



## **Social media and health promotion: evaluation of effectiveness in promoting hypertension self-care in urban contexts of social inequities**

## **Mídias sociais e promoção da saúde: avaliação da efetividade da promoção do autocuidado para hipertensão em contextos urbanos de iniquidades sociais**

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**ABSTRACT**

This paper explores the role of social media in promoting self-care for Systemic Arterial Hypertension (SAH) and addressing health inequities, emphasizing its significance in the context of the COVID-19 pandemic. It calls for a focus on social determinants of health and highlights the global impact of Chronic Non-Communicable Diseases (NCDs), with a particular focus on Brazil's healthcare system. The research, a collaboration between the University of Brasília and the research initiative Escola de Pacientes DF (EP-DF), employs Participatory Community Based Research (CBPR) to evaluate the impact of social media on SAH self-care in urban areas with social inequities. The study includes a scoping review of relevant articles, document analysis of SAH patient testimonials, and knowledge translation for community understanding. Results from the scoping review show positive changes in self-care behaviors due to social media interventions, while acknowledging challenges such as low Functional Health Literacy (FHL), age, education, and internet access. In conclusion, the paper highlights social media's potential in improving healthcare accessibility and equity for SAH and NCDs in vulnerable communities.

**Keywords:** social media, systemic arterial hypertension, social determinants of health, health literacy, social vulnerability.

**RESUMO**

Este artigo explora o papel das mídias sociais na promoção do autocuidado com a Hipertensão Arterial Sistêmica (HAS) e na abordagem das desigualdades na saúde, enfatizando seu significado no contexto da pandemia da Covid-19. O documento chama a atenção para os determinantes sociais da saúde e destaca o impacto global das Doenças Crônicas Não Transmissíveis (DCNT), com destaque especial para o sistema de saúde do Brasil. A pesquisa, uma colaboração entre a Universidade de Brasília e a iniciativa de pesquisa Escola de Pacientes DF (EP-DF), emprega Pesquisa Participativa de Base Comunitária (CBPR) para avaliar o impacto das mídias sociais no autocuidado de SAH em áreas urbanas com desigualdades sociais. O estudo inclui uma revisão do escopo de artigos relevantes, análise de documentos de depoimentos de pacientes de HAS e tradução de conhecimentos para a compreensão da comunidade. Os resultados da revisão de escopo mostram mudanças positivas nos comportamentos de autocuidado devido a intervenções

nas mídias sociais, ao mesmo tempo em que reconhecem desafios como baixa Alfabetização em Saúde Funcional (PAF), idade, educação e acesso à internet. Concluindo, o artigo destaca o potencial das mídias sociais em melhorar a acessibilidade e a equidade na saúde para as SAH e DNTs em comunidades vulneráveis.

**Palavras-chave:** mídias sociais, hipertensão arterial sistêmica, determinantes sociais da saúde, alfabetização em saúde, vulnerabilidade social.

## 1 INTRODUCTION

This paper addresses health promotion through the use of social media, with a focus on supported self-care of Systemic Arterial Hypertension (SAH). Its main distinctive aspect is the deepening of the applicability of these media in scenarios of inequities.

Globally, more than half of the population, 4.1 billion people, are Internet users. This proportion increases to 69% in young people aged 15 to 24 years (ITU 2019).

In the health area, interaction via Internet facilitates communication between professionals and patients and enables the exchange of experiences between individuals with common interests, proving to be an important strategy to manage various health conditions. According to the European Citizens' Digital Health Literacy Report, produced by the European Commission in 2014, 59% of European citizens used the Internet to search for health information from different sources, including social media (EEUU 2014).

In the scenario of social isolation and physical distance imposed by COVID-19 an even greater number of users of social media was achieved in 2020 (FIOCRUZ 2020). The new Coronavirus pandemic has intensified the shift from face-to-face to online interaction in different contexts of daily life, including health and education services. In Brazil, a large increase in Internet users in search of health information was observed in the pandemic period, going from 55% to 72% of users. (ITU 2019).

Social or digital media are defined as online activities between individuals exchanging information that is easy to create and share through words, images, videos or audios. This definition includes discussion forums, social networks such as WhatsApp,

Facebook and others with two-way communication between peers or between the digital platform and users. Therefore, sharing information through these media enables interpersonal interaction and user empowerment (Norman 2012).

Thus, social media has shown to be an important health promotion environment. However, it is worth emphasizing the need to overcome health promotion actions focused in promoting behavior change through monitoring and feedback, to an expanded view of health promotion committed to facing the social determinants of health (WHO 2010).

