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THE USE OF DIGITAL TECHNOLOGIES BY THE ELDERLY DURING THE COVID-19 PANDEMIC: A SCOPING REVIEW

USO DE TECNOLOGIAS DIGITAIS POR IDOSOS DURANTE A COVID-19: UMA REVISÃO POR ESCOPO

USO DE TECNOLOGÍAS DIGITALES POR ANCIANOS DURANTE LA COVID-19: UNA REVISIÓN DE ALCANCE

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ABSTRACT

Introduction: With the growth in the use of digital technologies by the elderly, researches have shown that the use of these technological resources would influence the reduction of social isolation among the elderly. Thus, this study aims to map scientific evidence of the relationship between elderly people, digital technologies and social isolation during the COVID-19 pandemic.

Method: This is a scoping review, based on five databases (PubMed, Scopus, Web of Science, Cinahl and Lilacs). In each database, a search was applied with the following descriptors: elderly, digital technology, social isolation and digital media.

Results: Six studies were included in the review, published from 2020 to 2021, three publications relating to learning how to use technological devices, two comprising the dimensions of loneliness and isolation, and one on the effect of telemedicine.

Discussion: The studies included address the experiences of elderly people with technologies and their interfaces, from a learning point of view, and implications for the physical and mental health of their users.

Conclusion: The results of this review reflected the implications of communication and information technologies (ICTs) for elderly users, and positive effects and improvements in quality of life were observed. The analysis showed, albeit in an incipient way, the new social demands with direct implications for the quality of life of the elderly.

Keywords: Aged; Digital Technologies; Social Isolation.

RESUMO

Introdução: Com o crescimento do uso das tecnologias digitais pelas pessoas idosas, pesquisas têm demonstrado que o uso desses recursos tecnológicos exerceria influência na redução do isolamento social em idosos. Assim, este estudo tem como objetivo realizar um mapeamento das evidências científicas sobre a relação entre pessoas idosas, tecnologias digitais e o isolamento social face a COVID-19.

Método: Trata-se de uma revisão por escopo, realizada com base em cinco bancos de dados (PubMed, Scopus, Web of Science, Cinahl e Lilacs). Em cada base foi aplicada uma busca com os seguintes descritores: idoso, tecnologia digital, isolamento social e mídia digital.

Resultados: Seis estudos foram incluídos na revisão, publicados no período de 2020 a 2021, três publicações relacionadas ao aprendizado do uso de dispositivos tecnológicos, duas compreendendo as dimensões da solidão e isolamento, e uma sobre o efeito da telemedicina.

Discussão: Os estudos incluídos abordam as experiências de pessoas idosas com as tecnologias e suas interfaces, do ponto de vista de aprendizagem, e implicações na saúde física e mental de seus usuários.

Conclusão: Os resultados desta revisão refletiram as implicações das tecnologias de comunicação e informação (TICs) perante aos usuários idosos, de modo que foi observado um efeito positivo e uma melhora na qualidade de vida. A análise demonstrou, ainda que de forma incipiente, as novas demandas sociais com implicações diretas na qualidade de vida dos idosos.

Palavras-chave: Idoso; Isolamento Social; Tecnologias Digitais.

RESUMEN

Introducción: Con el crecimiento del uso de las tecnologías digitales por personas mayores, las investigaciones han demostrado que el empleo de estos recursos tecnológicos influiría en la reducción del aislamiento social en ancianos. Así, este estudio tiene como objetivo realizar un mapeo de las evidencias científicas sobre la relación entre las personas mayores, las tecnologías digitales y el aislamiento social frente a la COVID-19.

Método: Se trata de una revisión de alcance, realizada a partir de cinco bases de datos (PubMed, Scopus, Web of Science, Cinahl e Lilacs). En cada base se aplicó una búsqueda con los siguientes descriptores: anciano, tecnología digital, aislamiento social y medios digitales.

Resultados: Se incluyeron 6 estudios en la revisión, publicados entre 2020 y 2021, estando tres de las publicaciones relacionadas con el aprendizaje del uso de dispositivos tecnológicos, dos con las dimensiones de la soledad y el aislamiento, y una sobre el efecto de la telemedicina.

Discusión: Los estudios incluidos abordan las experiencias de personas mayores con las tecnologías y sus interfaces, desde el punto de vista del aprendizaje, y sus implicaciones en la salud física y mental de los usuarios.

Conclusión: Los resultados de esta revisión reflejan las implicaciones de las tecnologías de la comunicación y de la información (TICs) en los usuarios ancianos, de modo que fue observado un efecto positivo y una mejora en la calidad de vida. El análisis demostró, aunque de forma incipiente, las nuevas demandas sociales con implicaciones directas en la calidad de vida de los ancianos.

Descriptores: Aislamiento Social; Anciano; Tecnologías Digitales.

INTRODUCTION

The ability to age is a subject of study in many different sciences, such as health, education, anthropology, psychology, philosophy and technology, among others. In each field, efforts are made to understand how human beings age in a healthy way, as well as which social changes influence the way these individuals play their role in society.

Aging is a natural process for human beings, involving physical, emotional and cognitive transformations, which can be influenced by biological or social factors. Among the Brazilian population, there has been an increase in the elderly population; however, there are still few discussions about this section of society[1]. Demographic data on the world's population shows an increase in life expectancy among people over 60. This extension of human survival has encouraged numerous studies about ageing[2].

The environmental stimuli and social experiences that a person goes through during their life are capable of promoting a change in their quality of life[3]. Pandemics, as a large-scale event, have the potential to profoundly alter society's behaviors, generating changes in lifestyle and impacting the way people interact and perceive themselves.

