Social media for psychological support of patients with chronic non-infectious diseases: A systematic review

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Title: Social media for psychological support of patients with chronic non-infectious diseases: a systematic review

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LAY SUMMARY

Psychological symptoms are common among patients with chronic non-infectious diseases. Seldom treated properly, they are a major reason for a low quality of life. Chronic patients, like those who suffer from oncologic, psychiatric or heart diseases, could have difficulties in finding the right psychological support. One way to potentially reach anyone is using social media, which are often used by chronic patients for educational purposes about their diseases, or for finding psychological support from others with similar conditions. We wanted to study whether social media have been used in clinical research for administering psychological support to patients with chronic diseases. We studied the existing scientific literature doing a systematic review, finding that often social media were not used at their full potential. Peer-to-peer interactions were the most common interactions, chats rooms and forums the most common social media platforms. Participants were most commonly psychiatric and oncological patients. It is very important not to overlook powerful instruments like social media: they could be easily used by patients to empower themselves in managing their conditions. Social media could be an efficient way to easily provide chronic patients with psychological support either administered by health professionals, like psychotherapists, or by peers.

ABSTRACT

Psychological complications of chronic diseases are often underestimated because they may be interpreted as normal consequences of the underlying illness. Additionally, chronic patients may find several obstacles to healthcare access, including physical, socioeconomic, geographical, and psychological barriers. Social media may be potential tools to provide

psychological care extending the possibility of treatment where the offer is limited. This review aimed to explore the use of social media in administering psychological interventions to patients with chronic noncommunicable diseases. Following the PRISMA guidelines, a systematic review was conducted by searching PubMed, Embase, and PsycInfo (from 2004 to 2021). Randomized Controlled Trials outlining the social media use in administering psychological assistance to patients with chronic noncommunicable diseases were considered eligible. Out of 9838 records identified, 75 papers were included. Peer-to-peer interaction was the most used (n=22), mainly via chat rooms and forums. Interventions were mostly administered to patients with psychiatric (n=41) or oncologic disorders (n=12). This work highlighted a lack of tailored interventions based on disease, age, or gender, and a use of a limited range of relatively old platforms such as emails, blogs, and forums. To administer efficient interventions, it would be advisable to continuously analyze the evolving use of these tools.

Breakdown of the total word count:

Lay summary: 198

Abstract: 200

Background: 580

Methods: 1001

Results: 1607

Discussion: 1112

Conclusion: 161

BACKGROUND

Having a chronic illness is known to be associated with an increased risk for psychological disorders (Daré et al., 2019; Ducat et al., 2014). Even so, the psychological dimension of people living with chronic illness is often underestimated or neglected (WHO, 2018; Voinov et al., 2013).

The link between chronic illnesses and psychological disorders is even more relevant considering that 13 out of the 20 diseases that caused most of disability-adjusted life years (DALYs) in 2019 were chronic diseases, such as ischemic heart disease, stroke, chronic obstructive pulmonary disease, diabetes, depression, and others (Bochen Cao et al., 2020). Moreover, 41 million people die every year from a chronic disease, accounting for over 70% of all deaths worldwide (Riley L et al., 2020).

The mistaken belief that some symptoms (e.g. sleep disturbance, fatigue, lack of appetite) are an expected consequence of the underlying chronic condition can bring to the underdiagnosis of psychological complications, leading to a worsening of the treatment outcome (Osservatorio Nazionale sulla salute nelle regioni italiane, 2019; Voinov et al., 2013). Considering the existence of several barriers to access healthcare for chronic patients (such as physical, socioeconomic, geographical, and psychological barriers) (Foo et al., 2020; Stein et al., 2019), having psychological comorbidity while suffering from a chronic disease could even complicate finding access to support care (Stein et al., 2019). Moreover, social stigma goes with psychological disorders, making it more difficult to find support and affecting its quality (Baumann & Dang, 2012).