In particular, the use of social media as a health promotion tool has unique potential in tackling inequities and strengthening the self-care of people with Chronic Non-Communicable Diseases (NCDs) (Kivelä et al. 2014). The World Health Organization defines cerebrovascular and cardiovascular diseases, such as hypertension (SAH), neoplasms, respiratory diseases and diabetes mellitus (DM) as NCDs (WHO 2017).

Among the various possible languages in the virtual environment, the offer of health-related audiovisual content on social media benefits supported self-care for NCDs, especially for SAH and DM in the context of Primary Health Care (PHC) (Vendruscolo et al. 2020). These digital health interventions can be made available through different Information and Communication Technologies (ICTS), from websites with accessible content to messaging applications, in addition to phone calls and emails. (Chérrez-Ojeda et al. 2019).

In this context, there is evidence of benefits in clinical control and behavior change when offering accessible content to users with low Functional Health Literacy (FHL), often in vulnerable social situations (Passamai et al. 2012). However, if on the one hand this population is provided with an opportunity, on the other hand, they have more difficulties in accessing the Internet, which increases inequity. (Crowley et al. 2016; Norman 2012; Welch et al. 2016, 2018).

Inequality in health is understood as inequalities that are unfair and potentially preventable (Braveman 2014), since they exist, for example, in situations in which Stratifying Elements of Society (SES) such as sex, race, ethnicity, education, social status,

sexual orientation or religion are factors that corroborate social vulnerability and consequently health inequities (Welch et al. 2018).

There is general consensus that the efficient treatment of NCDs is of interest to countries of all economic classifications. In the United States (USA) alone, SAH, DM and respiratory diseases affect almost 44% of the population, with health costs estimated at US\$ 271 billion (Donevant et al. 2018). Furthermore, the impact on the risk of Cardiovascular Diseases (CVD) further increases the cost, reaching 800 billion in developed countries from 2011 to 2030 (Chandler et al. 2019).

This situation worsens in low- and middle-income countries: the increase in the prevalence of NCDs has brought challenges that include health care burden, increased health costs and decreased economic productivity due to sequelae and deaths. Low- and middle-income countries account for more than 80% of all CVD-related deaths, bringing an estimated US\$ 7.1 trillion economic toll between 2011 and 2030, almost 9 times higher than for the rest of the world (Chandler et al. 2019).

In addition, the scenario is more worrying when considering the context of setbacks in social rights and the increase in inequities underway in Latin America, and, more intensely, in Brazil. Thus, the purpose of health promotion to strengthen the individual and collective capacity to seek solutions to problems that affect the health and ways of life of individuals in their territories becomes more relevant (Nogueira et al. 2020).

The Unified Health System (SUS) in Brazil is fundamentally a territorialized care project, organized in regional health care networks (RHC), with PHC as the main gateway that organizes patient access to RHC (Heidemann et al. 2019; Medina et al. 2014).

In this context, the Family Health Strategy (FHS) is the mainstay of PHC, with a team of medical professionals, nurses, nursing technicians, community health agents, in addition to dentists and dental hygiene technicians in expanded teams. The responsibility involved in providing care over assigned territory involves up to 3,750 people, and each team serves as a community reference, following not only, but in particular, the principles of longitudinality; first contact; care coordination; integrality; family orientation; community orientation and cultural competence (Anderson 2019).



This paper is part of a doctoral research linked to the Graduate Program in Collective Health at the University of Brasília (UnB). The associated group was formed in 2009 linked to the National Health Training Reorientation Program (Frenk et al. 2010) with support from the Ministry of Health. Studies are carried out with a focus on reducing health inequities, using promotion and education strategies in health with groups of greater social vulnerability.

Working together with the research group since 2016, the Escola de Pacientes DF (EP-DF) is a teaching-service-community partnership strategy developed in a socially vulnerable region on the periphery of the federal capital of Brazil. EP-DF carries out health promotion, continuing education and health education activities, including the production of content for social media. The materials include printed and online guidelines both on the website [www.escoladepacientes.com](http://www.escoladepacientes.com) and on social media platforms, including audiovisual content (Cubas-Rolim et al. 2018). This partnership between service, university and community is guided by values such as equity, social participation, empowerment and the right to life, with services focused on the reasoning of the FHS.

This paper is aimed at evaluating the effects of using social media in promoting self-care supported for NCDs, focusing on SAH, and in an urban context of social inequity.

## **2 THEORETICAL FRAMEWORK AND METHOD**

This research was based on critical theory using Participatory Community Based Research (CBPR). CBPR was defined as "collaborative efforts between the community, academics and other stakeholders who gather and use research and data to build, based on the strengths and priorities of the community, multi-level strategies to improve health and social equality" (Wallerstein, 2017).