These situations lead to a transformation in lifestyles, from behavioral changes to new reflections on one's outlook on life. The transformations generated by global crises such as these are not limited to physical health, but extend to the emotional, social and technological fields, forcing society to re-evaluate its priorities and ways of life.

The pandemic caused by COVID-19 (SARS-CoV-2) from 2020 to 2022 has brought significant changes to the lifestyle of people over 60. To contain the spread of the virus, strict sanitary measures were implemented globally, such as social isolation, physical distancing, mandatory use of masks and constant hand sanitization with alcohol[4]. These changes in social habits have negatively affected the quality of life of the elderly, contributing to an increase in health risk behaviors, such as sedentary lifestyles and worsening mental health. In addition, health authorities observed that the elderly, once they had a more vulnerable immune system, were more likely to develop severe forms of the disease, which intensified segregation measures aiming to preserve their lives.

The social isolation recommendations for the elderly were based on the need to prevent the spread of COVID-19. However, these measures may have aggravated problems such as anxiety, loneliness and sadness among this population. With the increase in social distancing and segregation, the elderly have become more susceptible to emotional isolation. To mitigate these negative effects and promote social inclusion, the use of Information and

Communication Technologies (ICT) has emerged as a solution. ICTs have provided a way to keep the elderly connected with family, friends and health professionals, allowing them to participate in social interactions, even if remotely.

Information and Communication Technologies (ICTs) are recognized for their efficiency in reducing physical barriers, allowing interaction between two or more people, even when they are in different geographical spaces. In addition to facilitating communication, ICTs can also be widely used by different generations, including the elderly. However, in order for this population to take advantage of these technologies' benefits, a process of acquiring new skills and even changing behaviors is required. This adaptation process requires not only the development of digital skills, but also overcoming resistance and encouraging the continuous use of these tools in everyday life[6].

During the pandemic caused by COVID-19, elderly people have turned to ICTs as a way of interacting with their families, healthcare professionals, work colleagues and various service establishments. Social isolation and the restrictions imposed by the pandemic have reinforced the need of these technologies to maintain social connections and ensure access to essential services. However, since the pre-pandemic period, between 2018 and 2019, data on the world's demographic population pointed to a progressive growth in the use of the internet by people aged 60 and over, who were incorporating the use of technology into their daily activities, such as shopping, payments and leisure[7]. This trend was accelerated by the pandemic, which required rapid adaptation to the use of ICTs to meet the needs arising from isolation.

As a result of the conditions imposed by the COVID-19 pandemic, Information and Communication Technologies (ICTs) have been widely applied in various sectors, such as health, education and the workplace. The use of these technologies has become essential to reduce physical contact between people, especially those infected, helping to control the spread of the virus. At the same time, ICTs have allowed their users to stay connected digitally, partly compensating for the social isolation imposed by physical distancing[8]. During the pandemic, digital tools and devices became essential for contact with the external environment, serving as a bridge to maintain social, professional and even educational interactions, even amid severe restrictions on mobility and physical interactions[9].

With the intensification of ICT use by the elderly during the pandemic, the importance of studying the interaction between digital contexts and this population has become evident. In this way, health professionals and caregivers can play an active role in promoting these skills, creating training strategies that not only help the elderly to use technologies, but also to understand the reliability of information shared online. This can mitigate the risk of digital exclusion and improve the autonomy of the elderly.

Besides facilitating social interactions, ICTs can be integrated into healthcare, enabling remote consultations and monitoring chronic conditions. Health professionals should exploit these tools to optimize care, especially in hard-to-reach regions. However, it is essential to adapt approaches according to the elder's level of familiarity with technology, ensuring personalized and inclusive care, respecting individual preferences and offering alternatives for those who are less technologically proficient.

ICTs are widespread in modern society and are used in a variety of contexts and by different age groups. However, when it comes to the elderly, it is important to highlight the state of vulnerability that affects those with low proficiency in such technologies[10]. Many elderly people face challenges in using ICTs efficiently, especially those with less digital familiarity. In addition, a lack of clarity about how these tools work can hinder their ability to correctly assess information shared on the internet, exposing them to risks such as misinformation and online frauds. This highlights the need for initiatives promoting digital literacy and raising awareness about the safe and critical use of these technologies among the elderly population[11].

The COVID-19 pandemic has caused significant changes in social interaction, affecting all age groups, with a more pronounced impact on the elderly population. Adapting to digital technologies has stood out as an essential tool for mitigating the effects of social isolation, offering new means of interaction and participation in society. The use of ICTs was crucial during the pandemic, and now it is relevant to adapt these tools to the post-pandemic context. With the gradual return of face-to-face interactions and the evolution of digital platforms, the role of ICTs in the quality of life of the elderly is emerging as a promising field[12].

ICTs can mitigate social isolation and contribute to more active and connected ageing. Continued use of these technologies can expand leisure opportunities, strengthen support networks and facilitate access to essential services such as telemedicine. Investigating how elderly people adapt to these tools and the main challenges involved is fundamental to ensure that their potential is fully exploited.

Considering that the way in which the elderly interact with technologies is relevant, this study aimed to map scientific evidence on the relationship between elderly people and digital technologies and social isolation facing COVID-19.

METHODOLOGY

The article is characterized as a scoping review, as recommended by the Joanna Briggs Institute. This methodology seeks to map the main studies on a given subject in different areas and present a synthesized description based on the results. This methodological approach allows the creation of the state of the art of the phenomenon being assessed, establishing a description of the studies observed; however, a critical review or synthesis of systematic research is not applied.

