

TECHNOSOCIALITY AND HEALTH PROMOTION IN THE DAILY LIVES OF PRIMARY CARE USERS: A SCOPING REVIEW

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ABSTRACT

Objective: to map available evidence on the use of technologies by Primary Health Care users in the context of health promotion.

Method: this is a scoping review according to Joanna Briggs Institute, and the recommendations of the international guide Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews were followed. The PCC strategy (participants, concept and context) was used. The search in the databases was carried out from January to April 2020.

Results: a total of 5,267 studies were retrieved and 28 articles were selected for review. The article origin was diverse, with the largest number being from the United States of America (7), the predominant language is English, the year was 2018 and the level of evidence 2. Studies show that users obtain benefits in health care through the use of technologies.

Conclusion: health interventions, using technology, positively impact people's behavior and lifestyle, focusing on the prevention and control of chronic diseases. It is noteworthy that technologies used in isolation cannot overcome behavioral barriers and their use does not replace one-to-one care and monitoring.

DESCRIPTORS: Technology. Primary health care. Social networking. Mobile applications. Health promotion. Health behavior.

HOW CITED: Nascimento LC, Campos AM, Figueiredo SB, Nitschke RG, Moncada MJA, Viegas SMF. Technosociality and health promotion in the daily lives of primary care users: a scoping review. *Texto Contexto Enferm* [Internet]. 2021 [cited YEAR MONTH DAY]; 30:e20200675. Available from: <https://doi.org/10.1590/1980-265X-TCE-2020-0675>

TECNOSSOCIALIDADE E PROMOÇÃO DA SAÚDE NO QUOTIDIANO DE USUÁRIOS DA ATENÇÃO PRIMÁRIA: SCOPING REVIEW

RESUMO

Objetivo: mapear a evidência disponível sobre o uso de tecnologias por usuários da Atenção Primária à Saúde no contexto da promoção da saúde.

Método: trata-se de um *scoping review* segundo *Joanna Briggs Institute*, e foram seguidas as recomendações do guia internacional *Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews* (PRISMA-ScR). Foi utilizada a estratégia PCC (*participants, concept e context*). A busca nas bases de dados foi realizada no período de janeiro a abril de 2020.

Resultados: foram recuperados um total de 5.267 estudos e selecionados 28 artigos para a revisão. A origem dos artigos foi diversa, sendo dos Estados Unidos da América o maior número (7), o idioma predominante é o inglês, o ano foi o de 2018 e o nível de evidência 2. Os estudos evidenciam que os usuários obtêm benefícios no cuidado à saúde pelo uso das tecnologias.

Conclusão: as intervenções em saúde, com uso de tecnologias, impactam positivamente comportamentos e estilos de vida das pessoas, focando na prevenção e controle de doenças crônicas. Ressalta-se que as tecnologias usadas de forma isolada não conseguem superar as barreiras comportamentais e seu uso não substitui o atendimento e acompanhamento presencial.

DESCRITORES: Tecnologia. Atenção primária à saúde. Rede social. Aplicativos móveis. Promoção da saúde. Comportamentos relacionados com a saúde.

TECNOSOCIALIDAD Y PROMOCIÓN DE LA SALUD EN LA VIDA DIARIA DE LOS USUARIOS DE ATENCIÓN PRIMARIA: SCOPING REVIEW

RESUMEN

Objetivo: mapear la evidencia disponible sobre el uso de tecnologías por los usuarios de la Atención Primaria de Salud en el contexto de la promoción de la salud.

Método: esta es una revisión de alcance según el Instituto Joanna Briggs, y se siguieron las recomendaciones de la guía internacional *Preferred Reporting Items for Systematic Reviews* y la extensión de metaanálisis para *Scoping Reviews* (PRISMA-ScR). Se utilizó la estrategia PCC (*participants, concept y context*). La búsqueda en las bases de datos se realizó de enero a abril de 2020.

Resultados: se recuperaron un total de 5.267 estudios y se seleccionaron 28 artículos para su revisión. El origen de los artículos fue diverso, con el mayor número de los Estados Unidos de América (7), el idioma predominante es el inglés, el año fue 2018 y el nivel de evidencia 2. Estudios muestran que los usuarios obtienen beneficios en la atención a la salud a través de el uso de tecnologías.

Conclusión: las intervenciones en salud, utilizando tecnología, impactan positivamente en el comportamiento y estilos de vida de las personas, enfocándose en la prevención y control de enfermedades crónicas. Cabe señalar que las tecnologías utilizadas de forma aislada no pueden superar las barreras conductuales y su uso no reemplaza la atención y el seguimiento cara a cara.

DESCRITORES: Tecnología. Atención primaria de la salud. Red social. Aplicaciones móviles. Promoción de la salud. Conductas relacionadas con la salud.

INTRODUCTION

Technosociality can be characterized as a mode of social interaction through technology, i.e., the sociality present in the virtual space¹. Gradually, but persistently, the various interactive media are gaining ground and imposing themselves today both in terms of administrative and bureaucratic services and daily interactions, extending to the realms of play². When addressing post-modernity, Maffesoli mentions one of its most striking characteristics: the advancement and development of technology, defining it as the synergy between archaic and technological development, an immersion in a world reenchanting by new technologies that enhance this process. The power of these communication networks lies in their connective reconnection character, favoring a mixture and stimulating the emergence of experiences².

Present in everyday life, information and communication technology (ICT) is an enabler to support primary health care. It is essential to adapt to new technologies in health actions and health promotion through virtual means and no longer just as a one-to-one service³.