In this study, the definition of effectiveness, in the context of the treatment of NCDs, was considered to be an effect obtained by the intervention in a given population group in a real situation (Silva and Formigli 1994), achieving favorable or successful results (De Salazar 2010).

Based on a collective reflection and learning about the adaptation of the CBPR Model in our local context, the evaluation of effectiveness was structured in three stages: 1. Review of scope and knowledge translation on the topic “Social media and health promotion: effectiveness in NCDs with a focus on SAH”; 2. Document analysis of spontaneous reports with public records of hypertensive patients from EP-DF; 3. Knowledge translation in audiovisual format of academic findings to the socio-technical network shared between academics, relief aid providers and community.

## 2.1 SCOPING REVIEW

Scoping Review was carried out according to the quality criteria mentioned by Arksey e O'Malley (2005) (Arksey and O'Malley 2005) and Tricco et al (2018) (Tricco et al. 2018) with the objective of mapping research methods, theoretical references used and the most effective social media in promoting self-care in NCDs with a focus on SAH.

The databases searched were PubMed, BVS and Scopus, with a time frame from 2010 to 2020, using the following descriptors in the pre-defined languages English, Portuguese and Spanish: ("whatsapp" OR "facebook" OR "instagram" OR "youtube" OR "social media" OR "health 2.0" OR "e-health" OR "ehealth" OR "e-patient" OR "epatient" OR "video" OR "audiovisual") AND ("hypertension" OR "high blood pressure" OR "blood pressure" OR "raised blood pressure") AND ("self-care" OR "self-management").

The articles were organized using the RAYYAN application (<https://rayyan.qcri.org/welcome>) and stored on the Mendeley platform. The most relevant data were displayed in Excel - Google Sheets and grouped by categories.

## 2.2 DOCUMENT ANALYSIS

Since 2016, beneficiaries of EP-DF education and assistance tools have space for spontaneous public registration of comments, suggestions and doubts, with the authors' confidentiality being preserved and only group of origin, initials, gender and age indicated on the EP-DF website. In addition to the website, there is an open WhatsApp channel indicated in prescriptions, guidelines, audiovisual material and website.



Public data available online revealed that in December 2020 the EP-DF had more than 23,060 medical services and 177 files of guidance for the community were available, 4 of which are specific for SAH and 7 are for DM.

Mixed theoretical-empirical categorization (Miles and Huberman 2013) of testimonial records related to the effects of social media of users with SAH treated in PHC between February 2016 and December 2020 was performed.

Thirty-three records generated over 58 months were analyzed. 84.8% were women (28 of 33). The average age was 51.9 years, ranging from 29 to 79 years. The most relevant parts of the identified comments were listed throughout the text.

### 2.3 KNOWLEDGE TRANSLATION AND DIALOGUE WITH PARTICIPANTS

The findings of the scoping review and document analysis were synthesized in audiovisual format with language and format adapted for better community understanding (Shea 2011), and made available on the EP-DF educational website and on YouTube, with a link for future shares between the community via WhatsApp, Facebook and Instagram. Part of the material was also made available on the educational website and in the Google Drive shared folder with technical content available on the internet.

## 3 RESULTS AND DISCUSSION

The scoping review found 1162 articles, 39 of which were identified as most relevant to the topic. Of these, 18 were marked as priorities because they include literature reviews and experimental designs (FIGURE 1).

Only studies in English were found, and of the eighteen studies, 8 articles were published in the USA. Meta-analyses, reviews and experimental designs from Iran, China, Japan, the Netherlands, Australia, England, Germany and Malaysia, published between 2014 and 2019, were also identified. The potential of mixed methods, especially powerful in the context of PHC, was highlighted.

The results of publications using smartphone-based social media were evaluated - WhatsApp, Youtube, Facebook, Instagram (Daud et al. 2020; McLean et al. 2016; Redfern et al. 2014; Zullig et al. 2014) and the Chinese messaging platform We-Chat (Li



et al. 2019), plus SMS text messages (Band et al. 2017; Chandler et al. 2019), phone calls (Band et al. 2017; Chandler et al. 2019) (Conway and Kelechi 2017; Ghezalje et al. 2018) and emails (Yue et al. 2019).

The articles provided a comprehensive view on the state-of-the art of the topic, also showing the theoretical frameworks and methodological models used in each publication (Tricco et al. 2018).