In order to obtain the main concepts related to the subject of the study, a scoping review was adopted, since it differs from systematic reviews, which aim to assess the quality of the available evidence. Thus, this scoping review followed six consecutive stages: 1) elaboration of the research question and objective; 2) identification of research relevant to the review proposal; 3) selection of studies based on the defined criteria; 4) mapping; 5) summarization of the results; 6) presentation of the results.

The starting point was the following research question: "What are the implications of Information and Communication Technologies and their interfaces in the daily lives of the elderly during the pandemic period?". Keywords directly related to the topic were then identified, and studies were retrieved from the different databases using inclusion and exclusion parameters.

In order to identify the relevant studies, it was decided to consult databases with high impact and relevance in the areas of public health and digital technologies, which allowed broad coverage of peer-reviewed research. Five databases were selected (PubMed, Scopus, Web of Science, Cinahl and Lilacs), which group together publications in the health area and include research conducted both nationally and internationally.

As the efforts were made to select relevant studies from the databases highlighted, other publications may not have been analyzed, so a more diversified view of the topic could be obtained.

Each database was searched using the descriptors: elderly, digital technology, social isolation, digital media and post-pandemic, which were combined with the Boolean terms: and, or and not. The following inclusion criteria were chosen: articles published between 2012 and 2023, written in Portuguese, English and/or Spanish. In addition, these exclusion criteria were applied: dissertations, theses, case studies, partially available research and duplicates.

Studies such as theses and dissertations were excluded from this scoping review due to the absence of peer review, which can compromise the quality of the evidence and the reliability of the results. The review focused on studies published in peer-reviewed journals to ensure the methodological integrity and validity of the findings. Thus, some of these studies have limited access to the full text.

The mapping stage was conducted using Google Spreadsheet, which allowed the following information to be detailed: year, author, title, journal, country and objective of the main articles of interest selected. The data was then summarized through a descriptive analysis of the articles, which observed the results in line with the theme of this scoping review.

RESULTS

Initially, 3269 publications related to the descriptors entered were identified in all the databases. In the screening process, after time and title filtering, 1090 were selected for reading, 900 of which were discarded. After applying the eligibility criteria, 187 were sent for full reading, of which 60 were selected for complete reading, while 124 were eliminated. In the end, 6 publications were selected for a scoping review (Figure 1↗).

The nine studies included in this review were published between 2020 and 2023 and are shown in Chart 1↗. The studies focus on qualitative research with a focus on observing the elderly in different scenarios, and thus characterize aspects such as the participation and interaction of this population within the context of COVID-19. Of these publications, 4 addressed the effects of telemedicine, 3 focused on issues related to learning to use technological devices, while 2 sought to understand the dimension of loneliness and isolation.

DISCUSSION

The scoping review conducted indicates a comprehensive overview of research into the use of Information and Communication Technologies (ICTs) by the elderly and their relationship with the COVID-19 pandemic. The 9 publications included address the interaction between the elderly and digital technologies, focusing on different aspects such as telemedicine, loneliness, social isolation and digital literacy. By comparing these studies, it is possible to identify both similarities and significant differences, which offer important insights for clinical practices and public policies aimed at the elderly population.

The studies included deal with the experiences of elderly people with technologies and their interfaces. To this end, we chose to categorize the studies into sections: a) learning; b) health, and; c) quality of life. Using a qualitative approach, we observed the implications of ICTs in the daily lives of the participants in the different studies.

Learning

Given the circumstances of the COVID-19 pandemic context, there was a need for people aged 60 and over to use technological tools in order to guarantee their health, regarding contamination by the virus. There has been a change in behavior among the elderly, who have started to include technology in their usual activities, such as payments, shopping and other work activities[18]. Elderly people are capable of conducting activities in the virtual environment, as long as they develop new skills and receive support during the learning process[17].

Learning to use ICTs gives the elderly the opportunity to interact with their external community without leaving home. For this to happen, digital literacy is fundamental, enabling these users to safely access different technological devices. Elderly people need to develop skills for handling technology, as well as tools for evaluating the information available online[17,18].

ICTs bring practicality to everyday activities, which are conducted with greater agility, optimizing the user's day-to-day life. The elderly can be excluded from these functions when they stop using technological devices due to a lack of adequate training and, consequently, tend to become more reclusive in society.

When observing the ICT learning process, it was found that the elderly without basic knowledge of these tools have difficulties in the transition from the physical to the virtual environment, since they lack the necessary skills to conduct simple tasks. On the other hand, students with some basic notions were able to expand their skills through mentoring and support[18].

In addition to training elderly people to handle ICTs, trainers must be able to identify what skills students already have in order to avoid creating new barriers to learning and transition. Through careful and detailed observation, the trainer should promote digital literacy that considers the limitations and potential of each student[15]. Among the pedagogical approaches used in the study analyzed, it was found that the digital literacy proposal integrated with personalized advice and continuing training showed a high rate of content retention among the participants.

The COVID-19 pandemic has highlighted the need for the elderly to develop new technological skills in order to continue participating actively in society. In the study[14], it was observed that, despite initial resistance to the use of digital tools, elderly people who received adequate support and training were able to significantly expand their skills. This learning process made it easier to conduct everyday tasks, such as paying bills and shopping online, and was essential for the elderly to remain socially connected.