In this context, health promotion is defined by Brazilian National Policy for Health Promotion (PNPS - *Política Nacional de Promoção da Saúde*) as “a set of strategies and ways of producing health, with intra-sectoral articulation and cooperation. Admitting the other policies and technologies present aiming at equity and quality of life, with reduction of vulnerabilities resulting from social, economic, political, cultural and environmental determinants”^{4:7}.

Among the PNPS principles and values, there is the recognition of “subjectivity of people and collectives in the process of care and care in defense of health and life”^{4:10}. Furthermore, the transversality of this policy proposes that the production of health and care should favor humanized care practices that recognize and value interdisciplinarity with theoretically systematized knowledge and empirical knowledge, considering real life and the determinants of the health-illness process⁴. It is noteworthy that health promotion practices can strengthen forces for healthier choices in everyday life, resulting in the strengthening of individuals and the collective, expanding their autonomy⁵.

Progressively, the means of communication/information become more attractive due to their potential to reach a large proportion of the population, and, at the same time, they have a relatively low cost for actions to promote health and care in Primary Health Care (PHC)⁶.

The introduction of evidence-based digital interventions in clinical practice can promote healthier life choices. These interventions must be carried out in a way that allows personalized meetings with users. Digital tools make it easy to change people’s behavior and lifestyle⁷.

The relevance of this study is based on the advancement of technology and its use in everyday life by people in post-modernity, mapping the state of the art on this theme and the subsidies for the promotion of health of people/families registered in PHC. In this study, technosociality is considered to be the use of virtual social networks and health technologies for health promotion actions in the daily lives of PHC users, and this use can be by users as well as by health professionals when promoting health actions. Therefore, the question is: what evidence is available on the use of technologies by PHC users in the context of health promotion?

This study aimed to map the available evidence on the use of technologies by PHC users in the context of health promotion.

METHOD

This is a scoping review according to Joanna Briggs Institute and the recommendations of the international guide Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)⁸, with research protocol registered in Open Science Framework (<https://osf.io/gxr7u/>).

The scoping review can be characterized as a study method that aims to explore the main concepts of the object in question, by mapping these concepts and obtaining comprehensive results, ascertaining its dimension, scope and nature of study, condense and publish results indicating existing knowledge gaps⁸⁻⁹.

According to the Joanna Briggs Institute, “evidence synthesis answers research questions by considering data approaches other than quantitative, such as qualitative and economic evidence, when considering the results of well-designed research studies of any methodology as potential sources of credible evidence”^{10:142}.

The method proposed by the Joanna Briggs Institute, Reviewers Manual 2020¹¹ establishes eight steps: 1) identification of the research question; 2) identification of inclusion and exclusion criteria; 4) identification of relevant studies; 3) selection of studies; 5) assessment of the quality of studies; 6) data extraction; 7) grouping, synthesis and presentation of data; 8) presentation and interpretation of results, including a process to establish certainty to the body of evidence and using the Grading of Recommendations Assessment, Development and Evaluation system and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA-ScR)⁸. These steps were adopted in the investigation of the state of the art of the theme “technossociality in the daily lives of PHC users and health promotion in post-modern times”.

The survey was carried out considering the time span from 2016 to 2019. The civil framework of the internet in Brazil was given by Law 12.965 of April 23, 2014, which defines guarantees, principles, rights and duties for the use of the internet in Brazil¹², and by Decree 8771 of May 11, 2016, which provides for various topics dealt with in Law 12.965/2014, that depended on regulation after two years of discussion¹³.

The search was in the following databases: U.S. National Library of Medicine (PubMed), SciELO (Scientific Electronic Library Online), Scopus, Web of Science, Cumulative Index to Nursing and Allied Health Literature (CINAHL), LILACS, Cochrane Library.

Full articles available, studies empirical and theoretical, in Portuguese, Spanish and English were included. The PCC strategy (participants, concept and context) was used. P (participants) represented the users and also PHC professionals who used technologies to promote health actions in PHC; C (concept) represented the use of technologies; C (context) represented the impact on health promotion. Unfinished studies and those that did not correspond to the research question, as well as theses, dissertations and monographs, were excluded.

The search in the databases was carried out from January to April 2020 using the following descriptors and Boolean operators: “Primary Health Care” AND “Technology” AND “Health Promotion”; “Primary Health Care” AND “Social Networking” AND “Health Promotion”; “Primary Health Care” AND “Mobile applications” AND “Health Promotion”; “Primary Health Care” AND “Technology” AND “Health Behavior”; “Primary Health Care” AND “Mobile applications”; “Primary Health Care” AND “Health Promotion”; “Primary Health Care” AND “Technology”; “Technology” AND “Health Behavior”.

The selection of scientific articles was carried out by three researchers, with a date and time schedule for simultaneous search. The selection of studies was based on a strategy of combining descriptors and applying the following filters: Portuguese, Spanish and English; full text available; and publication in the timeline from 2016 to 2019. Duplicate results were manually excluded. Titles

and descriptors were read in order to verify the correspondence of the articles to the research question. Then, abstracts, introductions and conclusions of each study were read, in order to assess its relevance to the research and whether the inclusion or exclusion criteria were met. Subsequently, pre-selected articles were read in full, assessing them more precisely as to their relevance to the topic under study and if the inclusion and exclusion criteria were met, excluding articles that did not answer the research question. From the selected articles, relevant data for interpretation and discussion of results were extracted.

