these technologies can only help people when there's an epidemic problem.

Kaplan's (2020) study finding discussed that information technology has been essential throughout the COVID-19 pandemic. Telehealth and telemedicine services have made it easier for patients to receive support and care remotely. From 2020 onwards, society professionals, governments and scholars studied ethical dilemmas associated with telemedicine and telehealth. The goal of the research is to identify, summarize, and explore all possible ethical risks involved in using IT, specifically when applied to healthcare, such as through telecommunications system usage (EU Guidelines). A synthesis matrix was developed that considered clinicians' concerns about the quality of care, accessibility, and an expected expanded patient base for practitioners. Other issues were little discussed, including usability factors; tailoring services to individual patients; curriculum development and training of practitioners.

6.3 Research Ethics and Validity

According to Arifin (2018), integrity in scientific research aims to ensure that ethical practices such as honesty, prudence and recognition of equality are adopted by researchers within the institutions, being linked to any developed research, whether a scientific or intellectual production.

For research to be ethical, it must have value, which represents a judgment about its social, scientific or clinical importance; It must propose an intervention that leads to improvements in the living conditions or in the well-being of the population or that produces knowledge that can open up opportunities for overcoming or solving problems, even if not immediately (Pietilä et al., 2020).

Therefore, taking this into account throughout the study, plagiarism has been avoided, and paraphrasing has been done to describe the material through understanding by the individual. Moreover, the study was completed in a good manner with maximum integrity (Peoples, 2020). All data collected from online sources was thoroughly referenced both within the text as well as in a coherent reference list at the end of the thesis. Also, any misleading data that could cause harm to people and society was omitted from inclusion in this study (Thompson et al., 2021).

6.4 Implications for Practice and Future Research

Therefore, it is recommended that it is important to emphasize that the scenario is still one of little scientific evidence regarding the use of digital technologies and responses to the pandemic. Therefore, it is essential to produce research that produces evidence about its use at different levels of complexity, services and applications in the field of health and well-being, as well as the socialization of the elderly. The broad scope of digital technologies, adjusting to the needs in the health of each social context, provides innovative solutions for the provision of health services and opens great opportunities for its use in the case of epidemics such as COVID-19 experienced at that time.

Strategies to boost access and digital literacy of the elderly population, enabling the development of search, selection, analysis and decision-making, as well as the creation of programs in the media that target this range of age groups, combat the spread of misinformation and allow informational checking in a way simple and practical, can minimize the risks to health. New studies should contemplate mechanisms that increase the resilience of this population and explore the best appropriation of older people to digital technologies and tools that enable them to have care using different information technologies.

7 CONCLUSIONS

Therefore, from the above discussion, it can be concluded that digital transformation is the use of technology to improve the efficiency and effectiveness of an organization's business processes. The role and impact of digital transformation in eldercare during the COVID-19 pandemic have improved the efficiency and effectiveness of the organization's business processes. The purpose of this paper is to evaluate the role and impact of digital transformation in eldercare during the COVID-19 pandemic. One aspect of digital transformation that can be used is noted, considering this is the efficiency and

effectiveness of eldercare during the COVID-19 pandemic through data analytics. Data analytics provides a way for healthcare organizations to better understand eldercare needs by analyzing existing data sets. This helps organizations make informed decisions about products, services, offerings, pricing strategies, etc., which ultimately improves eldercare satisfaction levels.

Moreover, digital technologies such as telecommunications networks and next-generation technologies (5G) connecting a proliferation of “Internet of Things (IoT)” applied to different monitors, biosignal sensors, equipment, and sensors for personal social use or for clinical use are capable of producing and collecting immeasurable amounts of data (big data) in real-time. These are transformed into training or even knowledge by software that mimics human reasoning, artificial intelligence (AI) and deep learning, which detects patterns and trends and predicts outcomes.