Continuous, personalized support proved vital in overcoming initial barriers, allowing this population to expand their digital autonomy and adapt to the new technological context. The importance of support during the learning process reinforces the crucial role of digital literacy programs aimed at the elderly, especially regarding social inclusion and improving quality of life.

It was found that the elderly learning ICT felt insecure about the devices. Although some of them had had experience during their working years, there was a negative impression, as they created a self-image of low efficiency. In addition, the low familiarity and the fear involved with the use of devices prevented them from using them in the virtual environment[19].

To the extent that the elderly do not have the tools they need to participate in digital environments, they become excluded from this scenario. Thus, offering digital literacy becomes fundamental for the elderly, since they can broaden their social participation. In order to do this, they need to understand the functionalities and potential of the different technological devices and be able to choose how to use them.

COVID-19 marked a tipping point in the use of digital technologies by the elderly, making ICT learning an urgent necessity to avoid social isolation[14]. During the pandemic, training in digital technologies was essential for elderly people to be able to conduct social and basic functions, such as accessing health services via telemedicine or staying connected with family and friends via video calls.

Among people aged 60 and over, there has been an increase in interest in internet usage, whether for social or work-related purposes. The acquisition of this knowledge has enabled active ageing, as it contributes to the interaction between family members, the pursuit of hobbies and keeping up to date with the latest developments in society. By using digital tools, the elderly have seen a change in their perception of their own ageing, as they engage in different occupations.

An analysis of the three articles[17,18,19] reveals the role of digital literacy for the elderly, which has been accentuated during COVID-19. This period has highlighted the need for this population to master ICT, motivated by factors such as autonomy, emotional well-being and integration with society. The elderly people consulted who developed skills in handling these digital tools showed an improvement in their quality of life.

A second common point highlighted in the three articles[17,18,19] concerns learning how to use digital platforms and the reduction in social and emotional isolation. Elderly people who were able to use digital tools such as social networks, video calls and other platforms to keep in touch with family and friends experienced a reduction in feelings of loneliness.

In addition, the publications[17,18,19] reiterate the role of COVID-19 as a tipping point in relation to the use of digital technologies among the elderly. In other words, the need for the elderly to maintain contact with their families and friends, as well as to perform basic social functions, has driven the urgency of acquiring digital training so that this population does not become socially isolated.

It is necessary to note that the articles analyzed have methodological differences: article[18] looked at the relationship between the elderly and ICTs from a general point of view, aiming to draw up standards and guidelines for the digital inclusion of the elderly, and thus exploring the structural limitations on access and differences in digital literacy. While[14], using a qualitative approach, focused on the individual experiences of this population with ICTs during the pandemic, in the opposite direction to the previous one, it sought to examine the emotional impact and social connections.

The third publication analyzed[17] focused on observing the use of ICT practices for home care through telenursing. It also focused on digital learning as a way of managing health care and increasing the autonomy of the elderly in relation to their health. The results of the research[14] reiterate the role of the COVID-19 pandemic as a tipping point in the adoption of ICTs by the elderly. The need to keep in touch with family and friends, as well as to conduct everyday activities such as shopping and banking, has accelerated the process of digital literacy, ensuring that this population is not socially isolated.

The findings of these studies[17,18,19,14] are relevant to clinical practices and public policies aimed at the elderly population, as they reinforce the need to expand digital literacy practices and their integration with ICTs. In the clinical context, the adoption of technologies such as telenursing[16] and the practical use of ICTs can improve access to healthcare for the elderly, facilitating remote monitoring of medical conditions and reducing the need for face-to-face visits. These technologies can be integrated into public health policies to create programs that empower the elderly to use technology effectively in their daily care.

Digital inclusion should be one of the goals in public policies for elderly people, as the use of ICTs has reduced feelings of loneliness and social isolation during the pandemic[18,19]. By providing equitable access and emotional support via ICT, public policies can help combat social exclusion and promote active and healthy ageing.

Health and quality of life

The implications of social isolation from a mental health perspective have led to research into the negative emotional impact of confinement[7,19]. In order to reduce the problems caused by the absence of social interaction with friends, such as fear, uncertainty and grief, groups of elderly people have been suggested to use ICTs so that they can communicate with colleagues and family members, as well as practicing leisure activities.

Social interaction is considered predictive of the onset of mood disorders such as depression and anxiety. In the context of the pandemic, there has been a significant reduction in communication between the elderly and their peers, coworkers and friends.

The use of ICTs makes it possible to reduce the feeling of loneliness and isolation, as it promotes a connection with the outside world and encourages social participation. This helps elderly people to increase their self-esteem and take control of their lives[7].

The beneficial effect of ICTs was observed among the elderly, who were able to operationalize their daily activities by promoting motivational stimuli, as well as strengthening their ability to learn new skills[20]. By understanding how to use digital tools, the elderly were able to maintain interaction with their families and thus felt less of the impact of social isolation.

Among the considerations about loneliness and isolation, it was pointed out that these dimensions were already present among the elderly, but the pandemic has worsened them[7,19]. By promoting positive interaction between family members and their peers, ICTs have functioned as a signpost, i.e., the need to establish a communicative route has emphasized the need for the elderly to undergo digital literacy in order to cope with confinement in a mitigated way. Elderly users of ICTs are able to give a new meaning to their quality of life, to the extent that they can maintain their social habits and physical activities.

Confinement has led to a reduction in the degree of confidence in the value of life, insofar as it mitigates projections and ratifies feelings of powerlessness in the face of the situation experienced. The possibility of maintaining a relationship with family, colleagues and friends promotes a sense of well-being and the self-assessment of physical and mental health[11]. Among the different uses of ICTs, their use as a form of companionship to reduce loneliness is pointed out as mitigating social isolation, as it promotes social support, involvement in activities of interest, self-confidence and a connection with the outside world[7].