Given that around 4.2 billion people use social media globally (Starri, 2021), these could be potentially appropriate tools to provide psychological support to the chronically ill from all

social extractions, extending the possibility of treatment to lower social classes or to those living in rural areas where the offered treatments are limited (Scogin et al., 2018). Moreover, it should be noted that many patients suffering from chronic diseases use the internet or social networks to search for useful information about their condition (Fox S., 2011). Social media could meet some needs that may not be detected during follow-up, as it is shown by the fact that many patients use social media to connect with other chronic patients in forums, blogs or chats to raise awareness of the disease (Fox S., 2011).

The role of social media in healthcare contexts has been investigated several times, for example for raising awareness about the prevention and care of HIV (Latkin et al., 2013; Muessig et al., 2015; Ronen et al., 2020), for health promotion and communication purposes (Smailhodzic et al., 2016; Chou 2013), for lifestyle modification and diabetes management (Cotter, 2014) or for administering mental health interventions or psychiatric treatment (Kazdin, 2019; Alvarez-Jimenez M., 2014; Naslund, 2016), especially in adolescents (Keles et al. 2020; Best et al., 2014). However, currently, too little has been studied about whether and how social media are used in robust clinical research, specifically in randomized controlled trials (RCTs), for psychological support in patients with chronic non-communicable diseases.

Therefore, this review aims to investigate which social media are commonly used in RCT studies, understand the preferred features and point out in which nosological categories and for what kind of psychological complication these tools are mostly used. This could provide new insights into social media's role in improving fragile populations' mental health. Updating knowledge about the current state of the art of social media usage in clinical research is pivotal to pave the way for further research for an ever-improving application of this potentially promising instrument.

METHODS

Data sources and search strategy

A systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist (Page et al., 2021) by searching PubMed, Embase, and PsycInfo databases. As suggested by the Cochrane handbook for systematic reviews (Lefebvre et al., 2022), PubMed and Embase were chosen as generalist bibliographic databases, while PsycInfo was chosen as specialist bibliographic database to be used when studying psychological interventions.

The search was carried out on March 25th, 2021. Dissertations were filtered out (PsycInfo). The authors selected papers published from January 1st, 2004, through March 25th, 2021. The starting point from 2004 was chosen because MySpace and Facebook, the first popular social networks, were launched in 2003 and 2004, respectively, thus contributing in coining the term "Social Media" and promoting the importance of social networks as we know it today (A. M. Kaplan & Haenlein, 2009). In addition, the essential concepts for the definition of "Social Media" (i.e. Web 2.0 and User Generated Content, UGC) were developed in 2004. Indeed, we decided to adopt the definition given by Kaplan and Haenlein "Social Media is a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of UGC" (A. M. Kaplan & Haenlein, 2009). Summing up, the Web 2.0 is a platform where users repeatedly participate and collaborate to change content and applications and the UGC represents the various ways of media content that are created by users (A. M. Kaplan & Haenlein, 2009). Similar

definitions of social media are commonly shared and the interactivity between users is among the main key characteristics (Cao et al., 2017; Obar & Wildman, 2015).

Both free terms and thesaurus terms were used to create the search strategy. Search terms for four main themes were used: chronic diseases AND psychological care AND social media AND randomized controlled trial. Supplementary file 1 shows the full search strings.

The field of chronic conditions is extremely wide and includes noncommunicable conditions, long-term mental disorders, ongoing physical/structural impairments and persistent communicable conditions (WHO, 2002). To circumscribe our search, we decided to exclude chronic conditions related to communicable diseases as other reviews have already focused on social media and some of these conditions (Cao et al., 2017; Ronen et al., 2020). Based on this, in order to find papers about the most relevant chronic conditions, we decided to consider the top 35 noncommunicable disease causes of disability-adjusted life years (DALYs) among people aged above 15 years (Bochen Cao et al., 2020) (including mental disorders and impairments). Overall, these top causes included cardiovascular diseases, cancers, diabetes mellitus, pain conditions, respiratory diseases, neurological diseases, mental disorders, digestive diseases, hearing loss, gynecological diseases, musculoskeletal disorders, endocrine, blood and immune disorders, refractive errors, kidney diseases, and edentulism. Both synonyms of "chronic diseases" and terms referring to the above-mentioned conditions were included in the search string.

