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Review Article

Technosociality in the COVID-19 pandemic and health promotion for users and families: a scoping review

Tecnosocialidad en la pandemia de COVID-19 y promoción de la salud de usuarios y familias: revisión de alcance

Tamires Carolina Silva[I], Leila Cristine do Nascimento[I], Bruna Moreira da Silva[I], Daniela Priscila Oliveira do Vale Tafner[II], Tassiana Potrich[III], Selma Maria da Fonseca Viegas[I]

[I] Universidade Federal de São João del-Rei, *Campus* Centro-Oeste (UFSJ/CCO), Divinópolis, MG, Brazil
[II] Universidade Federal de Santa Catarina, Florianópolis, SC, Brazil
III Universidade Federal da Fronteira Sul, Chapecó Campus. Chapecó, SC, Brazil

Abstract

Objective: to map scientific evidence on technosociality in times of the COVID-19 pandemic and health promotion for Primary Health Care users/families. **Method:** a scoping review that used the Participants, Concept and Context (PCC) strategy. The search was carried out in six databases. The findings were extracted, analyzed and synthesized in a narrative form. **Results:** a total of 30,377 studies were retrieved; of these, 28 were selected for review. Users are more connected on social networks, in order to seek information about COVID-19, and the influence of social media on individuals' behavior is unquestionable. **Conclusion:** social networks are fertile ground for sharing news and can be used by health professionals to promote health amidst the COVID-19 pandemic. Moreover, telehealth emerges as an important tool for the continuation of care in times of social isolation.
Descriptors: COVID-19; Technology; Online Social Networking; Telemedicine; Mobile Applications

Resumo

Objetivo: mapear as evidências científicas sobre a tecnossocialidade em tempos da pandemia de COVID-19 e a promoção da saúde para usuários/famílias da Atenção Primária à Saúde. **Método:** *scoping review* que utilizou a estratégia *Participants, Concept e Context* (PCC). A busca foi efetuada em seis bases de dados. Os achados foram extraídos, analisados e sintetizados de forma narrativa. **Resultados:** recuperou-se um total de 30.377 estudos; desses, 28 foram selecionados para a revisão. Os usuários encontram-se mais conectados em redes sociais, a fim de buscar informações sobre a COVID-19, sendo inquestionável a influência das mídias sociais no comportamento dos indivíduos. **Conclusão:** as redes sociais constituem terreno fértil para o compartilhamento de notícias e podem ser usadas por profissionais da saúde para a promoção da saúde em meio à pandemia de COVID-19. Além disso, o

telessaúde desponta como importante ferramenta para a continuação do cuidado em tempos de isolamento social.
Descritores: COVID-19; Tecnologia; Redes Sociais Online; Telemedicina; Aplicativos Móveis

Resumen

Objetivo: mapear las evidencias científicas sobre la tecnosocialidad en tiempos de la pandemia del COVID-19 y la promoción de la salud de los usuarios/familias de la Atención Primaria de Salud. **Método:** revisión de alcance que utilizó la estrategia Participants, Concept and Context (PCC). La búsqueda se realizó en seis bases de datos. Los hallazgos fueron extraídos, analizados y sintetizados en forma narrativa. **Resultados:** se recuperó un total de 30 377 estudios; de estos, 28 fueron seleccionados para su revisión. Los usuarios están más conectados en las redes sociales para buscar información sobre el COVID-19, y la influencia de las redes sociales en el comportamiento de las personas es incuestionable. **Conclusión:** las redes sociales son un terreno fértil para compartir noticias y pueden ser utilizadas por los profesionales de la salud para promover la salud en medio de la pandemia de COVID-19. Además, la telesalud surge como una herramienta importante para la continuación de la atención en tiempos de aislamiento social.
Descriptores: COVID-19; Tecnología; Redes Sociales en Línea; Telemedicina; Aplicaciones Móviles

Introduction

Technosociality can be defined as the use of internet and its tools by postmodern society, promoting the emergence of a new virtual world. This makes it possible for individuals to communicate and interact collectively through virtual social networks and online forums, representing the 21st century products.[1]

In postmodernity, interactive media are of fundamental importance.[2] If, on the one hand, the Internet tends to "favor the isolation of people, on the other hand, by connecting to it individuals meet, talk, know each other, thus emerging a new way of being together".[3:40]

It is perceived that social media has emerged as a powerful tool in controlling the dissemination of information and in the formation of understanding and behavior of the public.[4] As a consequence, there is "cultural and existential boiling that develops in the horizontality of the Internet, where shared knowledge, ordinary knowledge is very fraternal and the word circulates in endless communication".[5:128]

In the first cases of COVID-19 (COronaVIrus Disease-19) confirmed and disseminated, information and news about the disease were quickly published and shared on social media. Although the field of infodemiology has studied information patterns on the web and social media for at least 18 years, the COVID-19 pandemic was

referred to as the first infodemic, i.e., excess social media information.[6]