The possibility of expanding their knowledge and living new experiences through interaction in virtual environments has allowed the elderly to look to the internet and social media for new occupations. Besides talking to other people, elderly ICT users have become able to express their life experiences and enjoy a variety of leisure activities, such as listening to podcasts and taking part in spiritual, cultural and political events[20].

The elderly people who took part in the study[17] highlighted the positive effects of using technology, especially in terms of health and safety, since they were able to keep their activities connected to the outside world while maintaining the necessary caution. Although they make it easier to conduct daily activities, it is necessary to highlight the risks that the elderly are exposed to in online environments, such as frauds, the dissemination of fake news and other crimes.

The use of ICTs must be conscious and safe, since their benefits for quality of life are confirmed by various studies[18,19]. ICTs make it significantly easier to carry out different activities, whether linked to leisure, professional or personal activities, but just as attention needs to be paid to online crimes, it is important to warn about the usability of platforms for the elderly, i.e. technological interfaces should be designed with an understanding of the difficulties they can cause to users with low proximity to applications, websites and other digital media.

During the pandemic, digital platforms were used by the elderly and their friends, colleagues, family members and professionals from different services, such as medical consultations. Through voice and/or video calls, the care was maintained for the well-being of the elderly, in which, given the recommendations for social isolation, assessments and guidelines were made to promote good mental and physical health. Among the teleconsultations, investigations were made into routine habits applied to personal hygiene, as well as into the impact of isolation on mental health[12].

All the articles highlight the fundamental role of technology in the provision of health care during the COVID-19 pandemic. Among the points highlighted were the use of technology for remote monitoring to ensure that elderly patients were assessed at home[7,13,16,18].

In addition to improving health, the use of ICTs has reduced social isolation: telemedicine and telehealth have facilitated communication between health and health professionals, reducing loneliness[16,20].

A common point in the articles analyzed in this section concerns the acceleration of the need to integrate health technologies into the daily lives of the elderly, to the extent that the use of ICTs has promoted continuity in medical treatment during the period of confinement, and thus reduced the spread rates of the disease[7,16,17,18,19,20].

It is necessary to point out the methodological differences between the articles. Papers[13] and[16] focused on the use of remote devices to maintain medical care during the pandemic. In this sense, the focus was on remote monitoring of health conditions, access to medical appointments and follow-up of patients with chronic diseases. In the other hand, papers [7], [19] and [20] verified the ability of technologies to provide emotional and social support, especially in relation to physical health, through a broader approach to technology.

The population differences between the studies make it difficult to generalize the results to all the elderly, as each study focuses on groups with different socioeconomic, cultural and geographical contexts. For example, the [13] study focuses on elderly people in the United States, highlighting disparities in access to technology and telemedicine, particularly among low-income and minority populations. Meanwhile, the [7] survey looks at elderly people in India, where access to technology is even more limited due to economic barriers and a lack of digital infrastructure, hindering the adoption of ICTs. In contrast, a multicultural study[19] of the elderly in four countries (Italy, Mexico, Portugal and Spain) was conducted, where cultural realities and the level of use of smart technologies vary considerably. This population diversity prevents the results of one study from being applied widely, as the barriers and facilitators to the use of technology for elderly people differ substantially between the populations analyzed.

These contextual differences show that each population of the elderly faces different challenges in the use of ICT, which calls for personalized approaches to public policies and clinical interventions, avoiding generic solutions that disregard local realities.

The results presented in the studies reiterate the need to adapt public policies to expand access to health technologies for the elderly, taking into account their specific realities. Telemedicine and telenursing, although effective, must be accompanied by initiatives that

guarantee accessibility and mastery of these tools, particularly in regions where access to technology is still limited. It is essential that public policies invest in digital infrastructure and technological training for the elderly, enabling them to use these tools effectively and autonomously, which would directly contribute to the continuity of care at home, especially in contexts of vulnerability.

On the other hand, clinical practices must go beyond physical care and integrate strategies that use technology to support the emotional well-being of the elderly. The pandemic has shown that technology can be a bridge to mitigate isolation and promote mental health. Therefore, policies that encourage the creation of digital support programs for the elderly, including online social activities and support groups, are fundamental.

Challenges

The challenges faced by the elderly in using ICTs have become even more evident during the COVID-19 pandemic. Low digital literacy is one of the main obstacles preventing this population from enjoying the benefits of these tools. Many elderly people, who have had no previous contact with digital technologies, face difficulties handling devices and performing simple tasks such as video calls or online consultations. The lack of ongoing technical support exacerbates this situation, making learning more difficult and generating feelings of frustration.

In addition, the fear of cyber fraud is a recurring concern among the elderly. Insecurity about online frauds and the theft of personal information causes many to avoid using digital services. This fear is exacerbated by a lack of knowledge about internet security practices, which increases the vulnerability of the elderly in the online environment. As a result, many end up turning away from these tools, depriving themselves of their benefits.

Finally, adapting to technological change brings significant emotional challenges. Many elderly people feel inadequate when comparing their technological skills with those of younger generations, which can lead to frustration and demotivation. In addition, social isolation, already intensified by the pandemic, exacerbates these feelings of exclusion and low self-efficacy. It is essential that public policies and digital inclusion programs offer continuous support, both technical and emotional, so that the elderly can feel more secure and empowered when using ICTs in their daily lives.