Procedure for summarizing and extracting data

After reading the studies in full and applying the inclusion and exclusion criteria, data was extracted from the articles selected for this scoping review. The studies were qualitatively analyzed and classified by degree of recommendation and level of evidence, according to the classification developed by Evidence-Based Practice (EBP), used to make clinical decisions about individual patient care. This hierarchy guides the criteria for classifying studies by levels of evidence for different types and research methods¹⁴.

There are five levels for characterizing the strength of evidence: level 1, strong evidence from at least one systematic review of multiple well-designed and controlled randomized studies; level 2, strong evidence from at least one randomized trial with an appropriate design, adequate size and controlled; level 3, evidence from non-randomized and well-designed studies, such as a single pre- and post-cohort group, time series or paired case-control; level 4, evidence of well-designed, non-experimental studies carried out in more than one research group or center; level 5, opinions based on clinical evidence from respected authorities, expert committee reports or descriptive studies¹⁵.

Results were extracted by three reviewers. The presentation of results includes title, level of evidence, databases, country, type of study, number of participants (sample), year of publication, objective and main conclusions. In case of disagreement between the three reviewers, a fourth was consulted.

RESULTS

The results of the initial search in the databases resulted in a total of 5,267 studies. Thus, 173 works were pre-selected for full reading; of these, 145 were excluded, making up the sample of this review 28 articles that address the use of technologies by users and/or professionals of PHC and the impact on health promotion. Figure 1 shows the process of searching, deleting and selecting retrieved articles.

The results were presented descriptively in Chart 1, including title, year of publication, level of evidence, country of origin, type of study, number of participants (sample), objective and main conclusions.

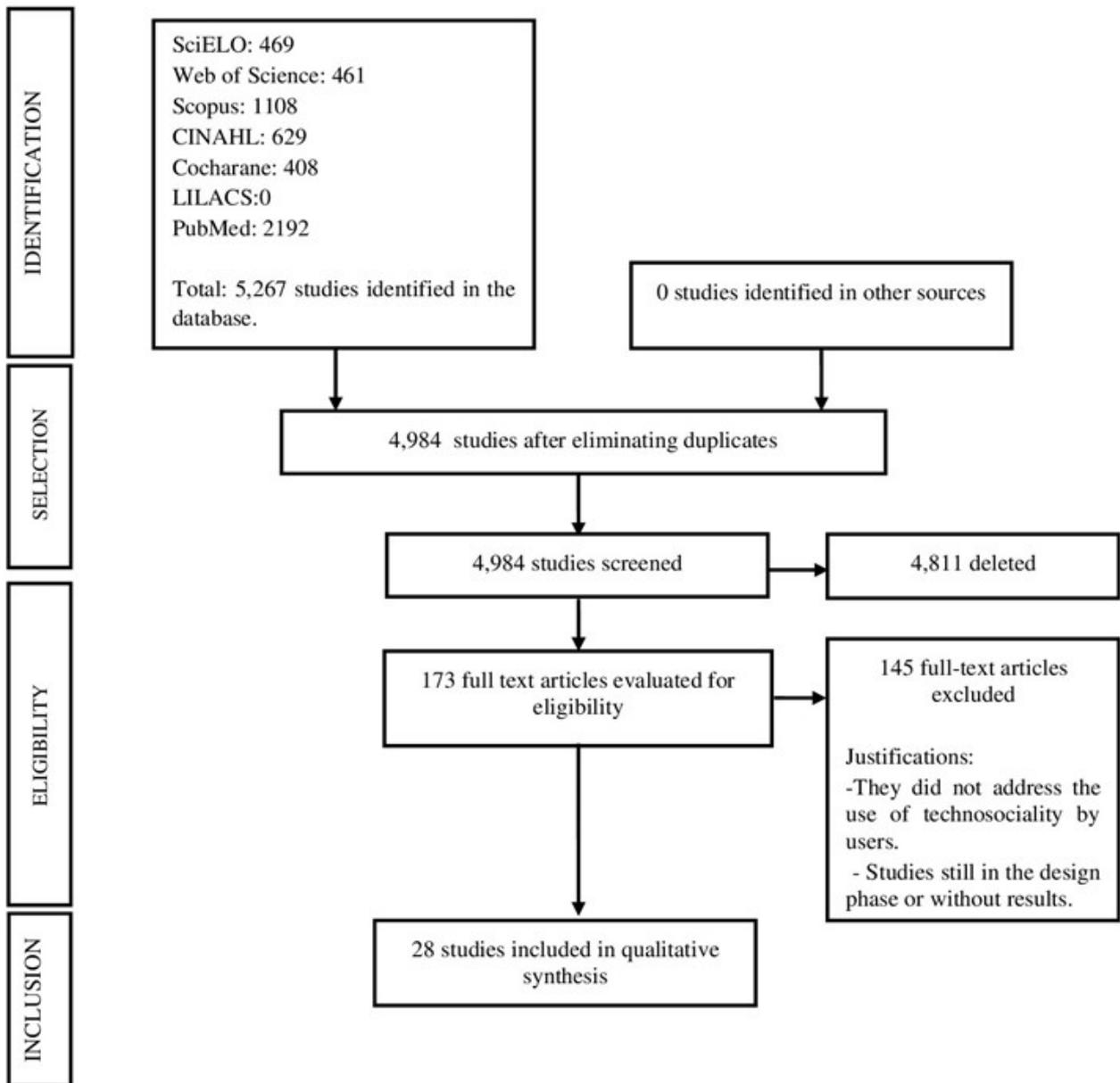


Figure 1 – Flowchart of the search, exclusion and selection process of retrieved articles adapted from PRISMA-ScR⁸. Divinópolis, MG, Brazil, 2021.