About terms for social media, we used the definition and classification of Kaplan and Haelein, which include blogs, social networking sites, virtual social worlds, collaborative projects, content communities, and virtual game worlds (A. M. Kaplan & Haenlein, 2009). Both common nouns and proper nouns of the most used social media were included in the search string.

Last, we decided to focus on RCTs since we were interested in exploring how social media were used compared with other traditional supports to eventually analyze in future papers the efficacy of social media interventions with the best grade of evidence.

Study selection and data extraction

Table 1 shows the PICOS (Population, Intervention, Comparator, Outcome, Study type) approach (Munn et al., 2018) that guided the inclusion criteria along with the above-mentioned definitions of chronic conditions and social media (A. M. Kaplan & Haenlein, 2009; WHO, 2002). Specifically, studies were considered eligible if their sample was composed of people with chronic conditions (noncommunicable conditions, long-term mental disorders, ongoing physical/structural impairments (WHO, 2002), including but not limited to the top 35 noncommunicable disease causes of DALYs (Bochen Cao et al., 2020). To be eligible, the interventions must include any kind of psychological care provided through social media, i.e. media that had both these two essential features: internet-based platform and exchange of any kind of content between users.

[insert - Table 1. PICOS approach - here]

No restrictions were applied regarding the users with whom participants interacted (e.g. peers, therapists, physicians, family members). Only peer-reviewed studies with RCT design and papers written in English, French, Spanish, Italian, or Portuguese were considered eligible.

Studies with samples consisting exclusively of people below a threshold for a disorder (e.g. subthreshold depression), of patients with communicable diseases, and of caregiver/relatives of patients were excluded. Papers with interventions with no interactions between users or based exclusively on chatbot/automated virtual assistant and smoking cessations interventions were excluded. Protocols, letters, editorials, commentaries, and reviews were excluded.

In a first phase, duplicates were removed, and articles were independently screened by the authors (EM, GG, GLM) for title and abstract via the Rayyan software (Ouzzani et al., 2016). Disagreements were solved by a consensus-based discussion. In a second phase, the authors (EM, GG, GLM) independently applied the inclusion and exclusion criteria to the full texts. Disagreements were resolved by consensus and reasons for exclusion were documented. Then, the authors (EM, GG, GLM) extracted the following information from the final included studies: year of publication, country, language, RCT features, participants and setting, length of the intervention, year of study, outcome measures, funding and conflict of interest information, intervention and control group characteristics. The last two fields were analyzed to assess which social media platforms were employed in the intervention or control group, which were the interactions between participants (or between participants and study operators), and which roles social media had in the intervention. The above-mentioned roles were categorized based on common characteristics, to summarize their application.

The authors carried out a narrative synthesis according to study design, setting, population included, outcome assessed, intervention or control design and characteristics. In addition, the extracted data are presented in Summary of Findings tables.