Gaps highlighted

The gaps in research on the use of ICTs by the elderly, especially during the COVID-19 pandemic, reveal the need for broader and more diverse investigations. One of the main gaps is the lack of longitudinal research examining the long-term effects of ICT use on elderly people's mental and social health. In addition, many studies have focused on the immediate impact of the pandemic, but little is known about how these technologies influence the well-being of the elderly in a post-pandemic context. This lack of long-term data prevents a deeper understanding of the benefits and limitations of the continued use of these digital tools.

Another significant gap involves the lack of specific data on populations in rural areas and the impact of digital inequality. Many of the elderly in remote or low-income regions have limited access to the internet and suitable devices, which increases their digital exclusion. Studies exploring the disparity in access to ICTs between urban and rural areas are scarce, leaving a fragmented understanding of how to improve connectivity and digital inclusion for these groups. This gap makes it essential to develop specific solutions for these populations.

Furthermore, cultural differences in the acceptance and use of ICTs by the elderly are little explored. Although some studies mention technological adaptation in different cultural contexts, there is a lack of research that analyzes in detail how cultural norms and social expectations shape the acceptance of ICTs. The adoption of technologies, for example, can vary substantially between elderly people in different countries, even when they face similar challenges, such as social isolation or the need for remote medical care.

Finally, many studies do not extensively address the emotional impacts of digital exclusion. The pandemic has highlighted the vulnerability of the elderly without digital skills or access to the internet, but there is a lack of research into the emotional effects of this exclusion, such as increased loneliness and worsening mental health problems. These gaps indicate the need for more robust public policies that not only promote access to technology, but also provide ongoing support for the elderly, ensuring that they can use these tools effectively and safely.

CONCLUSION

The results of this review reflected the implications of communication and information technologies (ICTs) for elderly users, with a positive effect and an improvement in quality of life.

The studies can be used as indicators of the new social demands on the elderly, i.e., technological education is needed, as well as more attention to mental and physical health, so that they can actively participate in society. The results of this review were based on the evidence presented, which was able to analyze the phenomenon in question in a fragmented way.

The COVID-19 pandemic has led to changes in behavior, resulting in new phenomena to be studied. Thus, the analysis of 9 articles on the subject shows, albeit in an incipient way, the new social demands with direct implications for the quality of life of the elderly. In addition, it is important to highlight the limited sample of the studies observed. For future studies, it is suggested that the sample of participants be expanded to include a variety of sociodemographic representations.

It is important to note that the choice of databases can influence the applicability of the results. By selecting a limited set of databases, there is a risk of excluding studies that could provide additional or complementary insights into the adaptation of elderly people to digital technologies in the post-pandemic period. This methodological limitation suggests that the results should be interpreted with caution, especially when considering generalization to other contexts or populations. Future studies could broaden the range of databases used to include a greater diversity of perspectives and ensure a more holistic view of the topic.

Information and Communication Technologies (ICTs) have shown significant benefits for the elderly, especially in contexts such as the COVID-19 pandemic, when social isolation was widely imposed. The use of ICTs, such as smartphones, social networks and videoconferencing platforms, has allowed elderly people to stay connected with friends, family and health services, even at a distance, reducing the effects of emotional isolation. In addition, ICTs provide access to essential services such as shopping and medical consultations via telemedicine, ensuring greater autonomy and continuous interaction with the external environment.

In practice, for the elderly to be able to take full advantage of these benefits, it is essential that they receive support in digital literacy. Training programs aimed specifically at this age group can include workshops on the use of mobile devices, digital security, as well as simple practices such as making video calls or using messaging apps. Another practical aspect would be the customization of technological interfaces to facilitate usage by the elderly, considering their physical and cognitive limitations. In this way, ICTs can be a powerful tool for promoting active and connected ageing.

One of the most effective practical interventions to promote digital inclusion among the elderly is the combination of telemedicine and health monitoring with virtual support groups and community activities. Expanding the use of telemedicine platforms offers the possibility of accessing medical care without the need to travel, allowing remote monitoring of health conditions and consultations, especially for those with chronic illnesses. At the same time, it is possible to encourage the participation of the elderly in online groups focused on leisure and social activities, such as exercise classes and cultural programs, creating a virtual support network that tackles isolation and reinforces emotional well-being. This integration of health and socialization promotes not only physical care, but also stimulates social interaction, ensuring healthier and more active ageing.

Virtual support groups can also be used for digital safety training, addressing practical issues such as preventing online scams and fraud. The provision of digital safety training could be included as part of virtual activities, guiding older adults on safe internet usage and enhancing their confidence when conducting transactions and interacting in digital environments. This combination of telemedicine, socialization activities and digital security creates a supportive ecosystem that facilitates the continued use of ICTs, improves physical and mental health and, at the same time, protects elderly people from the risks of the digital environment.

To promote the digital inclusion of the elderly, it is essential that public policies are developed with a focus on digital literacy and universal access to the internet. A national digital inclusion program should be created to ensure that all elderly people, regardless of their location or socioeconomic status, can have access to free or subsidized training courses. These initiatives can be implemented through partnerships with community centers, public libraries and educational institutions, ensuring that the elderly receive the necessary training to use Information and Communication Technologies (ICTs) autonomously and safely.

In addition, digital safety education should be a priority in public policies aimed at the elderly. National awareness campaigns can be promoted on accessible platforms such as television and radio, clearly and objectively addressing how to avoid online frauds and scams. To complement these actions, it is essential that public health services integrate the use of telemedicine and digital platforms, allowing older people to access medical care remotely. Health professionals should also be trained in the use of these technologies, ensuring complete and personalized support for the elderly population, promoting not only digital inclusion, but also continuity of health care.