Most selected studies were published in 2018 (14 articles), followed by eight studies in 2019, three in 2017 and three in 2016.

Regarding the level of evidence, five articles were level 1, 10 articles were level 2, seven articles were level 3, three articles were level 4 and three articles were level 5.

The articles came from different countries: United States of America (seven studies), Australia (six studies), United Kingdom (five studies), Brazil (three studies), China (one study), Sweden (two studies), Canada (two studies), Spain (one study) and Ireland (a study).

Chart 1 – Description of studies included according to title, year of publication, level of evidence, country of origin, type of study, number of participants, objective and main conclusions, Divinópolis, MG, Brazil, 2021.

Sample	Title /Level of evidence// Country/Study design/ Number of participants (Sample)	Study objective	Main conclusions
Oliver-Mora; Iniguez-Rueda ³ (2017)	El uso de las tecnologías de la información y la comunicación (TIC) en los centros de salud: la visión de los profesionales en Cataluña, España. Level 3 Spain Qualitative research 11 participants.	Identify experiences using ICT that are able to improve the public management of health centers in Catalonia (Spain), in addition to being generated from the bottom up by primary health professionals.	When studying the experiences in the use of ICT capable of improving the public management of health centers, in Catalonia, it was argued that improving management does not mean reducing their budgets or the working conditions of their workers, but improving the experiences that contribute to improve its social, organizational and technical dynamics.
Carson-Chahhoud et al. ⁶ (2017)	Mass media interventions for preventing smoking in young people Level 2 Australia Published review update.	Assess the effects of mass media interventions on youth smoking prevention.	Mass media interventions, such as campaigns to prevent or reduce tobacco use among young people, have the potential to reach and change the knowledge, attitudes and behaviors of a large proportion of the community.
Berman et al. ⁷ (2018)	Clinician experiences of healthy lifestyle promotion and perceptions of digital interventions as complementary tools for lifestyle behavior change in primary care Level 3 Sweden Qualitative study 10 PHC clinics participated in the study.	Explore PHC physicians' perceptions of promoting a healthy lifestyle with or without digital screening and intervention.	Clarify clinicians' perceptions about promoting healthier lifestyles, with or without digital intervention, in PHC. The introduction of digital tools to promote a healthier life is complementary to one-to-one meetings, in order to maintain significance in the patient-clinical meeting.
Subasinghe et al. ¹⁶ (2019)	Using mobile technology to improve bone-related lifestyle risk factors in young women with low bone mineral density: Feasibility randomized controlled trial Level 2 Australia Randomized trial with 35 participants.	Determine the acceptability and feasibility of an mHealth intervention called Tap4Bone in improving health behaviors associated with osteoporosis risk in young women.	Mobile health intervention is an acceptable and viable method of improving health behaviors. The far-reaching capabilities of mobile technologies can be used to enable low-cost interventions and support interactivity.

Chart 1 – Cont.

Sample	Title /Level of evidence// Country/Study design/ Number of participants (Sample)	Study objective	Main conclusions
Stevenson et al. ¹⁷ (2019)	eHealth interventions for people with chronic kidney disease Level 2 Australia Literature review 43 studies with 6,617 participants.	Assess the benefits and harms of using eHealth interventions to change health behaviors in people with chronic kidney disease.	It is uncertain whether the use of eHealth interventions improves outcomes for people with chronic kidney disease, but it is known that eHealth interventions can improve dietary sodium intake management and fluid management.
Lee et al. ¹⁸ (2018)	Effective behavioral intervention strategies using mobile health applications for chronic disease management: A systematic review Level 1 United States Systematic review 12 controlled randomized trials.	Examine the effectiveness of mHealth interventions on process measures, as well as health outcomes in randomized controlled trials, to improve chronic disease management.	Most studies using mHealth interventions have shown some improvement in health outcomes in patients with chronic illnesses. Favorable factors in mHealth approaches (mHealth) are, among others, frequent and accurate monitoring of symptoms and improved communication between patients and healthcare professionals, resulting in improved self-management.
Glynn et al. ¹⁹ (2018)	Implementation of the SMART MOVE intervention in primary care: a qualitative study using normalisation process theory Level 2 Ireland Qualitative research with 14 participants.	Conduct a theoretically informed analysis using the theory of the normalization process, barriers and potential levers for implementing an mHealth intervention to promote physical activity in PHC.	It is an application for smartphones, with the objective of promoting physical activity as part of a project of Transnational Solutions for International Telemedicine. Its use has successfully promoted physical activity among users of PHC services and service providers.
Jones et al. ²⁰ (2018)	Investigating the Perceptions of Primary Care Dietitians on the Potential for Information Technology in the Workplace: Qualitative study Level 4 Australia Qualitative study with 20 participants.	Explore the perceptions of PHC nutritionists about the use of information technology in their workplace.	The PHC scenario is an effective avenue for the management and prevention of chronic diseases. Nutritionists help manage modifiable risk factors. They realized that information technology brings benefits to PHC professionals and patients. But to achieve the optimal benefit, support is needed to overcome barriers and integrate information technology into practice.

Chart 1 – Cont.