RESULTS

A total of 9838 records (Pubmed: 4896; Embase: 2957; PsycInfo: 1985) were identified through database searching. Figure 1 represents an overview of the study selection process following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (PRISMA 2020). The whole selection phase resulted in 75 included publications (Ahola Kohut et al., 2016; Alavi et al., 2016; Anastasiadou et al., 2020; Andersson et al., 2012; Arnold et al., 2019; Aubin et al., 2018; Bogosian et al., 2015, 2022; Bostock et al., 2016; Boyd et al., 2019; Buhrman et al., 2013; Chavooshi, Mohammadkhani, & Dolatshahee, 2016; Chavooshi, Mohammadkhani, & Dolatshahi, 2016; Chee et al., 2016; H. Chen et al., 2020; Choi et al., 2014; Chong & Moreno, 2012; Classen et al., 2013; Conrad et al., 2015; Glass et al., 2017; Gliddon et al., 2019; Graham et al., 2020; Greenberg et al., 2019; Heim et al., 2021; Hensel, [..] Bouck, et al., 2019; Hensel, [..] Cohen, et al., 2019; Hesser et al., 2012; Hoffmann et al., 2021; Hur et al., 2018; Jasper et al., 2014; Johansson et al., 2019; Kim et al., 2018; Kryger et al., 2019; Krzystanek et al., 2019; Li & Tse, 2020; Linden et al., 2018; Ljótsson et al., 2010; Lundgren et al., 2016; Ly et al., 2014; Ma et al., 2021; Moberg et al., 2019; Mohr et al., 2019; Neumayr et al., 2019; Nolte et al., 2021; Omidi et al., 2020; Oser et al., 2019; Owen et al., 2017; Pan et al., 2020; Perini et al., 2009; Robinson et al., 2010; Robinson-Whelen et al., 2020; Ruehlman et al., 2012; Ruland et al., 2013; Schlosser et al., 2018; Schulz et al., 2020; Scogin et al., 2018; Stinson et al., 2016; Strandskov et al., 2017; Titov, Andrews, Choi, et al., 2008; Titov, Andrews, Davies, et al., 2010; Titov, Andrews, Johnston, et al., 2010; Titov, Andrews, Schwencke, et al., 2008; Titov et al., 2009, 2011; Topooco et al., 2019; Vilhauer et al., 2010; Wang et al., 2018; Weise et al., 2016, 2019; Wims et al., 2010; Wise et al., 2018; Wootten et al., 2015, 2017; Young et al., 2018; Zwerenz et al., 2017).

[insert - Figure 1. Study selection process - here]

Characteristics of the included studies

The included papers were published between 2008 and 2021, and more than half of them (n=44) were written after 2017. The year with more articles (n=14) was 2019.

Most of the studies presented data from the United States of America (n=19), Australia (n=13) and Sweden (n=10) and they were mostly designed with two arms (n=62): an intervention and a control group. However, 12 studies were designed with three arms. In 19 studies control groups consisted of a waiting list, in 14 studies they consisted of a discussion forum group, and in 13 studies they received educational material. In 14 studies the control group received a deferred treatment.

The sample size ranged from 21 to 1013 participants (Supplemental Table S1), the ratio of intervention participants to control participants ranged from 1:1 to 2.7:1. The length of the study ranged from three weeks to 60 weeks; eight studies had a follow up period - lasting one month up to 12 months.

Seven studies were feasibility RCTs and two were pilot RCTs. A total of 4 studies were multicenter RCTs. Fifty-nine works had a declared funding source and 13 studies stated potential conflicts of interest. All studies were written in English. Full details of characteristics of the included studies are presented in Supplemental Table S1.

Characteristics of participants and chronic diseases

The mean age of participants ranged from 15.5 years to 65 years. Females represented the majority of respondents in 46 studies and the totality of respondents in 10 studies, whereas males represented the majority in 16 studies and the totality in 2 studies.

Most patients were recruited in clinics/hospitals (n=27), with a mean age of 15-58 years, via social media such as Facebook or Forums (n=9), with a mean age of 17-47 years, or via websites/advertising online (n=11), with mean age 38-61 years. Eighteen studies recruited patients via multiple methods (Supplemental Table S2). Some inclusion criteria were frequent across the included studies, such as being at least 18 years old (n=45) and having access to the internet (n=42). The most frequent exclusion criteria for participants were severe psychiatric condition or suicidality (n=47), pregnancy (n=4), severe cognitive impairment (n=7), and addictive disorders (n=7) (Supplemental Table S3).

Most of the studies concerned psychological support in psychiatry (n=41) and in oncology (n=12). The studies in the psychiatric area were mainly about depressive disorders (n=10), anxiety disorders (n=7) or both (n=4). The others were mostly about phobias (n=2) and eating disorders (n=2). The studies in the oncology area were mostly about breast (n=4), prostate (n=2) or gynecologic cancer (n=1); the others were about cancer survivors or patients with cancer in general (Supplemental Table S2).

Considering the diseases addressed in both genders, the studies mostly concerned psychiatric and oncological areas. Studies with a higher percentage of males mainly addressed cardiological (n=3) and otolaryngological (n=3) diseases; whereas studies with a higher percentage of females mostly addressed chronic pain (n=4) and neurological (n=4) diseases.