Thus, Eldercare during the COVID-19 pandemic has provided an opportunity for digital transformation in eldercare facilities. The pandemic has led to an increase in demand for eldercare services by senior citizens who have lost their homes and jobs due to COVID-19. As a result, there has been an increased need for eldercare services and technology such as home health aides (HHAs), telehealth services, and virtual visits (VVs). Thus, it can be said COVID-19 pandemic has changed paradigms in all aspects of modern society, such as social, work, family and behavioural. In its fight, in 2020, it was possible to rely on classic public health measures allied to a wide range of technological innovations capable of enhancing conventional clinical approaches for elderly care, with the consequent increase in its effectiveness.

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APPENDIX A: SELECTED STUDIES

SNO	Author(s), year	Title
1	"Scheibe De Bloom & Modderman 2022	Resilience during Crisis and the Role of Age: Involuntary Telework during the COVID-19 Pandemic.
2	Noone et al., 2020	Video calls for reducing social isolation and loneliness in older people: a rapid review.
3	Nowicka et al., 2021	COVID-19 Pandemic and Resilience of the Transnational Home-Based Elder Care System between Poland and Germany.
4	MacLeavy, 2021	Care work, gender inequality and technological advancement in the age of COVID-19.
5	Song Qian & Pickard 2021	Age-Related digital divide during the COVID-19 pandemic in China.
6	Turja et al., 2022	Positive turn in eldercare workers' views toward telecare robots.
7	Kańtoch & Kańtoch 2020	What features and functions are desired in telemedical services targeted at polish older adults delivered by wearable medical devices? Pre-COVID-19 flashback.
8	Kaplan 2020	Revisiting health information technology ethical, legal, and social

		issues and evaluation: telehealth/tel- medicine and COVID-19.
9	Bakshi & Bhattacharyya 2021	Socially distanced or socially con- nected? Well-being through ICT us- age among the Indian elderly during COVID-19.
10	Hemmati & Rahmani 2022	Internet of Medical Things in the COVID-19 Era: A Systematic Litera- ture Review.”

APPENDIX B: CRITICAL APPRAISAL CHECKLIST FOR QUALITATIVE RESEARCH

JBI CRITICAL APPRAISAL CHECKLIST FOR QUALITATIVE RESEARCH

Reviewer _____ Date _____

Author _____ Year _____ Record Number _____

	Yes	No	Unclear	Not applicable
1. Is there congruity between the stated philosophical perspective and the research methodology?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there congruity between the research methodology and the research question or objectives?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there congruity between the research methodology and the methods used to collect data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is there congruity between the research methodology and the representation and analysis of data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is there congruity between the research methodology and the interpretation of results?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is there a statement locating the researcher culturally or theoretically?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the influence of the researcher on the research, and vice-versa, addressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are participants, and their voices, adequately represented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

APPENDIX C: RESULTS OF CRITICAL APPRAISAL

	Authors	Titles	Objectives	Methodologies	Findings	Justifications
1	“Scheibe De Bloom & Modderman 2022	Resilience during Crisis and the Role of Age: Involuntary Telework during the COVID-19 Pandemic.	“The aim of this study was to survey the general public in China to better understand their levels of psychological impact, anxiety, depression, and stress during the initial stage of the COVID-19 outbreak.”	We conducted an online survey taking 31 January to 2 February 2020 using snowball sampling techniques. The online survey collected information on demographic data, physical symptoms in the past 14 days, contact history with COVID-19, knowledge and concerns about COVID-19, precautionary measures against COVID-19, and additional information required with respect to COVID-19. The	This study included 1210 respondents from 194 cities in China. Of these respondents, 53.8% rated the psychological impact of the outbreak as moderate or severe. There were 16.5% with moderate to severe depressive symptoms, 28.8% with moderate to severe anxiety symptoms, and 8.1% who reported moderate to severe stress levels. Most respondents (84.7%) spent 20-24 hours a day at home, while 75.2% worried that they would contract COVID-19	In this study, a total of 1210 respondents were selected that mainly belong to the 194 cities in China. It was observed that during COVID-19, people were highly depressed. The people were also found to face numerous diseases during this time.

