Digital media use among older adults during the COVID-19 pandemic: a scoping review

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Abstract

Objective: To identify and map the purpose of digital media use among older adults during the coronavirus disease (COVID-19) pandemic. Methods: A scoping review was conducted using the Joanna Briggs Institute methodology involving a search of 7 databases for relevant articles in English, Spanish, and Portuguese published between 2020 and 2021. Most studies were retrieved from the SCOPUS and Web of Science databases. The inclusion criteria for this review were: participants — individuals aged ≥ 60 years; concept — digital media use during the pandemic; context — community-dwelling older adults. Results: The search led to the retrieval of 1992 studies. The titles and abstracts were screened by 2 independent reviewers. Full texts were then extracted according to the inclusion criteria, reaching a total of 12 articles for the review. The results showed that the main purposes of digital media use by older adults were to access and answer surveys sent by e-mail or posted on social media and virtual social networks (eg, Facebook, Instagram, and/or Twitter) and also for telemedicine consultations. Conclusions: Adherence and acceptance of technologies and digital media are considered important factors for their use by older adults. However, a large contingent of the older population does not have access to, or require assistance for, information and communication technologies, mainly in low- and middle-income countries, making the promotion of digital literacy fundamental in this population.

Keywords: digital media; information technology; coronavirus infection; novel coronavirus pandemic; older adult.

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INTRODUCTION

Information and communication technologies (ICTs) are present in our everyday lives, being disseminated through social communication (news and television) or digital communication (internet). Currently, the main users of ICTs are younger individuals, although the representation of the older population is growing rapidly. Any society can come into contact, directly or indirectly, with new technologies, such as watching television or using online banking services, among other situations. In these cases, the employment of ICTs takes place via the use of e-mail, digital media, and online searches.

The use of new technologies saw a major increase during the global COVID-19 pandemic in early 2020. The pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), caused a major public health crisis worldwide. The main measure for reducing virus transmission was social distancing, which changed people’s routines and habits. Social distancing is now recognized to have triggered psychological problems (stress, depression, and anxiety), in addition to greater feelings of fear, insecurity, and loneliness, as well as grief over the loss of family members. Conversely, the use of ICTs has helped avoid self-isolation and enabled social interaction and connectivity among members of the same nuclear family, work colleagues, and friends. It also had a positive emotional and humanizing impact on the access to entertainment and hobbies and in improving self-esteem. ICTs thus have the capacity to influence people’s social lives and well-being.

Amid the initial COVID-19 outbreak, public authorities of each country applied restriction measures to the older population due to the higher vulnerability and lethality perceived in this group. Thus, older adults underwent long periods of social distancing, leading to increased use of ICTs. Social distancing measures caused studies involving older people to be halted or postponed, and researchers resorted to using the remote model. In this context, an alternative for interviewing this group was to post invitations on social platforms such as Facebook, Instagram, Twitter, and/or WhatsApp. After initial contact with respondents had been made, researchers could send online surveys according to the target topic of each study. Therefore, the objective of the present scoping review was to identify and map the national and international literature on the use of digital media by community-dwelling older adults during the COVID-19 pandemic. The aims, inclusion criteria, and analysis methodologies for the present review were outlined and documented in a previously published protocol.

METHODS

Search strategy

The search strategy was developed with the assistance and guidance of an expert librarian specialized in search and review strategies, and the method recommended by the Joanna Briggs Institute was employed. This entailed a 3-step process: first, an initial limited search of PubMed was conducted, followed by the analysis of titles, abstracts, and Medical Subject Headings (MeSH) terms used to describe the articles. Second, a search using the defined keywords and MeSH terms was performed on all the included databases. Finally, the lists of references of all identified articles were checked for additional relevant studies. Studies published in English, Spanish, and Portuguese in 2020 or 2021 were considered for analysis.

The search was carried out on 7 databases: Pubmed, Ageline, SCOPUS, LILACS, EMBASE, PsyNET and Web of Science. The initial search strategy was (Aged OR “Aged, 80 and over” OR “Seniors” OR “Older People” OR “Older Adults”) AND (“Digital Media” OR “Social Media” OR “Social Networking” OR “Online Social Networking” OR “Internet Use” OR “Internet Access” OR “Mass Media” OR “Information Technology”) AND (“Coronavirus Infection” OR “Covid-19”) AND Pandemics). The full search strategy is provided in Appendix 1.