The results below will follow the order of Explicit Theoretical Referential in the Studies; Types of Social Media Effects: a) Behavior Change, b) Knowledge, c) Clinical Control; Implementation Practices; and Knowledge Translation and Dialogue with Participants. The findings of the scoping review will be related to the testimonials of the document analysis.

### 3.1 THEORETICAL FRAMEWORK EXPLICITED IN THE STUDIES

The models identified in the scoping review studies included: 1) chronic care, 2) acceptance of technology, 3) incorporation of the social context in health behavior interventions, 4) Prochaska's transtheoretical, 5) acceptance of health information technology. Theories included: 1) self-efficacy, 2) planned change, 3) rational action, 4) persuasive technology, 5) determination.

While some studies have not reported any theory or model to support them (Donevant et al. 2018; Hargraves et al. 2018; Redfern et al. 2014), other studies have reported the use of more than one framework (Conway and Kelechi 2017; Daud et al. 2020; Yue et al. 2019). The use of several references in the same study can be attributed to the nature of the scoping review publications, as the majority produced evidence from systematic reviews and/or meta-analyses.

The evaluation of these theoretical references highlights the focus of valuing an approach deeper than a simple isolated behavioral monitoring and feedback approach, which is closer to the promotion ecological approach (University of Minnesota Rural Health Research Center and NORC Walsh Center for Rural Health Analysis 2018), and not the socio-environmental approach committed to facing social determinants.

There are several models and theories that support health promotion actions and programs (Nutbeam et al. 2010). The field of health promotion has shown that the analysis of these theories allows us to identify how close or distant they may be in relation to the principles and strategies promulgated since the Ottawa Charter (McQueen et al. 2007).

Historically, theoretical approaches that focus on individual determinants have been predominant (Buss et al. 2020). Especially in contexts of social inequities and fiscal austerity (Nogueira et al. 2020), it is necessary to have a greater commitment to approaches that recognize social determinants and/or, at least, ecological approaches that include interpersonal, institutional, community or public policy factors in different spheres: national, regional or local (Akerman et al. 2019).

In the local context of the EP-DF, the equity lens allows action, interaction and evaluation of the socio-technical network with the academic community (Cubas-Rolim et al. 2020) being even more relevant in times of COVID-19.

Within the research paradigm of this study, the equity lens allows a more appropriate assessment of the austerity scenario that has been increasing in several places around the world and also in Brazil (Anderson 2019; Nogueira et al. 2020).

In this sense, the concept of inequity gains even more relevance, since there is a double character of social vulnerability: sometimes giving more benefits to the population with audiovisual media, sometimes presenting inherent difficulties in accessing these media (Norman, 2012); it is of utmost importance that it be treated, including through public policies. In Brazil, for example, the right to Education and Health is ensured in the constitution (BRASIL 1988), and to which extent access to the internet is within the dimensions of fundamental rights, including at the international level, is discussed (Melo 2020).

Therefore, in the context of Digital Society 2.0, it is important to democratize access to these materials so that they can be effective even for people with low FHL (IUHPE 2018). Therefore, the use of content in audiovisual format is a gain compared to previous literature (Welch et al. 2016, 2018). In this context, partnerships with the community are facilitating elements.

## 4 TYPES OF SOCIAL MEDIA EFFECTS

### 4.1 BEHAVIOR CHANGE

The findings of the scoping review related to “Behavior Change” showed a higher agreement rate in relation to the improvement of self-care (Band et al. 2017; Chandler et al. 2019; Conway and Kelechi 2017; Ghezeljeh et al. 2018; Li et al. 2019; Zullig et al. 2014), profile of physical activity and healthy eating (Band et al. 2017; Chandler et al. 2019; Daud et al. 2020; Donevant et al. 2018; Redfern et al. 2014; Zullig et al. 2014) with a decrease in sodium intake (Chandler et al. 2019; Conway and Kelechi 2017; Ghezeljeh et al. 2018; Li et al. 2019; Yue et al. 2019). Determining factors for self-care were also identified, which include: sharing experiences and the existence of private chats for personalized responses, increasing confidence (Li et al. 2019; Zullig et al. 2014). In addition, three studies reported decreased consumption of tobacco (Daud et al. 2020; Redfern et al. 2014; Zullig et al. 2014) and alcohol (Daud et al. 2020).

Health materials disseminated via email and SMS showed an increase in self-monitoring of Blood Pressure (BP) (Band et al. 2017; Li et al. 2019), with averages of 1 measurement at least once a week for 78% of study participants (Li et al. 2019), with self-motivated individuals tending to have more effective long-term results, as demonstrated by Band et al. (2017) with SMS.