Sample	Title /Level of evidence// Country/Study design/ Number of participants (Sample)	Study objective	Main conclusions
Bennett et al. ²¹ (2018)	Effectiveness of an App and Provider Counseling for Obesity Treatment in Primary Care Level 2 USA Randomized controlled trial 351 participants.	Assess the effectiveness of an app and provider counseling for the treatment of obesity in PHC.	Digital healthcare approaches promise to extend the reach of highly personalized, low-cost, evidence-based obesity treatments to a variety of clinical care settings. They compare the effectiveness of usual care to a digital obesity treatment, combined with counseling from primary and auxiliary care providers, 12-month weight change, among patients with socioeconomic disadvantage and high risk of cardiovascular disease.
Bengtssona et al. ²² (2018)	Patient contributions during primary care consultations for hypertension after self-reporting via a mobile phone self-management support system Level 4 Sweden Qualitative exploratory study 27 participants.	Describe the structure and contributions of patients to follow-up consultations after eight weeks of self-report through a support system for self-management of hypertension by cell phone.	The cell phone self-management support system and its concrete visual resources can support patients' active involvement in health consultations for the management of hypertension in PHC.
Taki et al. ²³ (2019)	Consumer engagement in mobile application (app) interventions focused on supporting infant feeding practices for early prevention of childhood obesity Level 3 Australia 1st Study: cross-sectional research, 107 pregnant women participated. 2nd Study: qualitative study with 29 mothers of babies <1 year old.	Describe two independent studies that investigated the perceptions, interest and experiences of mothers or pregnant women with technological devices, apps and websites on infant feeding practices.	Applications contribute as one of the many sources of information in health and to promote health, when professionals are involved for proper use. The use of apps is acceptable, from the perspective of mothers, to promote healthy infant feeding practices.
Mascarenhas et al. ²⁴ (2018)	Increasing physical activity in mothers using video exercise groups and exercise mobile apps: randomized controlled trial Level 2 United States Randomized trial with 64 participants.	Test the feasibility, acceptability, and effectiveness of an individually adaptive and socially supportive physical activity intervention, incorporating video conferencing and mobile apps for mothers.	Digital technology interventions represent a convenient, cost-effective, and scalable delivery mechanism for delivering interventions. However, new technologies alone cannot overcome barriers to behavior change.

Chart 1 – Cont.

Sample	Title /Level of evidence// Country/Study design/ Number of participants (Sample)	Study objective	Main conclusions
Pinto; Rocha ²⁵ (2016)	Innovations in Primary Health Care: the use of communications technology and information tools to support local management Level 5 Brazil Descriptive case study carried out in 16 Technology Observatories.	Describe the results of research carried out in 16 Information Technology and Communication in Health Observatories.	Social media have been used in various contexts in order to streamline the flow of information and data for decision making, contributing to the production of knowledge in networks and expanding access to health services through communication channels. As perspectives, the possibility of using Distance Learning tools can provide evidence for information and decision-making in the health area.
Milward et al. ²⁶ (2018)	Developing typologies of user engagement with the BRANCH alcohol-harm reduction smartphone app: Qualitative study Level 3 United Kingdom Qualitative study 20 participants.	<ul style="list-style-type: none"> - Understand why and how participants engaged with the BRANCH app; - Explore enablers and barriers with the app's features; - Explore how the BRANCH app impacted drinking behavior; - Use data to identify application user typologies in terms of engagement behaviors; - Identify future design implications of the eSBI application. 	Electronic screening and brief intervention (eSBI) applications with people using alcohol can serve as a tool that prevents individuals from developing more serious conditions related to alcohol use.
Kaner et al. ²⁷ (2017)	Personalized digital interventions for reducing hazardous and harmful alcohol consumption in community-dwelling populations Level 1 United Kingdom Literature review 57 studies that randomized a total of 34,390 participants.	Assess the effectiveness and cost-effectiveness of digital interventions to reduce hazardous and harmful alcohol consumption, alcohol-related problems, or both in people who live in and are recruited from the community.	Technological innovations allow people to interact via computer, mobile device or smartphone with digital interventions designed to solve alcohol consumption problems. There is medium-quality evidence that digital interventions can decrease alcohol consumption by an average of up to three standard drinks per week compared to control participants.

Chart 1 – Cont.

Sample	Title /Level of evidence// Country/Study design/ Number of participants (Sample)	Study objective	Main conclusions
Tait; Kirkman; Schaub ²⁸ (2018)	The Participatory Health Promotion Mobile App Addressing Alcohol Use Problems (The Daybreak Program): Protocol for a Randomized Controlled Trial Level 1 Australia Randomized clinical trial 467 participants.	Systematically evaluate different versions of the Hello Sunday Morning Daybreak program (with and without coaching support) in reducing risky alcohol use.	The Hello Sunday Morning blog program asks participants to publicly set a personal goal to stop drinking or reduce their drinking for a specified period, recording their reflections and progress on blogs and social media. Daybreak is Hello Sunday Morning's evidence-based behavior change program designed to support people who want to change their relationship with alcohol.
Gomes et al. ²⁹ (2019)	Evaluation of mobile Apps for health promotion of pregnant women with preeclampsia Level 5 Brazil Evaluative study of mobile applications available on platforms (iOS and Android).	"Evaluate the mobile Apps available about PE in the main operating systems for the health promotion of pregnant women" ^{28:276}	The use of health applications is due to their low cost, increasing access to health information about healthy lifestyle and habits, diseases and their respective treatments.
Silva et al. ³⁰ (2019)	Mobile health technology for gestational care: evaluation of the GestAção's app Level 3 Brazil Evaluative, applied, methodological, quantitative-qualitative study 13 pregnant women.	"Evaluate the GestAção application, based on the experience of pregnant women use" ^{29:280}	The use of technology by mobile devices is a reality that has transformed people's daily lives through differentiated learning and entertainment experiences. <i>GestAção</i> is a technological tool aimed at empowering pregnant women about gestational health care. It contains information about the stages of pregnancy associated with easy-to-understand content, as well as resources to monitor maternal health and fetal evolution.
Halili et al. ³¹ (2018)	Development and pilot evaluation of a pregnancy-specific mobile health tool: a qualitative investigation of SmartMoms Canada Level 3 Canada Qualitative research 17 participants.	Implement a qualitative and descriptive research design to assess the responsiveness, functionality of the SmartMoms Canada app.	Women of childbearing age have adopted health information technology for counseling related to pregnancy, as communication in prenatal consultations is scarce and brief. Pregnant women and mothers highly value using online sources to support their pregnancy information needs. MHealth tools (mHealth) have the potential to reduce excessive gestational weight gain, providing reliable guidance to expectant mothers, ultimately improving the health outcomes of mothers and babies.