Characteristics of the interventions and controls

The main characteristics of interventions and controls are reported in Table 2 and Supplemental Table S4, respectively. Thirty-six studies administered interventions via ad hoc social media tools (forums or in app messaging), while two via pre-existing social media tools. Fourteen studies administered interventions either via both ad hoc tools and pre-

existing ones. Seventeen studies have had more than one type of intervention, as explained below.

Regarding ad hoc tools, chats have mostly been used (n=15), then forums (n=14). One study used social media as a blog, one as a social game, one for web calls. As for the existing tools, Skype was the most used (n=10), then emailing systems (n=7), WeChat (n=4), and Facebook (n=2). One study used Telegram, one SecondLife. The studies that administered the interventions with two social media used mostly forums plus emails or chats or, in one case, emails and a community.

In 21 studies social media tools were used in the control group too. Fourteen studies administered control via forum. Facebook, Skype, chatting, and SecondLife were used once. Only one study administered control in a mixed way (via email and chat).

The characteristics of the interaction between users changed based on the features of the platform that was being used. In 22 studies the intervention was driven by a peer-to-peer interaction with or without a supervisor coach - most often a trained peer. Among these studies, some administered interventions via chat or social games, but also web calls and forums. In ten studies patients interacted with coaches only, in 19 studies patients interacted with psychologists or psychiatrists, while in four studies patients interacted with nurses or clinicians. In 20 studies the interaction was mixed. Overall, peer to peer interactions were the most recurrent.

In the studies that provided psychological support to patients with psychiatric conditions, nearly all participants were under 50 years (n=37) and most studies had a higher percentage of females (n=35 out of 41). Instead, in the other pathological areas, patients were more likely between their 40s and 60s (n=28), and studies with a higher percentage of males were more represented (n=12 out of 34). Apart from the demographic differences, in both psychiatric and non-psychiatric conditions the interventions were substantially administered by the same

platforms and without any outstanding peculiarities: mostly forums, chats and web-calling platforms were used.

Based on their features, social media platforms were used with different interactions and purposes. Chats and emails were frequently used for receiving feedbacks about how the intervention proceeded, for receiving educational material or additional support other than the intervention per se. This was more frequent for non-peer to peer interactions, like therapist/health professional-driven or coach-driven interventions. On the other hand, forums and communities were more frequently used for establishing interactions between users, having a peer-to-peer interplay. Web-calling tools were used for administering telepsychotherapy.

Regarding the above-mentioned purposes, the most recurring ones were the “sharing emotions or feelings” - which went along with forums and chats, and it was mostly common in the “psychiatric area” studies, but largely diffused among all others - and the “feedback” one, which went along with chats and emails. In some studies, social media were used with more than one purpose, often mixing the “sharing emotions or feelings” one with the “feedback” one.

Psychiatric and oncological studies - the most recurring areas of interest in the evaluated studies - were more diversified than all other conditions, in terms of which and how social media platforms were used.

[insert - Table 2. Characteristics of the interventions - here]

As for the controls administered via social media, given that they were administered eminently via forum, the role of social media was almost only the “sharing emotions or feelings” one.

Outcome measures

Most outcomes were evaluated via questionnaires or validated scales that mostly were: Patient Health Questionnaire-9 (PHQ-9) or other versions of it (n=24); General Anxiety Disorder-7 (GAD-7) or other versions (n=14); Hospital Anxiety and Depression Scale (HADS) (n=12); Sheehan Disability Scale (SDS) (n=11); Beck Depression Inventory®-II (BDI-II) or other versions (n=9). All studies had more than one outcome to measure, and they used more than one scale or questionnaire to evaluate patients' depression, anxiety, quality of life, functional impairment, and pain.

Among the studies with social media driven interventions, 53 studies reported significant improvements in patients' psychological outcomes; 20 reported no significant results; 2 stated to have obtained insufficient data due to the insufficient sample size of their studies. None of the studies reported a negative effect (Supplemental Table S5).