This improvement in self-care was also observed for patients with conditions such as DM, heart failure and metabolic syndrome (Chandler et al. 2019; Conway and Kelechi 2017; Ghezeljeh et al. 2018) using social media based on smartphones, SMS and phone calls. Improvements in quality of life for patients with heart failure (Ghezeljeh et al. 2018) were also noted, in addition to psychological well-being in application-based intervention (Hargraves et al. 2018).

However, the evident benefits of increased self-care and self-monitoring are not the same for all users, with special difficulty for patients with low FHL, who tend to be older (Hargraves et al. 2018). Besides, it was also evidenced that the low formal education, which is highly prevalent in this population, hinders interventions based on videos or phone calls with regard to health behaviors, diet monitoring and physical activity, in addition to online communication with health professionals. Likewise, there

was less propensity to access online portals for some ethnic/racial groups such as Blacks and Latinos (Hargraves et al. 2018).

Regarding the Behavior Change category, the main differences were related to medication adherence. Most studies have shown an increase in adherence (Band et al. 2017; Chandler et al. 2019; Zullig et al. 2014), with records of improvement in medication adherence and control of diastolic blood pressure in simple linear regression (McLean et al. 2016). Anderson et al. (2016), however, showed limitations regarding the duration of the intervention when using cell phone applications: there was an improvement in the evaluations of 6 and 12 months after the intervention, which was not sustained in the evaluation of 24 months. Two studies did not identify a significant increase in adherence (Conway and Kelechi 2017; Zullig et al. 2014).

The document analysis revealed 69% of the records with a positive behavioral change report, as illustrated below:

(...) it has helped me a lot in my lifestyle, after I started to have medical appointments (...) I was more willing to do things, to go to the gym, food also changed. The guidelines were very good. Before I only stayed at home, but now I'm practicing exercises. S.M.V.S. FEM, 47 YEARS OLD

"My life has totally changed, today I have a better diet, I exercise, I cut 90% of the alcohol, I just haven't left the cigarette yet" E.R.S. FEM, 47 YEARS OLD

In the scoping review findings regarding the subtopics of knowledge and behavior change, the association of changes in physical activity and diet was frequent, which was also found in other publications (Hovadick et al. 2020; Kivelä et al. 2014; Maher et al. 2020) Although not consensual in the literature, the EP-DF document analysis indicated similar results for behavior change and increased knowledge.

#### 4.2 CLINICAL CONTROL

Regarding the "Clinical Control" category, there was a reduction in body weight (Chandler et al. 2019; McLean et al. 2016; Redfern et al. 2014), cholesterol (Redfern et al. 2014) and glycemia (Daud et al. 2020) obtained with different strategies. Chandler et al. (2019) used SMS and phone calls; Daud et al. (2020) used mobile phone applications



to control blood glucose, and Anderson et al., 2016 observed improvement in the control of chronic pain, insomnia and depression using the same strategy.

Band et al. (2017) noticed promotion of FHL through audio and SMS text, and application-based interventions were also effective in clinical control with the use of videos and phone calls (Hargraves et al. 2018).

However, there was a greater difficulty for populations in situations of social vulnerability due to the disparity in digital access (Hargraves et al. 2018). It is noteworthy that education alone was not enough to reduce readmission in one study (Ghezalje et al. 2018): there was no major impact on clinical control.

As noted by Band et al. (2017), it is essential to involve patients in a permanent and self-sustained manner throughout the treatment program, especially when considering that clinical decisions should be made based on markers and data coming from monitoring (Band et al. 2017).

There was a divergence in relation to BP reduction, although most of the articles indicated gains in clinical control (Chandler et al. 2019; Daud et al. 2020; Li et al. 2019; McLean et al. 2016; Redfern et al. 2014) Tools such as WeChat showed a reduction in cardiovascular risk (Li et al. 2019), including for Acute Myocardial Infarction (40%) and Stroke (22%), similar to the blood pressure reduction effect by using SMS text with phone calls (Chandler et al. 2019) (McLean et al. 2016) (Redfern et al. 2014)(Daud et al. 2020).

The document analysis of EP-DF records revealed better clinical control for 39% of patients, as illustrated in the highlighted excerpts:

"As I am pregnant, I am having consultations and I am satisfied with the service and with the tips on food, as I had gestational diabetes, with the tips and guidance, thank God my diabetes is under control! I just have to thank everyone on the team." JBRQ FEM, 24 YEARS OLD

"I had improvements in my health. The orientations were very good, the accompaniment of the student was wonderful with the indications (...) in food and medicine" C.S.N. FEM, 46 YEARS OLD

"I'm taking medicine and I have lost 12 kg by reducing food. I'm really good." E.L.P.S. FEM, 49 YEARS OLD

Only one study assessed the costs regarding computing and telecommunications: US\$ 32.05 per patient, with a cost after 6 months of intervention of US\$ 7.39 for each mmHg of reduced BP and US\$ 5.42 for each 1% improvement in accessions (McLean et al. 2016).