Therefore, the COVID-19 pandemic has a particularity in relation to its predecessors, as it is the first to occur in the digital age, with digital health solutions that can considerably assist in the surveillance and management of this crisis. Through online search engines, it is possible to collect numerous amounts of data in real time, which facilitates the use of this information in public health.[7] Therefore, this digital access also enables governmental and non-governmental public health organizations to work with data for more effectiveness and effective communication with the public and decision makers.[8]

On the other hand, although technologies greatly assist in coping with the pandemic with the ubiquity and significant influence of social media, health professionals and researchers contend with other sources of information that may contain potentially false data about this pandemic. Thus, it is increasingly necessary to assess the validity and origin of the health information provided to the population, which uses digital media as a vehicle, since they can greatly impact individuals' and population's health.[9]

This scoping review aimed to map scientific evidence on technosociality in times of the COVID-19 pandemic and health promotion for Primary Health Care (PHC) users/families.

Method

This is a scoping review, with a research protocol registered in the Open Science Framework https://osf.io/cnwyx/, developed according to JBI and related according to the Preferred Items Reporting for Systematic reviews and Meta-Analyses extension for Scoping (PRISMA-ScR) recommendations.[10] This type of review can be defined as a study design that seeks to map the main concepts of the object in question through a systematic approach, identifying theories and gaps of knowledge.[10-11]

Eight steps are established in the method proposed by the JBI Reviewers' Manual 2020, namely: 1) identification of research question; 2) identification of inclusion and exclusion criteria; 3) identification of relevant studies; 4) study selection; 5) carrying out study quality assessment; 6) data extraction; 7) grouping, synthesis and presentation of

data; 8) presentation and interpretation of results. A process is included to establish certainty in the body of evidence using the Grading of Recommendations Assessment, Development and Evaluation system and the PRISMA-ScR guidelines.[10,12] These steps were observed in mapping the theme Technosociality in the COVID-19 pandemic and promoting health for PHC users/families.

The time frame adopted was the year 2020. This choice is justified because the new coronavirus (SARS-CoV-2) was identified in December 2019 in Wuhan City, China, and the pandemic was enacted by the World Health Organization on March 11, 2020.[13] The search was performed in the following databases: U.S. National Library of Medicine (PubMed), Scopus, Web of Science, Cumulative Index to Nursing and Allied Health Literature (CINAHL), LILACS, Cochrane Library.

Studies published in full, in English or Spanish or Portuguese, from the year 2020, which deal with technosociality in times of the COVID-19 pandemic, considering the context of the impact on promoting health for individuals and families, were included. Participants, Concept and Context (PCC) strategy was used. P (Participants) represents PHC users and professionals; C (Concept) checks the use of technologies in times of the COVID-19 pandemic; C (Context) composes the impact on health promotion for users/families. Studies in the project phase or without results and whose focus did not correspond to the research question, in addition to theses, dissertations and monographs, were excluded.

Considering the PCC strategy, the following review question arises: what scientific evidence is available on technosociality in times of the COVID-19 pandemic, considering the context of the impact on the actions of health professionals and on health promotion for PHC users/families?

The selection of keywords/descriptors was carried out from the Medical Subject Headings Section (MeSH), Descriptors in Health Sciences (DeCS) and CINAHL Headings. The search was conducted in November 2020, considering the strategy of articulation and conjugation of keywords/descriptors: “COVID-19” OR “2019 Novel Coronavirus Disease” OR “COVID-19 Pandemic” AND “Technology” OR “Social Networking” OR “Online Social Networking” OR “Mobile Applications” OR “Telehealth” OR “Telemedicine”.

The selection of scientific articles was carried out by three researchers,

individually, for later consultation and assessment of the findings, initiated by the construction of a search chain through the combination of descriptors and application of filters: availability of free and complete text; English, Portuguese or Spanish language; and year of publication 2020. A first analysis was made, initiated by reading titles, descriptors and abstracts, in order to verify whether the articles answered the review question. Then, pre-selected articles were read in full, identifying more precisely their relevance to the research and whether the inclusion and exclusion criteria were contemplated. The relevant data were extracted for further interpretation.

After reading the articles in full and verifying the inclusion and exclusion criteria for selecting the sample of studies included in this scoping review, data were collected. All selected articles were categorized by degree of recommendation and level of evidence, according to the classification developed by the Evidence-Based Practice (EBP), considering the conscious, explicit and judicious use of the best and most current research evidence, which is usually referenced for making clinical decisions about individual patient care.[14]

The strength of evidence can be categorized into five levels, namely: level 1, strong evidence from at least one systematic review of multiple randomized, controlled, well-designed studies; level 2, strong evidence from at least one randomized, controlled trial of appropriate design and adequate size; level 3, evidence from well-designed studies without randomization, single-group pre- and post-cohort, time series or matched case-control; level 4, evidence of well-designed non-experimental studies carried out in more than one research center or group; level 5, opinions of respected authorities, based on clinical evidence, descriptive studies or expert committee reports.[15]

The results were extracted by three reviewers. The presentation of results includes title, year of publication, country of origin, participants, study design, objective and main conclusions. In case of disagreement between the three reviewers, a fourth was consulted.