				<p>psychological impact was assessed by the Impact of Event Scale-Revised (IES-R), and mental health status was assessed by the Depression, Anxiety & Stress Scale (DASS).</p>	<p>themselves or someone in their family would; 75.1% were satisfied with the amount of health information available to them; and female gender, student status, physical complaints (e.g., myalgia, dizziness), and poor self-rated health status were all correlated with a higher psychological impact of the outbreak caused by COVID-19 and higher levels of stress, anxiety, and depression ($p < 0$).</p>	
2	Noone et al., 2020	Video calls for reducing social isolation and loneliness in older people: a rapid review.	<p>“The primary objective of this rapid review is to assess the effectiveness of video calls for reducing social isolation and loneliness in older adults. The review also sought to address the effectiveness of video calls on reducing symptoms of depression and improving quality of life.”</p>	<p>In the comprehensive literature search, the author searched CENTRAL, MEDLINE, PsycINFO and CINAHL from 2004-2020. In addition to that, we found references to relevant systematic reviews and included only their randomized controlled trials (RCTs) and quasi-RCTs (including cluster designs). The samples in the studies</p>	<p>One study with 62 participants reported quality of life. The participants were asked to complete the SF-36 health survey, which includes eight domains that measure the quality of life: physical function, physical role, emotional role, social function, pain intensity and vitality (quotient), mental health and physical health. Participants were grouped into two—those who received usual care and those who had</p>	<p>On the basis of the above results, the sample of this study mainly highlights that there is some doubtful evidence that was related to the effectiveness of video call interferences in diminishing loneliness in most older adults. Moreover, the reviews not only include the studies which were found to be reported different</p>

				had to have a mean age of 65 or older.	video conferences. Three months after the study began, there was no statistically significant difference between the groups in scores for physical function (MD 2.88, 95% CI -5.01 to 10.77), physical role (MD -7.66, 95% CI -24.08 to 8.76), emotional role (MD -7.18, 95% CI -16.23 to 1.87), social function (MD 2.77, 95% CI -8.87 to 14.41) or pain scores (MD -3.25, 95% CI -15.11 to 8.61). We downgraded our certainty of this evidence by three levels for study limitations and imprecision but not for indirectness as we believe it is due mostly to confounding biases from lack of blinding and lack of allocation concealment	evidence in terms of finding the effectiveness of video call interferences while also addressing the social isolation among older people. The evidence also highlights the effectiveness of the video calls in terms of findings on the outcomes relating to the symptoms of depression, which were found to be uncertain.
3	Nowicka et al., 2021	COVID-19 Pandemic and Resilience of the Transnational Home-Based Elder Care	“COVID-19 Pandemic and Resilience of the Transnational Home-Based Elder Care	The study interviewed 13 agencies in Germany and 15 in Poland, and we found out about their qualities, recruitment strategy,	The analysis showed that the system could mobilize adaptive capacities and continue to deliver services. Its absorptive capacity, however, is limited.	It has been observed that older workers are found to improve their work-life balance and lessen the work-life conflict

		System between Poland and Germany.	System between Poland and Germany”	challenges of the pandemic, and impact of legal regulations.	To enhance resilience, policies working toward the formalization and legalization of care services across national borders are required.	during the COVID-19 time. There are also most of the older workers are found to reportedly speak about the different working conditions that should be improved, and thus the workers should be focused on being more productive as they were before the COVID-19 crisis. It has also been observed that most of the older workers were also found to be reframing the crisis as an opportunity for their personal growth and success.
4	MacLeavy, 2021	Care work, gender inequality and technological advancement in the age of COVID-19.	“To evaluate Care work, gender inequality and technological advancement in the age of COVID-19.”	The article analyzes and evaluates the potential for technological investments to remedy a weakening care infrastructure, as well as how different systems of	Many countries are facing an unprecedented shortage of care. In other countries, the lack of a labour force has led to the widespread adoption of new technologies. This article	According to the research, they are some of the necessary information about the experiences needed for the care technologies along