#### 4.3 KNOWLEDGE

With regard to the “Knowledge” category, the potential for increasing FHL (Band et al. 2017) and increasing awareness of one's own health condition (Anderson et al. 2016; Chandler et al. 2019) draws attention, enhanced by the following elements: interaction with other patients, involvement of the family support network and use of alarms with motivational reminders (Zullig et al. 2014).

However, the increase in knowledge is not unanimous, although most studies agree that the use of the media under analysis is beneficial (Band et al. 2017; Donevant et al. 2018; Hargraves et al. 2018; Li et al. 2019; Yue et al. 2019; Zullig et al. 2014) There was an increase in knowledge in subscales associated with greater clinical control in the case of Wechat (Li et al. 2019). Even though there is no significance for general knowledge, there is clear evidence of increased knowledge in subcategories such as diet, physical exercise, smoking and alcoholism (Li et al. 2019; Zullig et al. 2014).

There is evidence of greater difficulty in contexts of social vulnerability and low FHL, according to Chandler et al. (2019) in the South African context with self-reported behavior change but with no significant difference in knowledge. In order to overcome this difficulty, the use of illustrated books can increase knowledge (Chandler et al. 2019).

The document analysis of the testimonies of the EP-DF revealed knowledge gain for almost 70% of the participants:

“You see, the guidelines were very good. It has completely changed my life. I could manage to be more secure. And I could also advise others, too.” E.C.S., FEM, 47 YEARS OLD”

I learned, based on his videos, the low-carb diet, and I'm slowly losing weight, I have diabetes. A.P.S.J. FEM, 39 YEARS OLD

The increase in knowledge followed the pattern of behavior change, reinforcing the potential for benefit in the context of teaching-service with more than 1960 clinical simulations based on over 23,000 visits already registered (Cubas-Rolim et al. 2020, 2018).

The review highlighted the potential of social media to strengthen self-care with audiovisual content in health, especially benefiting patients with low FHL and impacting behavior change and clinical control (Hargraves et al. 2018).

The WHO mentions these cognitive and social competences as a result of education and health promotion actions with individual and collective coverage (Passamai et al. 2012).

Although it is one of the aspects of supported self-care, it is worth mentioning that knowledge alone does not guarantee a change in behavior, clinical control or an increase in quality of life (Anderson et al. 2016; Ghezeljeh et al. 2018).

Thus, when it comes to self-care, it is worrying that tools such as text messaging applications can become just another means of disseminating information, without considering the principles of Health Promotion, with emphasis on Empowerment and Participation (Welch et al. 2016, 2018), enabling people to be proactive and to make contextualized decisions to improve their well-being and manage their illnesses (Househ et al. 2014; Hovadick et al. 2020; IUHPE 2018).

Production on quality of life and bonding has proven to be incipient (França et al. 2019; Kivelä et al. 2014; Maher et al. 2020). Approaches that focus only on behavior and feedback show a limited view of the research paradigm within Health Promotion (Welch et al. 2016).

## **5 IMPLEMENTATION PRACTICES**

Regarding the “Implementation Practices” category, the importance of regular frequency of feedback and contact with patients is highlighted, in addition to the active participation of a support network, especially of family and friends (Chandler et al. 2019) (Band et al. 2017; Hargraves et al. 2018).

Attention is drawn to Band et al. (2017), which adjusted the feedback taking into account factors identified through previous workshops to outline common domains for different ethnic groups and types of NCDs. This strategy allowed the creation of a database with 600 messages, divided according to the participant's level of adherence to the program (non-adherence, partial adherence and full adherence). These personalized messages were chosen automatically taking into account the previous day's scores and previous questionnaire responses, with participant-centered interactive design and driven by the theory of self-determination (Band et al. 2017). In this context, the potential of persuasive technology theory in the PHC environment is also interesting (Daud et al. 2020).

Illustrated explanations and regular audio and text feedback were also impactful, with links to PDFs or illustrative videos (Band et al. 2017; Chandler et al. 2019).

Adjustments to feedbacks made based on short and long-term values, beliefs and objectives have boosted the achievements and made the gains involved more sustainable (Band et al. 2017).