Chart 1 – Cont.

Sample	Title /Level of evidence// Country/Study design/ Number of participants (Sample)	Study objective	Main conclusions
Badawy et al. ³² (2019)	Computer and mobile technology interventions to promote medication adherence and disease management in people with thalassemia Level 1 United States Literature review with 25 studies.	Identify and evaluate the effects of computer and mobile technology interventions designed to facilitate medication adherence and disease management in individuals with thalassemia.	It was based on the identification and assessment of the effects of interventions on computers and mobile technologies designed to facilitate medication adherence and disease management in individuals with thalassemia. Due to the lack of evidence, it is recommended to carry out randomized clinical trials on the effect of technological interventions on adherence to iron chelation therapy in people with thalassemia.
Blease et al. ³³ (2018)	Computerization and the future of primary care: A survey of general practitioners in the UK. Level 2 United Kingdom Cross-sectional online survey with 1,474 participants.	Describe the views of British general practitioners on the potential of future technology to replace key tasks performed in PHC.	Most UK general practitioners are skeptical about the potential of future technology to perform primary care tasks as well as or better than humans. However, respondents were optimistic that, in the near future, the technology would have the ability to completely replace the fulfillment of administrative tasks related to patient documentation in PHC.
Maniatopoulos et al. ³⁴ (2019)	Negotiating commissioning pathways for the successful implementation of innovative health technology in primary care Level 3 United Kingdom Empirical case study 24 participants.	Explore the process by which commissioning organizations make their decisions to commission innovative health technologies.	Commissioning is a decision-making process whereby public services are planned, contracted and monitored to meet the needs of users/population. It involves activities that range from assessing health needs to specifying the service and negotiating or purchasing contracts, with continuous quality assessment. It is necessary to explore the processes by which commissioners make their decisions to commission a path to new diagnostic technology in PHC practice.
Vann et al. ³⁵ (2018)	Patient reminder and recall interventions to improve immunization rates Level 2 United States Literature review with 75 studies	Evaluate and compare the effectiveness of various types of patient reminders and recall interventions to improve immunization receipts.	To increase vaccine coverage levels, the intervention strategy is used 'reminder systems' or patient recall, including telephone calls and automatic dialing, letters, postcards, text messages.

Chart 1 – Cont.

Sample	Title /Level of evidence// Country/Study design/ Number of participants (Sample)	Study objective	Main conclusions
Gray et al. ³⁶ (2018)	Using information communication technology in models of integrated community-based primary health care: learning from the iCOACH case studies Level 2 Canada Comparative multiple case study 137 participants.	Explore how ICT are used to support integrated care activities and organizational and environmental barriers and enablers to their adoption.	ICT is a critical enabler of integrated community-based PHC models, but little is known about how existing technologies were used to support new integrated service models. Technological limitations prevent more innovative uses of technology that could withstand the disruption needed to improve care delivery.
Wu et al. ³⁷ (2019)	The effectiveness of using a WeChat account to improve exclusive breastfeeding in Huzhu County Qinghai Province, China: protocol for a randomized control trial Level 2 China Case -control study with 200 pregnant women.	Describe the study protocol of a WeChat intervention aimed at promoting breastfeeding in rural areas in China.	WeChat is considered one of the biggest social media platforms in China. It is a free, all-in-one communication app, widely used to send text and voice messages, video calls, share photos and 'moments' (updates on someone's everyday life) and play games.
Sin et al. ³⁸ (2018)	eHealth interventions for family carers of people with long term illness: A promising approach? Level 1 United Kingdom Systematic review with 78 studies.	Conduct a comprehensive systematic review of eHealth and mHealth interventions for family caregivers of people with long-term illness.	<u>eHealth</u> interventions for caregivers of people with long-term illnesses have high satisfaction and acceptability rates. The understanding of technologies should improve interventions, improving the outcome of caregivers. The approach comprises psychoeducational interventions carried out online with complementary modes of communication such as network support with professionals and colleagues.
Garg et al. ³⁹ (2016)	Qualitative analysis of programmatic initiatives to text patients with mobile devices in resource-limited health systems Level 5 United States Qualitative analysis 75 participants.	Understand why text messages are not widely used to improve medical services; Identify enablers and barriers to implementation in real-world safety-net configurations.	Text messaging is an affordable, ubiquitous and emerging technology that can help healthcare systems improve the quality of healthcare services. Improve the robustness of clinical text messaging applications in the long run will require more infrastructure investment.