				<p>paid and unpaid care have been introduced post-COVID-19.</p>	<p>will consider how new technologies could change care practices, including during this unprecedented crisis.</p>	<p>with also explaining as to what capacities are needed for these technologies which help in generating the sensory and more effective ways for the human body. There is also some understanding that relates to the feelings for the technologies, which creates suitable relevancy for the different policies and services which are found to move forward and can be manifest.</p>
5	Song Qian & Pickard 2021	Age-Related digital divide during the COVID-19 pandemic in China.	“This paper aims to examine the impacts of the age-related digital divide on older adults in the context of the COVID-19 pandemic.”	Three age-related digital divide scenarios, including older people taking public transportation, seeking medical care, and conducting digital transactions, are collected from official Chinese news outlets.	This paper shows that the COVID-19 pandemic leads to a significant acceleration in the utilization of digital technology but, at the same time, exacerbates the age-related digital divide. Such a divide is largely responsible for reducing older adults' access to both real society and virtual	In terms of age-related digitalisation, there has been a division in the widening of this pandemic. Since there are different groups that usually represent the information-poor population, older adults mainly suffer from one or more

					<p>society. Several factors have been identified as major contributors to this severe impact, including personal attitudes and motivations, education and income level, government policies, and family and social support. Therefore, more measures should be adopted to reduce such a divide or even prevent it from happening altogether.</p>	<p>challenges and have a difference more than other age partners. Therefore, acknowledging the challenges that are faced by older adults, the government should focus on paying more attention while also expanding the efforts that are mainly needed to address these issues.</p>
6	Turja et al., 2022	Positive turn in eldercare workers' views toward telecare robots.	“Do elder-care workers express the temporal change in the perceived usefulness of telecare robots or perceived personal value–robot use compatibility?”	In this article, we look at the survey data from 2020 and see how attitudes have changed for the better. This includes higher expectations in telecare robotization as well as decreased concerns about care robots' compatibility with personal values. In a longitudinal analysis (Phase 1), it was found that these positive views were influenced by	Robots for care work seem to be unacceptable because there are more universal ethical standards of care work rather than shared norms in the workplace. COVID-19 stress did not explain the temporal changes in thoughts about robot use in care, but it did have an impact on assessments of the compatibility between personal values and the use of robots for that purpose.	The study mainly highlights that the use of robots for care work was not found to be favourable because there are numerous ethical standards for the care work as compared to the shared norms, which were not explained for the temporal changes.

				care robots' high levels of value compatibility. In a longitudinal cross-sectional analysis (Phase 2) focusing on what drives personal values, our research revealed that those who are at risk of technological unemployment and those who are more stressed by the COVID-19 virus were more likely to favour telecare robots.		
7	Kańtoch & Kańtoch 2020	What features and functions are desired in telemedical services targeted at polish older adults delivered by wearable medical devices? Pre-COVID-19 flashback.	“The main objective of this study was to investigate the desirable features and applications of telemedical services for the Polish older adults delivered by wearable medical devices.”	The questionnaire study was performed on two groups of adult volunteers: those who are less than 65 years old (group C.1) and those who are 65 or more years old (group C.2). The analysis was based on qualitative research and descriptive statistics.	The majority of participants in the survey were unaware of telemedical services (56.8%). A total of 62.3% of C.1 and 34.8% of C.2 responded that they did understand what these services are. The 10.3% of respondents with a correct understanding concerning telemedical service were found among all participants in the study (5 from the first group and four from the second). The most suitable features for these devices are the detection	This study also focused on the telemedical services that target Poland's older people as they are also focused on creating the understanding as to what most of the telemedical services are mainly found in terms of detecting the different life-threatening and health-threatening situations also.