Results

Figure 1 demonstrates the process of identification, selection, eligibility and inclusion of studies.

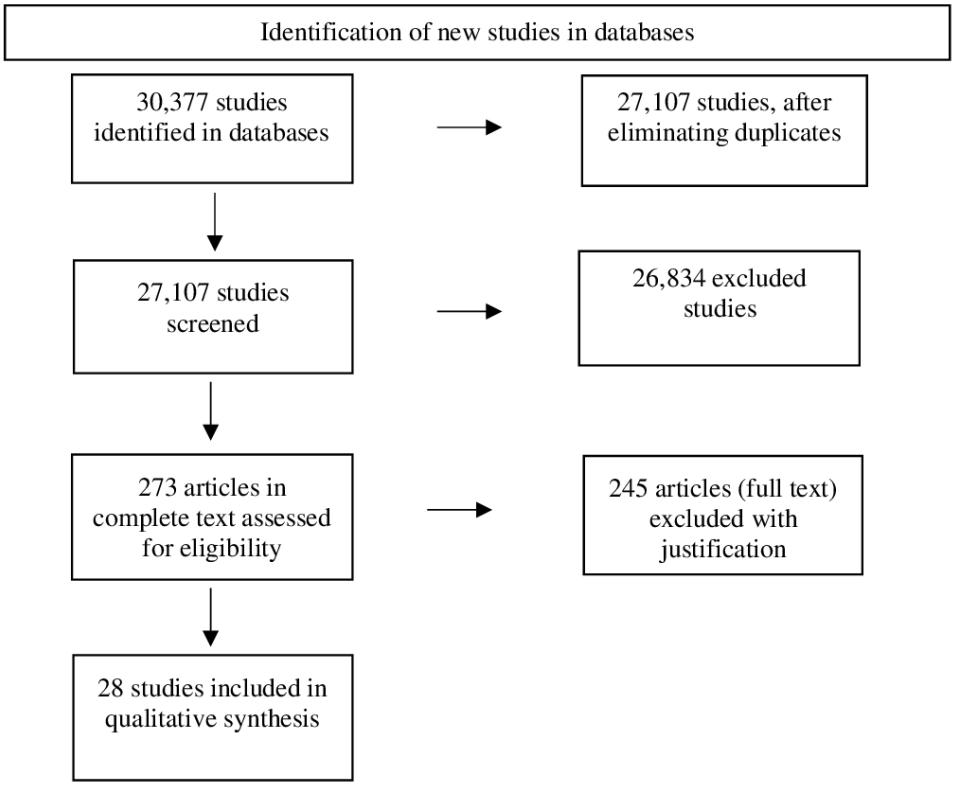

Figure 1 - Process of identification, selection, eligibility and inclusion of studies of this scoping review, 2020.[16]

A total of 30,377 studies were obtained; of these, 3,270 were excluded, as they were duplicate studies, resulting in 27,107. To perform the identification and exclusion of duplicate studies, the EndNote bibliography manager software was used. After reading the title, descriptors and abstract of each article, to verify if they corresponded to the research question, a total of 273 articles were obtained from PubMed (95), Scopus (82), Web of Science (50), CINAHL (29), LILACS (17) and Cochrane (0), which were read in full. At this stage, articles that were not coherent with the theme, studies without clear results or in the design phase, a different sample population of health professionals and/or users/family members were excluded, reaching a final sample of 28.

All articles included were published in 2020 (28) and in English (28). The predominant study design was cross-sectional (14), subsequent by retrospective (03), expert opinion (03), systematic review (02), cohort (02), randomized study (01), descriptive observational (01), self-administered electronic survey (01) and mixed parallel convergent study (01).

The studies were carried out in the following countries: United States of America (USA) (03), Canada (02), Saudi Arabia (02), China (01), United Kingdom (02), Brazil (02),

South Africa (01), Iraq (01), Jordan (01), Poland (01), Papua New Guinea (01), Singapore (01), Bangladesh (01), Zimbabwe (01), Italy (01), Egypt (01), Chile (01), and Spain (01). One study covered 17 different countries, and three studies did not report the country in which they were conducted.

Taking into account the strength of evidence, among its levels, level 5 (08) prevailed, followed by level 4 (08), level 3 (06), level 1 (04) and level 2 (02).

Considering PHC participants, users and professionals, the concept, the use of technologies in times of the COVID-19 pandemic, the context and the impact on health promotion in Chart 1 can be seen in the summaries of the main characteristics and results of eligible studies.