Sample	Title /Level of evidence// Country/Study design/ Number of participants (Sample)	Study objective	Main conclusions
Naples et al. ⁴⁰ (2016)	Perceptions of clinicians and staff about the use of digital technology in primary care: qualitative interviews prior to implementation of a computer-facilitated 5As intervention Level 4 United States Qualitative research 35 participants.	Identify factors from the perspectives of primary care providers and clinical staff that were likely to influence the introduction of digital technology and a CF5As smoking cessation counseling intervention.	Using a 5As model (ask, advise, assess, help, organize eg CF5As), the aim was to identify factors from the perspectives of primary care providers that likely influenced the introduction of digital technology and a counseling intervention for smoking cessation. The identification of factors that promote and hinder the adoption of CF5As could inform the implementation of other behavioral health interventions in PHC.

DISCUSSION

Health interventions using technology are increasingly common and valued in the daily lives of people and families in the context of PHC. In the studies selected for this review, users report benefits from the use of technologies for self-care and health interventions. Its success, in part, is due to the fact that users are increasingly connected and the ease of access, in addition to easily adapting to their routine. Health interventions were positive in the daily awareness of people's behaviors and lifestyle. It helped them spark a preventive focus on health, fitness, and exercise for weight loss. The health professional figure is reported as a possible enhancer of results, especially in providing support, encouragement and help to achieve healthier behaviors and in self-management of chronic diseases¹⁶.

There has been a considerable increase, worldwide, in the use of technologies in eHealth interventions, such as Telehealth, in the use of mobile or tablet applications, text messages or e-mail; electronic monitors, internet/websites and video or DVD. These resources are intended to improve the management of chronic diseases and the outcomes of therapy and/or patient follow-up, offering opportunities to improve health behaviors¹⁷. Positive results were observed in interventions for chronic diseases with the use of mobile technologies, such as asthma, cancer, cardiovascular diseases, chronic pain, spina bifida or Parkinson's disease. The mHealth approach is through automated text reminders, frequent and accurate symptom monitoring and improved communication, improved self-management of chronic diseases. mHealth shows itself with an optimistic future¹⁸.

In the Irish context, a smartphone app offered a clearly defined and quantifiable plan to increase exercise over previous unstructured approaches that were unsuccessful. However, some barriers are highlighted, such as technical issues, battery drain, literacy and limited use of smartphones among older populations¹⁹.

The use of health technologies is in many ways. The perception of Australian nutritionists is that information technology has been beneficial in initiating patient education prior to consultations, increasing the efficiency of the subsequent consultation, valuable for patient education and useful in helping persons to track their eating behavior and the progress between consultations²⁰. Digital obesity treatment, integrated with health system resources and PHC services, can produce clinically significant weight loss outcomes among socioeconomically disadvantaged patients at high risk for cardiovascular disease²¹.

A study noted strengths in relation to mobile apps recorded by patient self-reports, checked by stored data that is freely accessible to patients and their healthcare professionals. Through login-restricted feedback, patients are also able to examine how their self-generated blood pressure and pulse measurements relate to their symptoms, stress, and physical activity²².

A survey carried out in Australia of 107 pregnant women who use the internet to search sites that provide information on infant feeding showed that mothers' group forums or blogs are used to find solutions on infant feeding issues. However, they manifest the need for updated and accurate guidance and information. Interventions proved to be beneficial, regardless of users' socioeconomic status. This is relevant, as there are health disparities that exist between people, considering their sociodemographic condition. There is great potential for professionals to get involved in application development, with the aim of promoting health in the early years of life and in general. However, some negative feelings, upon receiving information, were aroused, highlighting the feeling of guilt of users for their feeding practice²³.

A study conducted in the United States identified, through videoconferencing and mobile apps for mothers, the feasibility, acceptability and effectiveness of an adaptive physical activity intervention, with 86% satisfaction. All mothers said they would recommend it to others and that social support provided increased physical activity and a significant decrease in depression among women who were inactive. They reported that the most significant impact of their participation was increasing their fitness levels (36%), being a good role model for their children (14%), improving their mood (11%), and feeling better with their body (7%)^{24:179}. Nevertheless, it is highlighted that, many times, new technologies alone cannot overcome the barriers to changing behavior²⁴.

Information technology makes it possible to capture daily work with ease and speed of access to documents and exchange of experiences in health units. It makes it possible to measure the educational actions of health professionals and permanent or continuing education²⁵.

In the UK, the use of the app by PHC users, in order to reduce harmful alcohol consumption, showed that the main motivations for using the app were not to reduce, but to monitor and track alcohol use and spending and find out whether or not they were at risk from the harmful effects of alcohol. Users had a positive emotional response, feeling empowered to control their daily lives²⁶. Another survey conducted in the United Kingdom used interventions through digital media, similarly to the resources of one-to-one interventions, in order to motivate users to reduce alcohol consumption. Over time, it was possible to notice the involvement in the creation of coping strategies and plans by the users²⁷. In Australia, intervention for people who wanted to change their relationship with alcohol was based on goal setting, reflection on the mood of participants, and the possibility of support from peer groups²⁸.

An example of the applicability of the use of technologies for health promotion was verified in an application for pregnant women, which, according to the users, had important information and clarified any doubts that arose. It was especially useful in guiding these pregnant women about hypertensive disorders in the gestational period in order to know the risk factors and modify the possible ones. The application enabled pregnant women to recognize symptoms to seek assistance as quickly as possible, enabling earlier detection and more successful clinical management²⁹.

Health professionals' role is to enhance the effectiveness of the application in prenatal care, being more satisfactory when performed and encouraged by nurses. Among the functions, the application offered reliable and important information for pregnant women, recording information for follow-up. Mobile health technologies can boost nursing consultations and empower pregnant women with regard to self-care during pregnancy and the puerperium³¹.