According to Hargraves et al. (2018), the impact of personalized, culturally adapted information was especially important for the patients' difficulties and doubts, in "Tailored" practice and taking into account the experience of developing cultural response apps for minority ethnic groups (Hargraves et al. 2018).

In relation to the format and content of the communications, the cultural adaptation of the content was particularly relevant by surveying the intra-community and individual dynamics, beliefs and values through the conduction of workshops that contributed to the relevance of the material produced (Band et al. 2017).

An important finding in the use of short messages (SMS) was the motivational elements such as the presence of strong community, gender, religious, work, recreational and friendships networks, improving the clinical conditions of patients with NCDs (Hargraves et al. 2018).

Within the community network, the family support network was highlighted. Although it is a protective factor in general, for women it can also be a risk factor for care overload within unfair social architectures. This overload must be considered in the

methodological designs to optimize individual and social results, with a greater proportion of the female gender having already been observed in the literature (Welch et al. 2016) and also in the EP-DF.

It is worth noting that the community immersion of EP-DF makes the process somewhat more challenging, but also more powerful in supporting the family nucleus and in the joint construction of health knowledge.

The increased link with the service provider team as a reference figure is also noteworthy, which may also reflect the greater time available for explaining the content based on audiovisual material, which gains importance given the difficulties in reading noticed in the population using the strategy - 76% of the population does not read a book per year, and of those who read, the majority reads only 1 or 2 books, with almost half of the population having incomplete primary education (46%) (GDF 2016).

It should be noted that standardized responses should be focused on understanding the content, adapting the language and maintaining adherence to the program (Donevant et al. 2018). Zullig et al. (2014) highlight the importance of progressive adaptation of the standard text according to the users' responses. In this context, the fusion of verbal, emotional and psychological persuasion strategies should be sought, with a special impact on self-efficacy (Li et al. 2019).

Again, it is worth reflecting that the difficulty of access may limit the benefit of the strategy of audiovisual material through social media, and in this scenario the use of phone calls and SMS is an alternative. In fact, there was evidence of the same level of effectiveness in the use of social networks as those found for telephone calls, with even more potential for interaction between the patient and the professional in the information sharing messages (Ghezeljeh et al. 2018).

Anyway, for any of the ICTS, the format is important to allow the effectiveness of the content (Band et al. 2017; Johnson et al. 2016).

Still with regard to environments of greater inequity, the general objectives of social media for the public in health are even more relevant, encompassing (1) communication with the public to obtain information; (2) promotion of the concept to the public; (3) dissemination of crucial information; (4) expansion of reach with



diversification of the audience; (5) engagement with the public, forming partnerships (Neiger et al. 2012)(CDC 2011).

## 6 KNOWLEDGE TRANSLATION AND DIALOGUE WITH PARTICIPANTS

In CBPR's perspective, the ongoing dialogue process of study participants requires investment in knowledge translation, defined by the Canadian Institutes of Health Research (CIHR) as "the exchange, synthesis and ethically sound application of knowledge within a complex system of interactions among researchers and users - to accelerate the capture of the benefits of research for society through improved health, more effective services and products, and a strengthened health care system" (CIHR 2009).

In addition to CIHR's vision, there is a definition that dialogues with the use of social media:

"We are in an age where the term "KT" may refer to actions that engage the entire community, and where the traditional media, the Internet, and Web 2.0 activities (i.e., social networking sites) are the instruments of communication and change" (Shea 2011).

Thus, knowledge translation is a step in the ongoing process of dialogue in the socio-technical network between workers, students and users, being an ongoing step in undergraduate and postgraduate research projects.

The results of the scoping review were systematized in PowerPoint-GoogleSlides slide presentations, presented by students and team workers and available online in a specific tab on the EP-DF educational website.

The slides served as the basis for an audiovisual presentation on the EP-DF YouTube channel. In December 2020, there were 1,410 subscribers with 128 videos, 18,555 views and more than 4,000 hours played.

The strategic power of the teaching-service-community interaction multiplies the potential for institutional strengthening, sharing results and a theoretical approach, with decision-making based on evidence and considering the local vision and context. The content is continuously improved by the socio-technical network involved.

In an international context of rapid dissemination of fake news, scientifically based content and community cultural support are even more valuable (Voos 2018).

## 7 FINAL CONSIDERATIONS

Advancing the understanding of the effectiveness of social media and audiovisual material to promote self-care is crucial, especially because of the context of social distance and barriers to access (Gralinski and Menachery 2020; Lobban et al. 2020; NHS 2020; WHO 2020) Intensive monitoring of conditions such as SAH is essential, especially in situations of inequity and overload of health systems (Villela 2020).