Chart 1 - Summary of key features and results of eligible studies, database, 2020

Author, year	Country	Study design	Sample	Level of evidence
Arshad Ali et al[17] (2020)	Pakistan	Retrospective cohort study	17 countries analyzed	Level 4
Chowdhur; Sunna; Ahmed[18] (2020)	Bangladesh	Expert opinion	-	Level 5
Garcia-Huidobro et al.[19] (2020)	Chile	Convergent parallel mixed study	3,962 participants	Level 3
Prete et al.[20] 2020)	Italy	Controlled cohort study	740 participants	Level 2
Elsaie et al.[21] (2020)	Egypt	Cross-sectional study	280 dermatologists	Level 5
Tashkandi et al.[22] (2020)	Saudi Arabia	Self-administered electronic research that was piloted and assessed for its clinical relevance	385 patients and 5 health professionals	Level 3
Haider et al.[23] (2020)	-	Systematic review	21 studies	Level 1
Xu et al.[24]	China	Retrospective cohort	188 patients	Level 3

(2020)		study		
Jiménez-Rodríguez et al.[25] (2020)	Spain	Descriptive observational study	53 health professionals	Level 5
Ye[26] (2020)	USA	Cross-sectional study	6 technology applications	Level 4
Murray et al.[8] (2020)	Saudi Arabia	Expert opinion	-	Level 5
Filho et al.[27] (2020)	Brazil	Cross-sectional study	30 older adults	Level 1
Li et al.[28] (2020)	China	Systematic review	1,067 articles analyzed	Level 5
Al-Dmour et al.[29] (2020)	Jordan	Cross-sectional study	2,555 social media users	Level 1
Bowles; Larreguy; Liu[30] (2020)	Zimbabwe	Randomized study	868 participants	Level 3
Dwye; Minnegal[31] (2020)	Papua New Guinea	Cross-sectional study	492 posts	Level 5
Ahmad and Murad[6] (2020)	Iraq	Cohort study	516 interviewees	Level 2
Eghtesadi; Florea[32] (2020)	Canada	Expert opinion	-	Level 5
Ahmed et al.[33] (2020)	United Kingdom	Cross-sectional study	6,556 Twitter users analyzed	Level 3
Li; Bailey; Huynh; Chan[4] (2020)	Canada	Cross-sectional study	69 videos	Level 4
D' Souza et al.[9] (2020)	USA	Cross-sectional research	113 videos examined	Level 4
Dutta et al.[34] (2020)	India	Cross-sectional study	240 videos	Level 5
Khatri et al.[35] (2020)	Singapore	Cross-sectional study	72 videos	Level 4
Basch et al.[36]	USA	Cross-sectional study	401 videos	Level 4

(2020)			examined	
Fan et al.[37] (2020)	United Kingdom	Cross-sectional study	1,275 URL analyzed	Level 4
Szmuda et al.[38] (2020)	Poland	Cross-sectional study	150 articles	Level 3
Perlman et al.[39] (2020)	United States	Retrospective cohort	Data from three digital health tools in the K Health app	Level 4
Agbehadji et al.[40] (2020)	South Africa	Systematic review	94 reviewed articles	Level 1

The summary of the main results of eligible studies can be seen in Chart 2.

Chart 2 - Summary of eligible study results, database, 2020

Author, year	Main code (Subject)	Secondary code (Conclusion)
Arshad Ali et al.[17] (2020)	Interest in the use of telemedicine Use of telemedicine	In the pandemic, interest in telemedicine is increasingly frequent. A preventive model for future deaths should be adopted on a regular basis.
Chowdhur; Sunna; Ahmed[18] (2020)	Telemedicine versus face-to-face health care	It is considered doubtful that telemedicine can replace the provision of face-to-face health care. Even in the face of a new pandemic crisis over existing systemic and structural health inequalities, it is imperishable to ensure that the needs of the most vulnerable and underprivileged patients are met in digital care.
Garcia-Huidobro et al.[19] (2020)	Use of telemedicine	The use of telemedicine for online consultations, in times of the COVID-19 pandemic, evidences physician and patient satisfaction when using this technology.
Prete et al.[20] (2020)	Use of telemedicine Technological implementation	Used by physiotherapists during the pandemic for online consultations of patients with Parkinson's disease, motor assessment and exercise practice. Although most patients were favorable to the use of the technology, telemedicine facilities were available for just over half of the cases (51.2%).
Elsaie et al.[21] (2020)	Use of telemedicine	The use of telemedicine by dermatologists during the pandemic was for communication with other health professionals and consultations.