It is noteworthy that the future of mHealth tools, as in prenatal care, will depend on the successful incorporation of these tools into daily healthcare routines and on encouraging healthcare professionals to integrate such tools into their practice³¹.

Mobile technology interventions to promote adherence to drug treatment and monitoring of diseases are carried out through health education and reminders through telephones and the internet³².

In a UK survey of British general practitioners, it was revealed that most respondents were not convinced that technological potential will work as well as or better than humans in the future when it comes to important tasks for PHC, including diagnoses, referrals to other specialists, and providing empathic care³³.

Also, in the United Kingdom, the analysis and commissioning of the decision-making process so that public services are planned and contracted in order to meet unique needs, focused on innovative health technologies, specifically that of diagnostic innovation for the treatment of vascular disease in PHC. The results show that decisions are subject to the micro-policies of the organizational environment, competing agendas, interests, priorities, demands and personal inclinations to be persuasive and convincing, instead of adopting a simple technical rationality³⁴.

The use of technologies is also perceived in the context of immunization, with the aim of increasing vaccination coverage. One of the most important intervention strategies is related to patient reminder or recall systems, in the context of PHC, enabling efficacy and improving the proportion of the target population that receives immunizations³⁵.

A study in Canada investigated the functionalities of ICT, its performance in the activities of integrated PHC models, the facilitators and challenges of its implementation in different organizational contexts, concluding that the use of ICT is still done in a limited way, restricting to forms existing workspaces³⁶.

The use of technologies can help to reverse the low rate of breastfeeding. In China, breastfeeding is considerably low and declining, which makes it urgent to create measures to aid adherence and return from the current downward trend. Mobile communication apps such as WeChat, one of the largest social networking platforms in the country, show the potential to improve health behaviors in a convenient way³⁷.

eHealth interventions offer an innovative and accessible approach. A review that investigated interventions that made use of ICT, with the aim of promoting the well-being of caregivers, found that eHealth interventions for caregivers are becoming more popular and are generally considered acceptable, desirable, and useful. However, more research is needed³⁸.

There are still many barriers to the implementation of technologies in the context of mHealth due to the lack of funds and training for professionals to use the platforms, as well as for people who do not have access to the internet or do not know how to use it³⁹.

Another point that deserves attention was the emergence of conflicting social norms regarding the implementation of health technology in PHC. The promise of technology also brought its burden, with the feeling that technological intervention would be seen, by professionals, as just “one more thing to do”, with an overload of work. However, it is observed that professionals recognize the potential of technology to support counseling. “However, for the promise of technology to materialize in the context of practices in PHC, implementation will need to carefully weigh the impact of its introduction on job functions, resource constraints and prevailing attitudes about this technology”^{40:12}.

Since technosociality is understood as a mode of social interactions permeated by digital technologies¹, it is observed that and although the use of technology is beneficial in several aspects, a balanced view must be maintained, explicitly declaring its role as a complement instead of replacing consultations and one-to-one follow-ups⁷. It is noteworthy that the reach of technologies to promote health, in the studies analyzed, is especially focused on behavioral changes, not reaching the other dimensions of health promotion.

Maffesoli states that “the dissemination of postmodern digital communication brings with it other forms of solidarity and the emotional pact of postmodern tribes. On the internet, impulses of generosity and solidarity, aiming to be together, flourish. Through digital communication, reason and the human, the intellect and the affection return to relate to each other”^{2:97}.

CONCLUSION

It is concluded that studies show that technologies used in their most varied forms, for health promotion, are considered accessible, useful and acceptable by users. The success is due to the fact that the ease of access and its use is commonplace for most people. Some studies have shown that health professionals are still resistant to adhering to technologies to enhance or help health promotion practices. The main reasons are work overload and discredit in relation to its effectiveness. Therefore, it is necessary to encourage health professionals to use more of such tools and incorporate them into their practice.

The reach of the use of technologies in the sphere of health promotion is increasingly evident; extending from the identification or knowledge of risk factors, disease prevention, maintenance and adherence to treatment, in the most varied age groups. They are useful as adjuvants to reverse or alleviate specific situations that put health at risk.

However, technologies used in isolation cannot overcome behavioral barriers, which are essential for true health promotion. Furthermore, its use does not replace one-to-one care and monitoring, especially due to the uniqueness of care and the importance of constructing subjectivity in health care. However, it is an important tool that can be used to enhance practices and guidance of PHC users in an attempt to raise their awareness about health promotion, as well as enhancing sociality through the use of technologies in everyday life.

This study contributes by highlighting the main findings of the use of technologies by users and professionals of PHC for health promotion, pointing out the main powers for behavioral change and greater co-responsibility for health and self-care. However, the limitations of the use of technologies in other areas of health promotion and the impact on the social determinants of health are highlighted.

The limitations of this study are due to the fact that it included articles with a delimited time space, which may have excluded possible studies relevant to the theme, but this cut is based on the civil and legal framework of the internet in Brazil. Furthermore, the studies found show realities in which countries, research scenarios, have populations with better socioeconomic conditions, i.e., favoring access to the internet and digital means of communication, making it a limitation for not highlighting the other realities in which the access is hampered.

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NOTES

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ACKNOWLEDGMENT

Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES - Coordination for the Improvement of Higher Education Personnel).

FUNDING INFORMATION

CAPES, public notice 001/2020/CAPES.

CONFLICT OF INTEREST

There is no conflict of interest.

HISTORICAL

Received: February 05, 2021.

Approved: August 24, 2021.

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