					of life-threatening and health-threatening situations (65.2% vs 66.2%). The findings suggest a lack of awareness among participants on the subject matter of telemedical services as well as an inadequate choice in offered solutions by wearable telemedicine devices designed to address such issues.	
8	Kaplan 2020	Revisiting health information technology ethical, legal, and social issues and evaluation: telehealth/telemedicine and COVID-19.	“To identify and summarize ethical, legal, and social issues related to information technology in healthcare, as exemplified by telehealth and telemedicine. To expand on prior analyses and address gaps illuminated by the COVID-19 experience. To propose future research directions.”	The literature on this topic was identified through a variety of sources. The author looked for relevant research through searches, backwards and forward citation checking and general knowledge of other scholars in the field. Additionally, the author analyzed guidelines from EU and professional organizations as well as nineteen scholarly articles on the subject; these were categorized by area to identify ethical, legal, and social issues they	A synthesis matrix was created to categorize the discussion of issues, which are grouped into: the quality of care, the patient's consent and autonomy, their access to care and technology, coastal responsibility for clinicians and patients, changed relationships with commercialization, policy around information needs, and evaluation. The literature focused primarily on discussions about the quality of care, access to care and technology, consent, and privacy. Other considerations	This study further represents the discussion about the different types of issues, which includes the caring quality and the consent from the patients, which results in accessing the care and technology, which also changes the relationships with commercialisation.

				<p>addressed. Finally, a synthesis matrix was created to categorize what sources had to say about each of these issues and correlate individual passages together.</p>	<p>that were little discussed included usability, tailoring services to each patient, curriculums and training for clinicians who use digital technologies in healthcare settings; implementation; commercialization; licensing or liability. The need for interoperability between devices is also more apparent because data availability is accelerating. Issues relevant to other information technologies in healthcare are also applicable here.</p>	
9	Bakshi & Bhattacharya 2021	<p>Socially distanced or socially connected? Well-being through ICT usage among the Indian elderly during COVID-19.</p>	<p>“How are the socially distanced older people from developing countries connecting to the outside world during the pandemic? Is the use of technology enabling their daily life activities during this health crisis time? How are they adapting to these technologies in developing</p>	<p>The qualitative in-depth interviews with 30 professionals aged 60 and above show that as the participants become more isolated, they reconfigure their traditional norms for face-to-face social interaction and rely upon their touchscreens and keyboards.</p>	<p>The study highlighted the blocks in the active usage of ICT for elderly people. This is because attitudinal barriers and negative experiences in the past prevent them from using it. There are also concerns over cyber security, complicated and unclear instructions, and a lack of understanding of how to go about learning new things. In order to create a technologically inclusive</p>	<p>This study further explains that blockage in the active usage of information communication and technology results in enhancing the performance of elderly people. It also helps in creating a most technological and inclusive society, which results in catering the essential needs.</p>

			ations if they use those technologies?"		society, it's essential to cater to their unique needs and design technologies that are easy to learn and understand.	
10	Hemmati & Rahmani 2022	Internet of Medical Things in the COVID-19 Era: A Systematic Literature Review."	"To evaluate recently published articles in the IoMT domain during the COVID-19 era. Between 2019 and 2022."	To better understand the current state of research in the IoMT domain, this study uses the Systematic Literature Review methodology. Between 2019 and 2022, 41 well-researched articles were evaluated to form our findings.	The analysis shows that 38% of the evaluation criteria include the delay factor, the highest percentage because a low-delay IoMT device has a quick response time. Furthermore, 22% is allotted to the performance factor, 28% is allotted to the accuracy factor, and 6% is allocated to the security factor. Finally, we concentrate on open issues with future research challenges in IoMT during COVID-19	This study further explains the overall evaluation criteria, which also includes the different delaying factors. It has been observed that the creation of future research challenges for the internet of medical things in the COVID-19 period.