	Knowledge about telemedicine Concerns raised	Participants showed a good knowledge and perception of the use of telemedicine. Risk of data privacy, accuracy of clinical diagnosis and whether use would add extra responsibilities.
Tashkandi et al.[22] (2020)	Use of telemedicine and media Use of Patient Accessible Electronic Health Records (PAEHRs) Sources used by patients to obtain information	In addition to medical consultations with cancer patients during the COVID-19 pandemic with good acceptance of patients, there was a preference for telephone calls as a means of communication. Schedule or reschedule appointments, request/delivery of medications, visualization of laboratory results and requests for medical reports, with good acceptance of patients. They use reliable sources to obtain information, such as the Ministry of Health and its physicians. In contrast, a minority relied on WhatsApp, Twitter, Snapchat, Instagram and Facebook.
Haider et al.[23] (2020)	Use of telemedicine Advantages of telemedicine	Use during the orthopedic pandemic is for clinical consultation. Economic, safe and patient/medical satisfaction.
Xu et al.[24] (2020)	Use of a telemedicine system developed through the WeChat app	Control of the progressive clinical picture of COVID-19, telemonitoring of patients, self-assessments and distance care helped in the intervention of late hospitalizations. Considered an effective system in the control of the disease, in the assessment and indication of hospitalization, when necessary, as in consultations that do not require physician-patient face-to-face contact.
Jiménez-Rodríguez et al.[25] (2020)	Use of telemedicine Difficulties	The use of teleconsultation and telemedicine by health professionals during the pandemic is considered by most participants as an appropriate option for providing care (96.2%). The difficulties of using this technology are associated with its implementation and the skills necessary for its management. Training on this tool is required for health professionals.
Ye[26] (2020)	Use of telemedicine Advantages of	Intelligent health systems are essential to overcome some of the challenges generated by the pandemic. Intelligence systems improve diagnosis and medical-

	telemedicine	patient experience in the face of the pandemic scenario.
	Future notes	Health systems need to be prepared for future public health crises.
Murray et al.[8] (2020)	Use of digital technology	Enhance disease screening, data collection and providing direct communication with users of health systems through social media, tracing prevention and health surveillance.
	Future notes	The COVID-19 pandemic has revealed the potential of many countries to increase the relationship between digital technology and public health. There are challenges in the effective application of digital technology by resisting this form of work and literacy for the use of technologies.
Filho et al.[27] (2020)	Use of online follow-up	Interventions made through telephone calls proved effective for health promotion and in improving knowledge in senior patients with type 2 Diabetes Mellitus.
Li et al.[28] (2020)	Sources used by patients to obtain information	In a sample of 1,067 articles, it was observed that the truest information was found on government, academic and non-profit websites.
	Reliable sources of information.	The population should be informed at reliable sources, such as the World Health Organization website, and not to verify social media information without scientific basis.
Al-Dmour et al. [29] (2020)	Use of digital technology	Social media is important in public awareness, generating effective behavioral changes and expressive prevention. The use of these tools is essential to combat the COVID-19 pandemic.
	Use of other sources of information	Online social media reaches a smaller audience, showing that television is a medium of greater population reach.
Bowles; Larreguy; Liu[30] (2020)	Methods used to combat disinformation	The use of WhatsApp is used by trusted sources, such as the Trusted Civil Society Organization of social media, to combat misinformation and encourage changes in population behavior during the pandemic.
Dwye; Minnegal [31] (2020)	Use of digital technology	There was intense interest in the use of digital technology in the COVID-19 pandemic and concern about its possible implications for Papua New Guinea were observed in forum members on Facebook. The

		posts contained a combination of relevant information with skepticism about some of this information. The Facebook platform is an important vehicle of communication and information for users.
Ahmad; Murad[6] (2020)	Use of social media and panic generation Use of social media	There was a strong relationship between dissemination of content about the COVID-19 pandemic and the development of panic in the 516 social media users who were interviewed. Facebook has been touted as the main social media to spread panic.
Eghtesadi; Florea [32] (2020)	Social media limitations	Popular social media platforms (Facebook, Reddit and TikTok) lack scientific oversight, generating noise and false information. Its use is not generalizable for the entire population.
Ahmed et al.[33] (2020)	Causes of the pandemic found on social media Fighting misinformation	An analysis of tweets (10,140) urging that the cause of the emergence of the new coronavirus was linked to 5G mobile network towers, pointed out that 34.8% of tweets related 5G to the COVID-19 pandemic, 32.2% denounced such a relationship and 33% were general approaches that did not express opinions. Measures that can control the spread of disinformation are: the pronouncement of public authorities, governments, influencers on social media, authority figures about the fallacy of this news; reporting false content; not share information of another nature accompanied by the hashtag that helps to spread the untruth addressed.
Li; Bailey; Huynh; Chan[4] (2020)	The presence of misinformation Fighting misinformation	25% of YouTube videos analyzed in this study contained misleading information. Public health agencies should use YouTube better to provide timely and accurate information and minimize the spread of incorrect information.
D' Souza et al.[9] (2020)	Analysis of content related to COVID-19 Fighting misinformation	69.9% of YouTube videos were classified as useful and 8.8% as misleading. Efforts to disseminate accurate information from reliable sources are needed.
Dutta et al.[34] (2020)	Analysis of content related to COVID-19	52.5% of YouTube videos were informative, 23.75% were news updates and 8.33% were personal experiences. It was found that 10% of videos had clinically misleading information. Independent users