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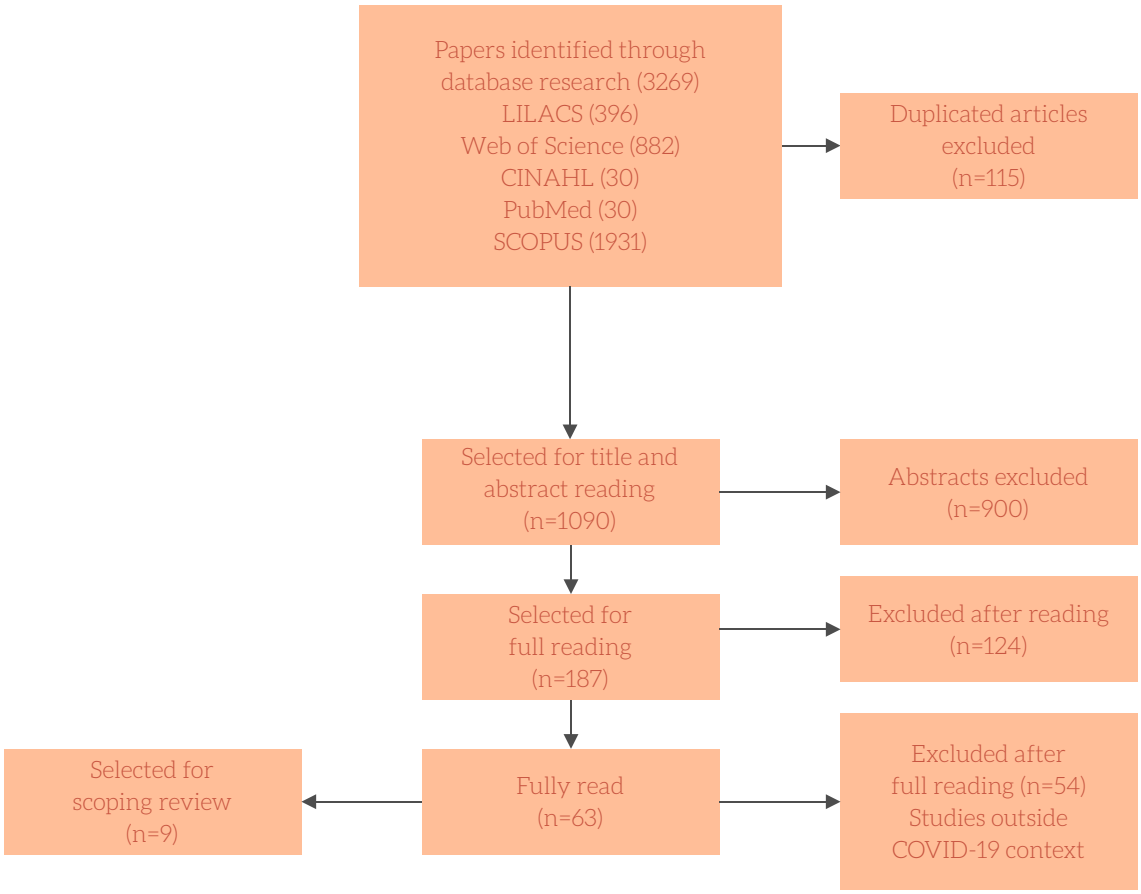

Figure 1 – Flowchart of the study selection process.

Chart 1 – Studies found according to year of publication, author, journal/institution, title, country of study and objective.

Year	Author	Title	Journal	Country	Objective	Type of study	Participants	Contributions	Limitations
2023	Hung M, Ocampo M, Raymond B, Mohajeri A, Lipsky MS[13]	Telemedicine among Adults Living in America during the COVID-19 Pandemic	International Journal of Environmental Research and Public Health	United States	Exploring the use of telemedicine among different socioeconomic groups in the United States during the COVID-19 pandemic, identifying patterns of use and possible disparities in access to technology-based health services.	Cross-sectional study with statistical analysis of demographic data collected through the Household Pulse Survey (HPS) in the USA.	Around 989,712 participants in total, with an average response of 70,000 per week between April 2021 and April 2022.	It revealed differences in the use of telemedicine based on demographic characteristics, highlighting greater use among the elderly, Black people, people with disabilities and women.	The survey was only conducted in the USA, limiting its applicability to other contexts. In addition, it was conducted online, which may introduce response bias.
2023	Ramírez-Correa P, Grandón EE, Ramírez-Santana M, Arenas-Gaitán J, Rondán-Cataluña FJ[14]	Explaining the Consumption Technology Acceptance in the Elderly Post-Pandemic: Effort Expectancy Does Not Matter	Behavioral Sciences	Chile	Explaining the acceptance of social networks by the elderly in the post-pandemic period, using the UTAUT2 and TRI models.	Cross-sectional study.	1555 elderly people in Chile, divided into three groups according to their technological predisposition.	The study revealed that the expectation of effort is not a significant factor in the acceptance of technology by the elderly in the post-pandemic and validates the classification of users.	This study was only conducted in Chile, which may limit the generalizability of the results to other cultural and socioeconomic contexts.
2021	Rodrigues, M. A., *et al*[16]	Teleconsulta no serviço de atenção domiciliar na pandemia da COVID-19: estudo transversal	Online Braz J Nurs [Internet]	Brazil	Identifying the nursing interventions conducted by teleconsultation for the elderly and their carigivers.	Cross-sectional study.	140 elderly people and 106 caregivers in the municipality of São Gonçalo, RJ.	It identified nursing interventions by teleconsultation during the pandemic, highlighting the importance of continuity of home care.	The study was limited to a single municipality and the data collection period was short, which restricts the generalization

Chart 1 – Studies found according to year of publication, author, journal/institution, title, country of study and objective.