Two authors selected studies based on their relevance to the review as per the information contained in the titles and abstracts. The selection stage was performed using the Rayyan web and mobile app (https://rayyan.qcri.org/welcome) for conducting systematic reviews and analyzing article titles and abstracts. The selected articles were then screened.

Full-text articles were retrieved for all studies that met the inclusion criteria based on the PCC framework, namely: population (P), concept (C), and (C) context, as recommended by the guideline for scoping reviews. However, in the event of doubts by reviewers regarding the relevance of a study based on the abstract alone, the full article was retrieved. Two reviewers examined the full articles to determine whether they met the inclusion criteria. Any disagreements between reviewers were settled by consensus or together with a third reviewer.

Inclusion criteria

Participants

Studies involving older adults (≥ 60 years old).

Concept

The present scoping review considered all studies addressing the main purpose of digital media and ICT use.
Digital media is defined as all content or communication vehicles based on the internet and that use it as distribution media.\textsuperscript{18}

ICT is an umbrella term defined as the overall set of technologies that enable the production, access, and dissemination of information, or as technologies that allow people to communicate with one another.\textsuperscript{19}

**Context**
Studies involving community-dwelling older adults who used digital tools.

**Source types**
Qualitative and quantitative studies were considered. Quantitative studies included observational studies focusing solely on descriptive studies, cohort studies, and cross-sectional studies. Qualitative studies included exploratory approaches.

**Data extraction**
One reviewer extracted data independently while the other oversaw the checking and correction process. Any disagreements between reviewers were settled by consensus. Data extracted from the articles included publication author and year, country, study type, total sample, number of female participants, mean age, and participant origin. In addition to these data, the main objectives, measures used, purpose of digital media use, and key results were recorded. The full set of extracted data can be found in Tables 1 and 2.

**RESULTS**
The search strategy led to the identification of 3147 articles in total. After removal of duplicates, 1992 studies remained for screening. Of these, 1720 met the inclusion criteria based on the titles and abstracts. The articles were read in full and 12 of them met the criteria for inclusion in the scoping review (Figure 1).\textsuperscript{20}

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**Identification of studies via databases and registers**

Records identified from:
- Ageline (n = 28); LILACS (n = 14); EMBASE (n = 237); ERIC (n = 2);
- PsycNET (n = 97); PubMed (n = 617); SCOPUS (n = 1 532); Web of Science (n = 620)

Records removed before screening:
- Duplicate records removed (n = 1155)

Records screened (n = 1992)

Reports sought for retrieval (n = 422)

Reports assessed for eligibility (n = 130)

Studies included in review (n = 12)

Records excluded (n = 1570)

Reports not retrieved (n = 292)

Reports excluded:
- Wrong population (n = 85)
- Wrong outcome (n = 37)
- Wrong study design (n = 4)

**FIGURE 1.** PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and registers only.\textsuperscript{20}
Context of studies
Regarding the origin of the selected studies, 5 had been conducted in Europe, comprising 1 each in Croatia, Spain, and Sweden, and 2 in the UK. Three studies were North American and 2 were Israeli. Finally, 3 studies had been carried out in Asia, comprising 1 each in Japan, Thailand, and India. It is noteworthy that Brazilian studies were not included because they did not meet the inclusion criteria. The characteristics of the studies are outlined in Table 1.

Study design
The most common study type in this review was cross-sectional, accounting for 8 articles. Two studies were longitudinal, one of which had a qualitative exploratory design and the other was a self-report study (Table 1).

Characteristics and origin of participants
All participants were community-dwelling older adults (≥ 60 years old) and all studies reported the mean age of the participants, which ranged from 66.13 (±5.51) to 84.00 (±0.51) years. The number of participants in the study populations ranged from 19 to 5,117. All 12 studies reported information on gender distribution. Female participants predominated in virtually all samples, with only one study containing more men than women.