		contributed to 75% of misleading content. Content reliability and quality of most videos on COVID-19 and severe acute respiratory syndrome were considered unsatisfactory.
Khatri et al.[35] (2020)	Use of social media Fighting misinformation	YouTube has been considered an important platform for the dissemination of information. Videos that provide relevant health information in the context of the pandemic are below ideal. It is relevant that international health agencies and academic institutions disseminate more videos with information relevant to the population. It is of paramount importance for YouTube to consider screening and removing videos with misleading information to avoid panic in times of pandemic.
Basch et al.[36] (2020)	Analysis of content related to COVID-19	The most common topics in all videos screened, using Google Video, were death, mortality rate and anxiety around the COVID-19 outbreak. Important information on the prevention and spread of COVID-19 received little attention.
Fan et al.[37] (2020)	Analysis of content related to COVID-19	It was observed that there is low quality in the information. Mainly regarding treatment, the minority approaches prevention and treatment with high quality information and veracity. Online information mechanisms on COVID-19 are needed that express higher quality to educate the population correctly.
Szmuda et al.[38] (2020)	Analysis of content related to COVID-19	The information that circulates on the internet, for the most part, requires a higher level of education than the national average and, therefore, information about the COVID-19 pandemic is difficult to read and understand for the population in general.
Perlman et al.[39] (2020)	Use of social media and telemedicine	Automated digital solutions, as well as online care provided by a medical professional, can help provide health information and guidance during an epidemic. Interactions between digital services can provide information on the characteristics of new diseases. Integrating these tools can be an important resource for health professionals and policymakers.
Agbehadji et al.[40] (2020)	Use of technologies	It was observed that the models of technologies studied can help in screening, diagnosis, case prediction and contact screening in cases of COVID-19.

Discussion

In this scoping review, the literature mapping exposes the synthesis of studies that address the concept of the use of technologies in times of the COVID-19 pandemic by users and health professionals in the context of health promotion in PHC, considering the PCC strategy. Virtual technologies have gained more and more space in the daily lives of health professionals and users. The Internet, through community sites, social networks, discussion forums and home pages, enables the sharing and dissemination of knowledge, communication and social interaction. One does not have to be fanatical about these new digital technologies to understand their importance to postmodern society.[3]

> It turns out that, after being, throughout modernity, restrained by the imprisonment in individual identity and bricked behind the wall of private life, this nomadic drive finds a renewed force in postmodernity. Thus, with the help of development (e.g., Internet browsing), this archaism, i.e., this archetype, is an increasingly important element of social life[2:77]

Faced with the pandemic scenario, it appears that people are increasingly turning to technologies for various activities, such as the search for information. A study carried out in 17 countries showed a fair positive relationship between the new cases of COVID-19 reported worldwide on a daily basis with the global interest in telehealth. The same phenomenon was observed with the registration of new deaths.[7]

Among the numerous possibilities that the user can make use of, Google Videos,[36] Google AdWords and Google Trends stand out, which have been used as sources of information about the COVID-19 pandemic.[37] However, there is a predominance of health information available in the news[36] or of low quality, demonstrating the lack of knowledge about COVID-19.[37] It is noted that, in the virtual environment, often "the content does not matter, only the contingent is necessary".[2:95] A worrying fact is that the information available can influence people in health decision-making and, consequently, "affects the effectiveness and outcome of public health measures implemented by health departments".[37:13]

This means that information from untrustworthy social media sources can shape knowledge and behavior when misinformation and distrust are widespread.[30] In this sense, social networks such as Facebook, Twitter and WeChat are full of news about

SARS-CoV-2 and health education resources.[28] In addition to accessing external information, users of these platforms participate in discussions and conversations, expressing their opinions and presenting their own experiences.[29] However, they lack scientific oversight, generating noise and false information,[32] and people are far more likely to have their information from social media than from any other source.[6]

There is still limited evidence on how the social media infodemic has spread panic and affected the mental health of its users. A study of 516 social media users found a significant impact on the spread of fear and panic related to the COVID-19 outbreak, with a potential negative influence on people's mental health and psychological well-being. Facebook was the most used network to spread panic about the COVID-19 outbreak. Furthermore, the fact that people are unable to discern which information on social media is true and which is false has caused more rumors about the true nature of the epidemic.[6]

From another perspective, it is noted that online educational articles about COVID-19, for the most part, use scientific terminology that is difficult to be read and understood by the general population, which can result in misunderstanding and misinformation. However, to reduce the spread of the virus and the burden on the health system, it is necessary for individuals to have access to online information in an understandable way, for the adoption of correct protective measures, reducing anxiety and panic amidst the pandemic. The use of videos and infographics can be a facilitating alternative for people to understand health information.[38]