Year	Author	Title	Journal	Country	Objective	Type of study	Participants	Contributions	Limitations
2021	Martin Garci, A. V., *et al*[17]	Intención de participación en programas universitarios de mayores en modalidad a distancia	Pedagogia Social	Spain	Exploring the intention to participate in an online university program for the elderly.	Cross-sectional, with hierarchical segmentation analysis (CHAID).	1633 participants, with an average age of 68.25 years. All participants in the Mayors University Program (PUM) of the Community of Castilla y León, Spain.	It identified the profiles of elders who are more likely to participate in online university programs, based on factors such as cheerful outlook towards technology and safety in the use of digital technologies.	Conducted in a single autonomous community in Spain, limiting generalization to other contexts. Does not include longitudinal data to analyze changes over time.
2021	Bakshi, T., Bhattachary ya, A.[7]	Socially distanced or socially connected? Well-being through ICT usage among the Indian elderly during COVID-19	Millennial Asia	India	Exploring the ways in which ICT is enabling social connection among the elderly in the face of social distancing measures and looking at the ways in which older working Indians are dealing with the challenges of using technology during the pandemic.	Qualitative study, with in-depth interviews.	30 elderly professionals aged at least 60, living in a metropolitan city in eastern India.	The study revealed how elderly Indian professionals used ICTs to maintain well-being and social connection during social distancing. It emphasizes the benefits and barriers in adopting technologies during the pandemic.	The sample was small and homogeneous, composed only of elderly urban professionals, which limits the generalization of the results to other elderly populations in India. Elderly people with cognitive difficulties or physical limitations were not included.

Chart 1 – Studies found according to year of publication, author, journal/institution, title, country of study and objective.

Year	Author	Title	Journal	Country	Objective	Type of study	Participants	Contributions	Limitations
2021	Martínez-A lcalá, C.I., *et al* [18]	The Effects of Covid-19 on the Digital Literacy of the Elderly: Norms for Digital Inclusion	Frontiers in Education	Mexico	Analyzing the level of Digital Literacy with the Digital Literacy Evaluation (DILE) of two groups of elderly people with different levels of literacy.	Longitudinal study comparing groups at different levels of digital literacy.	176 elderly people divided into two groups (G1: 140 and G2: 36), aged around 60, participating in digital literacy workshops in Mexico.	The study analyzed the impact of the pandemic on the development of digital skills in the elderly, highlighting the role of digital literacy workshops in promoting digital inclusion.	The sample is geographically limited to Mexico, which may affect the generalizability of the results. In addition, the pandemic interrupted some workshops, affecting the continuity of learning.
2021	Llorente-Barroso, C.a , Kolotouchkina, O.b , Mañas-Viniegra, L. [19]	The enabling role of ICT to mitigate the negative effects of emotional and social loneliness of the elderly during COVID-19 pandemic	International Journal of Environmental Research and Public Health	Spain	Understanding the impact of the use of Information and Communication Technologies on the emotional well-being of the elderly during their confinement.	Qualitative study, focusing on focus groups and in-depth interviews.	27 participants, elderly people aged 60 or over, living in Spain.	The study showed how the use of ICTs helped mitigate the negative effects of social isolation and emotional loneliness among the elderly, highlighting the role of ICTs in emotional well-being.	The study was limited to a national context (Spain) and had a relatively small sample, which may not reflect the reality of elderly people in other cultural and socio-economic contexts.

Chart 1 – Studies found according to year of publication, author, journal/institution, title, country of study and objective.

Year	Author	Title	Journal	Country	Objective	Type of study	Participants	Contributions	Limitations
2021	Li J, Goh WW, Jhanjhi NZ[15]	The Use of Emerging Technologies DIoT: Elderly Daily Living in Post-Epidemic Era	MATEC Web of Conferences	Malaysia	Investigating how emerging technologies, such as drones and the Internet of Things (IoT), can assist the elderly in their daily activities and improve their quality of life in the post-pandemic context.	Literature review focusing on emerging technologies, such as IoT-based drones (DIoT), and their applicability in the daily lives of the elderly in the post-pandemic context.	Not applicable.	The article explores the use of emerging technologies, such as drones, to facilitate everyday activities for the elderly, improving their independence and quality of life post-pandemic.	The low penetration of DIoT technologies among the elderly and the geographical range limitations of drones are significant barriers to the widespread implementation of these technologies.
2020	von Humboldt, S., *et al*[20]	Smart technology and the meaning in life of older adults during the Covid-19 public health emergency period: a cross-cultural qualitative study	International Review of Psychiatry	Portugal	Analyzing older adults' perspectives on how smart technology has influenced their meaning in life during the Covid-19 Public Health Emergency period.	Qualitative study, with in-depth interviews and content analysis.	351 elderly participants (aged 65 to 87) from Portugal, Italy, Mexico and Spain.	The study explores how smart technology has influenced the meaning of life for elderly people during the pandemic, identifying six main themes: meaningful relationships, rewarding activities, spirituality, health and safety support, personal growth and physical activity.	Sample limited to four countries, which may affect the generalizability of the results. In addition, the non-uniform distribution of nationalities limits intercultural representativeness.