Focus of studies
Of the 12 studies included in the scoping review, 7 investigated psychological aspects of older adults using online surveys. Four studies (36.45%) explored the impact of ICT use on older adults, of which 2 analyzed the effects and importance of ICTs during the pandemic, 1 evaluated technostress, and 1 examined engagement in telehealth among older adults.

Main measures
Four of the reviewed studies evaluated participants using an online semi-structured survey containing quantitative questions, whereas 2 studies applied a qualitative survey. For example, the study by Borade and Nagarkar applied a self-report questionnaire with questions collecting demographic information and probing the impact of the COVID-19 pandemic on psychological aspects of older adults.

Regarding the ability to use ICTs, the study by Llorente-Barroso et al. ran 4 focus groups with experts to steer 3 interviews, which explored: the negative impact of the worst stages of the COVID-19 pandemic on the well-being of older adults (participants aged 60 years or older); the positive emotional, operational, and humanizing role of ICTs to promote well-being and mitigate fears of older adults during the pandemic; and enhanced learning enabled by ICTs with motivational triggers for older adults during the pandemic. In addition, Satake et al. probed ICT use by posing the simple question: “Do you use the internet including e-mail or other communicative applications with computer, smartphone, or tablet devices?” One study specifically investigated technostress using a specific scale, while another explored engagement in telehealth.

Apart from semi-structured interviews, the studies employed instruments that evaluated depression, anxiety,
fraility, nutrition, and loneliness. The study by Tyler et al. assessed depression by applying the Depression, Anxiety and Stress Scale-21 and the Generalized Anxiety Disorder-7 scale. Anxiety was measured in the study by Keisari et al. using instruments that assessed COVID-19 resilience and COVID-19 anxiety symptoms. Satake et al. measured fraility and nutritional status of older adults using the Kihon Checklist and the Simplified Nutritional Appetite Questionnaire, respectively. Bertić and Telebuh analyzed social and family loneliness using the Social and Emotional Loneliness Scale for Adults. Only the study by Pothisiri and Vicerra assessed psychological well-being, based on the question: “During the COVID-19 outbreak, how frequently did you experience the following symptoms or feelings?” Further details on these measures are provided in Table 2.

**Purpose of digital media use**

Although only 4 studies directly assessed the importance and effects of ICTs on older adults, the main purpose of digital media use in the studies was collected via an online questionnaire for participation in scientific studies delivered by e-mail or via Facebook, Instagram, Twitter, and WhatsApp. The analysis of these studies is deemed relevant because the older adults were able to access the questionnaires and the internet. In this regard, it is known that interactions between individuals enabled by technologies can promote socialization with the aim of establishing, promoting, and optimizing social contact. ICTs thus serve as valuable tools for promoting mental health among older adults by facilitating stronger social ties. The study by Okoye et al., for example, involving a large sample of community-dwelling adults, found that 21.1 million older adults had internet access and 35.84% used telehealth services. Most of these users had fewer chronic health conditions, less social isolation, and greater independence for activities of daily living. However, access to technology among the oldest old remains limited. The study by Bertić and Telebuh noted that older adults who communicated with their family members via video calls or media apps were less likely to experience loneliness than those who communicated less.

The use of digital media to access online surveys and take part in scientific studies was found in 9 studies. The study by Tyler et al. used the Survey Monkey resource for its questions, whereas Keisari et al. and Corley et al. used the Qualtrics Survey and Qualtrics XM platforms, respectively. Only 1 study used the telephone for obtaining data, and 1 used e-mail (Table 2).

**DISCUSSION**

The results of the present study revealed the main purposes of digital media use by older adults during the COVID-19 pandemic. The eligible studies included in this review showed that the use of ICTs was mainly for engagement in online surveys and in response to the psychological impacts of the COVID-19 pandemic. The present study thus highlights the importance of combating the loneliness caused by social distancing during the pandemic. To this end, it is vital to change the way individuals connect socially, largely through the use of reliable, safe, easy-to-use, and effective digital technology tools.

In addition, our findings suggest that currently available technologies can attenuate the adverse effects on mental health caused by social distancing and the COVID-19 pandemic. ICTs are being increasingly adopted by older adults and there are few robust studies that show how technologies can help them, in time of a pandemic.