Digital technologies promote new ways of being together, which can be information or misinformation enablers depending on the source.[3] It is observed that when YouTube is used inappropriately, it represents a source of non-factual or misleading information,[4] able to confuse,[34] affect knowledge about COVID-19 and raise people's anxiety level.[9] Furthermore, reliable and accurate information often does not reach the majority of users,[9] and often "deceptive videos become more popular than helpful videos".[35:04] Therefore, public health agencies should also use YouTube to provide timely and accurate information and minimize the spread of incorrect information. This can play a significant role in the successful management of the COVID-19 pandemic.[28]

In light of the foregoing, YouTube can be considered a popular platform[35] or "a useful source of medical information about the COVID-19 pandemic".[9:935] Its strength, compared to other social media platforms, lies in its judicious use of audio and visual communication, making it readily accessible to individuals of all backgrounds. This virtual technology can be used by health professionals to promote educational actions to the population, in order to influence people's behavior change and disseminate high quality information. The education and co-participation of people are fundamental in the management of this pandemic, for compliance with public health measures.[4] However, YouTube is still little used by health professionals and managers.[4,34]

It is known that "electronic navigation will not fail to have an influence on ways of life and social imaginaries".[2:88] It is suggested that the use of virtual forums, to disseminate information and influence healthy behavior, is not restricted to reports of government actions and expectations.[31] Thus, a better understanding of social media platforms and their health data will help to extend their usefulness in public health.[29]

In line with the above and given the high rate of low-quality information, investment in the dissemination of reliable and accurate information is necessary,[9,16,30,34-35] derived from health professionals,[16] academic institutions and health agencies about the pandemic,[9,30,34-35] to control the spread of misinformation.[34]

The importance of this control is highlighted in a study, which analyzed a conspiracy theory and showed strategies to combat the spread of fake news. Popular theory linked 5G to the spread of news about COVID-19, leading to misinformation and the burning of 5G towers in the UK. In sum, the results revealed that understanding the drivers of fake news and fast paced policies aimed at isolating and reducing disinformation is key to combating it. In this way, public health authorities can advise citizens not to share or engage with incorrect information on social media, encouraging them to flag this information as inappropriate for social media companies. Furthermore, another method of neutralizing disinformation is to seek the help of influential public authorities and bodies, such as public figures, government accounts, relevant scientific experts, doctors or journalists, with a view to correcting incorrect information and counteracting the dissipation of fear among people.[33]

The precision in carrying out screening and diagnosis of COVID-19 cases, through

the telemonitoring or telemedicine strategy, demonstrated how technologies can help in the management of the public health crisis caused by the COVID-19 pandemic. Call centers were introduced in the health care field as a positive strategy to keep in touch with patients in social isolation. Interventions carried out through telephone calls can be effective in promoting health and increasing knowledge about health care.[27] Furthermore, artificial intelligence technologies have been and are being used to screen and identify the spread of the pandemic. The TraceTogether mobile app enables "community-based contact tracing, where devices exchange their proximity and duration information via Bluetooth signal".[40:08]

The K Health app, to support online care and self-management of COVID-19, can be used by doctors and health professionals to carry out assessment and counseling of users with mild or severe cases, referrals to secondary services, medical prescription, providing users with personalized and reliable health information about their diagnosis and clinical manifestations. This digital tool can lessen the burden on health systems by reducing the number of unnecessary hospitalizations.[39]

A study comparing patient and provider satisfaction between teleservice and face-to-face visits showed that the rapid implementation of this modality of health care, in response to the pandemic, showed high heterogeneity in its implementation across medical specialties.[19] It is noteworthy that the implementation of telemedicine in the face of the isolation scenario was beneficial for the non-interruption of health treatments, favoring a better recovery and rehabilitation of patients.[17, 20, 26]

On the other hand, when assessing professionals' opinion in the face of the new scenario, it is observed that dermatologists had a good knowledge of telemedicine; 77.2% of respondents felt that the tool should improve and increase communication between health care providers; 67.2% of participants estimated the possibility of performing tasks faster; 35% were skeptical and disagreed with the ability of telemedicine to improve clinical decisions.[21]

Another study carried out with health professionals pointed out that 96.2% considered the consultation by videoconference an adequate alternative for health care, especially in times of a pandemic. In addition to being beneficial to the patient, preventing the agglomeration and spread of SARS-CoV-2, it reduces waiting lists,

decreases workload and reduces costs. Regarding the negative aspects, the impossibility of carrying out physical examinations through video consultations and the technological difficulties, such as the lack of access for both patients and professionals, are highlighted.[25] Another study shows that telemedicine services reduced the risks of delayed hospitalization of users in home quarantine due to the progression of COVID-19.[24] However, health professionals fear that this distance caused by technology could create an environment of distrust for patients.[25]