The production on the theme in Portuguese or Spanish from Latin America is still incipient. The largest number of publications is concentrated in the years 2018-2019, showing the emergence of the theme in recent years.

Thematic analysis of categories was relevant for both Scoping Review and Document Analysis, dialoguing with theories found in other studies (Song et al. 2019).

Overall, the social networks studied (WhatsApp, Youtube, Facebook, Instagram, We-Chat) proved to be tools that are easy to implement, reliable and have beneficial effects for health interventions in SAH and other NCDs considering the outcomes of Behavior Change, Clinical Control and Knowledge, as found in previous studies (Hargraves et al. 2018; Hovadick et al. 2020; Kivelä et al. 2014; Welch et al. 2016)

The media are adaptable to different contexts and also promote a greater patient-professional bonding, highlighting the aspect of shared construction of health promotion (Abed et al. 2014; Conway and Kelechi 2017; Direito et al. 2019; Ghezjeljeh et al. 2018; Li et al. 2019; Zullig et al. 2014).

There is a suggestion of preference for short bi-directional messages, since they provide better patient-professional interaction than long unidirectional messages (Donevant et al. 2018; Yue et al. 2019). There was also an advantage in keeping materials in modules with individualized goals and with periodic reminders (Yue et al. 2019).

The potential for more explanation time invested with each patient and family unit also stands out, a time that in care settings is sometimes greatly limited by care pressures. Especially for the elderly, the education of this family unit is fundamental for



strengthening the care network and understanding the patient's reality, allowing greater motivation and better adaptation to the education and care methods (Anderson et al. 2016; Ghezalje et al. 2018; Zullig et al. 2014)

Thus, caution should be exercised in excessive automation processes that harm the physical social network of friends and family or even online networks, with reduced human interaction (Zullig et al. 2014).

Regarding the cost-effectiveness assessment of the effects of social media, although the field of health promotion has consistent references (Salazar et al. 2007), there was a significant gap in the theme despite the great impact of NCDs on a global level. As mentioned by McLean et al. (2016), evaluations must take structural aspects into account in order to effectively produce and distribute the content.

It is interesting to note that the financial impact goes beyond the clinical control or morbidity and mortality of each NCD in isolation: variables such as decreased body weight and decreased blood glucose have potential benefits for a wide range of comorbidities (WHO 2017).

A prominent gap was the lack of depth and quantity of assessments considering health inequities.

Regarding gender, there was a greater potential benefit for women, although with limitations associated with family care (Johnson et al. 2016).

There is a double character to social vulnerability: on the one hand, it may be the group that most benefits from strategies with audiovisual material on social media; on the other hand, it may be more difficult to access both due to low FHL and the lack of Internet or ICT, leading to an increase in the inequity gap. Especially in contexts where access is more difficult, interaction by phone may be better than by social media (Hargraves et al. 2018).

## 7.1 INNOVATION AND RECOMMENDATIONS FOR THE FIELD

Considering that the analysis of the explicit theoretical frameworks of the scoping review studies showed a departure from the socioenvironmental approach committed to tackling social determinants, investing in the formation and dissemination of theoretical



frameworks for the advancement of the paradigms that support the practices and research to promote health is recommended, with the prospect of advancing in tackling health inequities.

Given the rapid degree of innovation in the theme, it is worth mentioning that the literature search can benefit from the expansion of syntax for keywords that are sometimes not yet indexed or with non-consensual descriptors, with adaptation of digital intervention strategies and context. Sometimes it may be necessary to dialogue with tools similar to those originally sought (Direito et al. 2019).

Regarding the delivery format of audiovisual material, the methodological gaps in content, format and dissemination were marked. In particular, relevant gaps are the preparation of the script, posting platform, link to the reference figure, title, thumbnail art, audio volume, presence of subtitles, images, editing and duration of the material, in addition to the social media dissemination strategy. Such elements precede access to the content covered (BARROS JUNIOR 2008). The document analysis of EP-DF indicated 6% of patient records related to the theme.

Deepening the understanding of the elements of health communication combined with those of health education is suggested, and both should have the attention of professionals since they are increasingly important for health promotion (Stellefson et al. 2014). Again, the proper use of these technical and format elements, in a standardized manner, also potentially contributes to the performance of indicators, such as influence and engagement, so that the assessment of the effectiveness and impacts of social media can be done beyond isolated metrics or effects (Neiger et al. 2012).

Finally, taking into account complex contexts and inequality scenarios, the importance of quali-quantitative mixed method studies is reinforced (dos Santos et al. 2017; Pluye et al. 2018; Pluye and Hong 2014).

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