It is noteworthy that most of the articles included in the present review made direct use of the terms COVID-19 and ICTs in their titles, underscoring the central role of ICT use during the pandemic.

Previous studies have reported that the use of ICTs by older adults can aid in interactions with next-of-kin and close friends, avoiding loneliness and enhancing well-being. However, Flint et al. and Haider et al. showed that physical distancing measures have negatively impacted psychological factors, increasing loneliness, anxiety, and depression. Evidence suggests that individuals who communicated more intensely or engaged more in arts prior to the pandemic had higher levels of resilience and lower levels of anxiety.

The use of telehealth was addressed by one study, showing that 35.83% of older adults used this resource during the pandemic. In a later study, Baudier et al. showed that telehealth did not have transport costs and provided older adults with instant and direct access to physicians, irrespective of their geographical location.

Although ICTs were rapidly adopted during the pandemic, some older adults face difficulties handling the technology, requiring knowledge and support to learn how to use digital technology. However, some studies indicate that technology overuse can lead to technostress in older adults.

A previous review study found that the number of internet and social media users aged over 65 years in the USA rose exponentially in recent years, while the National Health and Aging Trends Study saw a similar trend among older users of Medicare. The overall use of the internet for keeping in touch and socializing with family and friends in 19 countries across 6 continents was
### TABLE 2. Main measurements and purposes of digital media use according to each included study.

<table>
<thead>
<tr>
<th>Author</th>
<th>Main goal</th>
<th>Measurements</th>
<th>Purpose of using digital media</th>
<th>Main results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borade and Nagarkar¹⁴</td>
<td>To document the life concerns of older adults and how they dealt with changes during the COVID-19 pandemic</td>
<td>Semi-structured questionnaire</td>
<td>Accessing digital media</td>
<td>Social and psychological aspects were the most affected by the COVID-19 pandemic</td>
</tr>
<tr>
<td>Nimrod²⁶</td>
<td>To explore the individual and contextual antecedents of technostress¹⁶ among older ICT users</td>
<td>Scale that assesses five domains of technostress (overload, invasion, complexity, privacy, and inclusion)</td>
<td>Accessing the online questionnaire</td>
<td>The level of technostress was higher in 2020 than in 2016</td>
</tr>
<tr>
<td>Tyler et al.⁴</td>
<td>To examine depression in adults aged 60 years and over in 33 countries during the COVID-19 pandemic</td>
<td>- Quarantine level - Epidemic–Pandemic Impacts Inventory - Depression, Anxiety and Stress Scale-21 - Generalized Anxiety Disorder-7</td>
<td>Accessing the Survey Monkey platform to answer the questionnaire and accessing Facebook, Instagram, Twitter, and WhatsApp apps</td>
<td>Participants from Europe and Central Asia reported higher levels of depression than those from other countries</td>
</tr>
<tr>
<td>Keisari et al.¹³</td>
<td>To verify the association between levels of resilience and anxiety in the COVID-19 pandemic among older adults</td>
<td>- Frequency of receptive arts engagement - COVID-19 resilience - COVID-19 anxiety symptoms</td>
<td>Using Qualtrics survey software to complete the survey and accessing Facebook and WhatsApp</td>
<td>High levels of engagement with art before the pandemic showed higher levels of resilience and low levels of anxiety</td>
</tr>
<tr>
<td>Pothisiri and Vicerra²⁸</td>
<td>To explore the psychological well-being of older people</td>
<td>Question: &quot;During the COVID-19 outbreak, how frequently did you experience the following symptoms or feelings?&quot;</td>
<td>Accessing and answer questions on the online platform</td>
<td>Most seniors experienced psychological distress during the COVID-19 pandemic</td>
</tr>
<tr>
<td>Llorente-Barroso et al.⁷</td>
<td>To understand the impact of ICT use on the emotional well-being of older people during social distancing</td>
<td>Semi-structured questionnaire</td>
<td>Verifying the effect of ICTs during the pandemic</td>
<td>ICTs had a positive impact on older adults, mitigating the negative effects of social isolation</td>
</tr>
<tr>
<td>Satake et al.⁹</td>
<td>To clarify the associations of the use of ICTs with frailty and physical activity in older adults</td>
<td>- Kihon Checklist - Simplified Nutritional Appetite Questionnaire - Question: &quot;Do you use the internet including e-mail or other communicative applications with computer, smartphone, or tablet devices?&quot;</td>
<td>Check the importance of ICTs</td>
<td>Older people who used ICTs were more physically active</td>
</tr>
<tr>
<td>Corley et al.²³</td>
<td>To examine if home garden use is linked to physical and mental well-being in older people during Scotland’s COVID-19 lockdown</td>
<td>- Questions: &quot;Do you have a garden or allotment?&quot; &quot;If yes, what do you do in the garden/allotment?&quot; &quot;Compared with before COVID-19 measures were introduced, how often do you currently use your garden/allotment?&quot; - Health self-assessment measurements</td>
<td>Accessing the Qualtrics XM platform to complete the survey</td>
<td>Garden use was associated with better self-rated physical, emotional, and mental health</td>
</tr>
<tr>
<td>Gustavsson and Beckman²²</td>
<td>To assess the mental health of older people during the COVID 19 pandemic</td>
<td>Semi-structured questionnaire</td>
<td>Accessing and using Facebook.</td>
<td>Half of the participants reported staying at home all the time, and they reported feeling depressed, having trouble sleeping, and that isolation made them feel bad</td>
</tr>
</tbody>
</table>