Still from this perspective, when analyzing the telemedicine projects that are being carried out in Bangladesh, it is observed that a significant amount of people are using health services through different virtual platforms, among them: "cell phone, Facebook pages and web pages, online applications, Skype and other social media in the country".[38:06] Thus, in times of a pandemic, telemedicine emerges as an economic, accurate, safe, valid and acceptable tool, and, in some cases, a preferred form of consultation. Regarding the advantages pointed out by patients, there are convenience, not spending time and travel costs, reduction of delays in consultations and time off work.[23]

However, there are still some obstacles that prevent people from obtaining the full benefits of telemedicine services, as their use is not generalizable to the entire population.[32] There is a digital divide,[27] with consequences that especially affect low-income populations, those who live in rural areas, those with special needs, ethnic minorities and older adults.[18]

Regarding the sources of information that 385 cancer patients most trusted during the COVID-19 pandemic, those from the Ministry of Health (98%) and medical professionals (94%) were mentioned, agreeing with digital transformation to improve their service (91%). Some patients reported trusting other sources of information, such as WhatsApp (13%), Twitter (34%), Snapchat (17%), Instagram (14%) and Facebook (13%). The phone call was the preferred method of communication for patients.[22]

Considering the above, it is noted that "cultures interpenetrate and their various temporalities contaminate the ways of being and thinking".[41:148] Therefore, digital tools have the potential to be used for pandemic crisis management.[36] Thus, a central component of effective public health is communication with the media, the public,

influencers and decision makers.[8]

Massive mobilization measures to contain the global outbreak of COVID-19 have unleashed a wave of information that has been overwhelming in the medical community.[32] It is noted that Facebook favors the creation of links between Internet users;[3] however, even in the face of the numerous possibilities offered through technologies, it is emphasized that the social bond from virtual technologies is at the same time solid and dotted.[2]

The present scoping review was limited by a generalized analysis of the use of technologies and virtual social networks, used for health promotion in times of the COVID-19 pandemic, not being researched the specifics of each tool, as well as its suitability to the target group.

The results of this review can support strategies to enhance evidence, with a positive impact on health promotion for PHC users and families, to reduce the damage related to the circulation of fake news that opposes the protective and preventive measures in the fight against SARS-CoV-2.

Conclusion

This review exposes the scientific evidence available on technosociality in times of the COVID-19 pandemic, considering that technologies and virtual social networks are present in the daily life of PHC, denoting the wide use during the pandemic. Demonstrates the use for educational actions, prevention of risks and injuries and health promotion for the population. If, on the one hand, technology encompasses potential advances in scientific techniques and developments, on the other hand, there is a lag in the quality of content transmitted and inequality in technological access. However, the influence of virtual social networks on the behavior of individuals and, consequently, on their health condition is unquestionable.

The growing presence of technology in everyday life, while expanding the new possibilities of communication and information, generates a lack of credibility, because there is no inspection of the scientific validity of the contents that circulate on the internet. This fact becomes a challenge for public health, in the face of fake news, opposing the regulations of protective and preventive measures that are essential to

combat SARS-CoV-2.

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Authors' contributions

1 - Tamires Carolina Silva
Corresponding author

Nurse. Mestranda - E-mail: ta.csilva@hotmail.com
Contributed to database collection, data interpretation, manuscript writing and final version approval, responsibility for all aspects of the work in ensuring the accuracy and integrity of any part of the work.

2 - Leila Cristine do Nascimento
Nurse. Master's Degree Student - E-mail: leilacnasc@gmail.com
Contributed to database collection, data interpretation, manuscript writing and final version approval, responsibility for all aspects of the work in ensuring the accuracy and integrity of any part of the work.

3 - Bruna Moreira da Silva
Nursing Undergraduate Student -E-mail: brunnaamoreira@gmail.com
Contributed to database collection, data interpretation, manuscript writing and final version approval, responsibility for all aspects of the work in ensuring the accuracy and integrity of any part of the work.

4 - Daniela Priscila Oliveira do Vale Tafner
Nurse. Doctoral Degree in Nursing - E-mail: dani.tafner@uol.com.br
Contributed to intellectual content critical review and approval of the final version, responsibility for all aspects of the work in ensuring the accuracy and integrity of any part of the work.

5 - Tassiana Potrich
Nurse. Doctoral Degree in Nursing - E-mail: tassiana.potrich@uffs.edu.br
Contributed to intellectual content critical review and approval of the final version, responsibility for all aspects of the work in ensuring the accuracy and integrity of any part of the work.

6 - Selma Maria da Fonseca Viegas
Nurse. Doctoral and Post-Doctoral Degrees in Nursing - E-mail: selmaviegas@ufsj.edu.br
Contributed to study conception and design, collection in databases, data interpretation, article writing and approval of the final version, responsibility for all aspects of the work in ensuring the accuracy and integrity of any part of the work.

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