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found to be typically lower among the oldest old than in the youngest old.40

Corroborating these data, the results of the present scoping review showed that older adults accessed e-mail, Facebook, Instagram, Twitter, and WhatsApp to answer online surveys for scientific studies. This finding was replicated in the study by Nimrod,26 which found an increase in internet use by older adults over the pandemic, particularly for the Zoom, Skype, or WhatsApp (64.14%) applications, medical consultations and purchases (41.72%), on-line news (40.81%), social network services (40.14%), and sites related to hobbies and interests (36.62%). In addition to this use, the study by Huang et al.43 showed that older adults also used WeChat to keep in touch with their family and medical teams. Our review did not include Brazilian studies because they were not within the scope of the inclusion criteria, possibly due to a limited use of computers by older adults and the fact that many Brazilians do not have internet access.2,44 In addition, if we consider different socioeconomic classes, there is an unequal access to technologies; older adults from classes D/E accounted for 2% of smartphone users, while those from classes A/B accounted for 40% of the total.45

Only one of the reviewed studies explored associations of ICT use with frailty status and physical activity, revealing that physically active older adults were more likely to use these technologies.27 The systematic review by Bian et al.27 found that when technologies (eg, motion sensors and artificial intelligence) were employed to assess frailty, older users tended to reject or abandon the assessment due to lack of compatibility and engagement.

The present study has some limitations. First, a number of potentially relevant articles failed to meet the inclusion criteria for this scoping review. Second, the search did not include grey literature or preprints, possibly overlooking some relevant articles addressing the topic. Third, most of the reviewed studies did not evaluate ICT use in the older population alone. Notably, Brazilian studies investigating digital media and ICT use in community-dwelling older adults are scarce. Finally, further reviews on this issue are warranted given the fast-growing body of evidence and scientific publications on COVID-19.
CONCLUSION
The results of the present review showed that older adults accessed different ICTs during the social distancing period imposed by the COVID-19 pandemic worldwide. ICTs predominantly served to support online scientific studies (Facebook, Instagram, Twitter and WhatsApp) and allow participants to fill out instruments used in these surveys (Survey Monkey Qualtrics Survey and Qualtrics XM platforms), along with having medical consultations (telehealth).

In addition, the studies showed greater adherence and acceptance of ICTs by older adults in developed countries, particularly those located in Europe. Therefore, virtual environments should be made more accessible to older users in developing countries such as Brazil, which in general have low socioeconomic and educational levels. Despite the challenges, government policies and actions are pivotal in creating digital literacy courses to mitigate the negative effects of social distancing imposed by the COVID-19 pandemic, promoting the well-being and social inclusion of older individuals.

Conflict of interest
The authors declare no conflicts of interest.

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Authors’ contribution
JCC: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. GCC: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. VA: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. MC: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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