DISCUSSION

This review highlighted the use of social media to provide psychological support for patients with chronic non-communicable diseases. Overall, 75 RCTs published between 2008 and 2021 were included. Most patients were women with an age range from 15.5 to 65, affected by psychiatric or oncologic diseases. Interventions were mostly administered as peer-to-peer interactions via chat rooms and forums, allowing the participants to share their feelings. Additionally, interactions via web-calling platforms, chat rooms or forums with psychotherapists or health professionals were common too, allowing participants to receive psychotherapy or feedback.

No outstanding differences in social media usage between different settings (such as different diseases or different patients' gender and age) were identified.

There might be some possible explanations for the broad involvement of psychiatric and oncologic patients. Social media, thanks to peer-to-peer interaction, are already known for their usefulness in mental health care (Naslund et al., 2016). Moreover, psychiatric patients have needs that are seldom adequately addressed, requiring a wide choice of treatment options (Lake & Turner, 2017) that may result in the necessity to study new ways to administer psychological interventions. Furthermore, oncologic patients are well known for their needed psychological support, although too often their psychological symptoms are confused as an expected consequence of cancer disease (Merckaert et al., 2010), underestimating the occurrence of psychological complications in oncologic patients (Grassi et al., 2017).

The extensive use of peer-to-peer interaction is in line with previous research (Betton et al, 2015; Chen & Wang, 2021). Indeed, the effectiveness of peer-to-peer support groups is already known for many conditions (Evans et al., 2021). They provide emotional, appraisal and informational assistance shared with members suffering from the same condition (Doull et al., 2017). Moreover, peers could give importance to aspects that might be overlooked by health professionals, such as hearing about others' experiences undergoing specific treatments, and performing self-care activities. (Rupert et al., 2016). Participants can document and share their progress, setting common goals, supporting, motivating and educating each other, even when moderated by health professionals to avoid misinformation and the spreading of fake news (Chen & Wang, 2021). Peer-to-peer interaction has proven to be effective also in engaging those hard-to-reach populations, not only geographically

speaking, but also those who fear reaching out for help (Prescott et al., 2020; Sokol & Fisher, 2016).

In this perspective, social media that allow peer-to-peer interaction could reduce social stigma and give a sense of belonging to a community (Smailhodzic et al., 2016; Naslund et al., 2016). The possibility of not revealing one's identity, the asynchronicity of interactions, the possibility of getting support 24/7, and the chance to talk with someone who shares similar experiences and difficulties are all relevant aspects in challenging the stigma and the fear of being disapproved or marginalized for one's diagnosis (Chen & Wang, 2021; Naslund et al., 2016).

During interventions, health professionals mainly provided feedback on progress or at most some instructions. These kinds of interventions, thanks to better follow-up execution and better teaching about disease management, are reported to increase psychological well-being and self-efficacy levels (Smailhodzic et al., 2016; Wang et al., 2018; Karabulut et al., 2014; Pendergast et al., 2017; Fukuoka et al., 2015). Furthermore, most interventions involving interaction with psychotherapists aimed to administer telepsychotherapy, a well-known practice since the 90s (E. H. Kaplan, 1997). This takes advantage of social media platforms like Skype to deliver videoconferencing even if not without important hindrances, such as reticence of professionals, lack of digital literacy and training of both professionals and patients (Van Daele et al., 2020).

Surprisingly, social media were used quite similarly in all contexts, despite the heterogeneity of patients and diseases involved. Additionally, only a few kinds of social media platforms were used, mostly earlier ones like emails, blogs, and forums. However, some variability in the kind and usage of platforms emerged in the two main nosology categories (psychiatry and

oncology) (Table 2). These findings may suggest that the choice in social media platforms is driven by usability, rather than by their characteristics or those of the target population (like gender, age, or disease). Taking into account that outcomes could change depending on programs used in interventions, it could be helpful to tailor social media to fit the patient's needs, considering how different populations experience social media (e.g. differences among generations) (Pew Research Center, 2021; Smith & Anderson, 2018).

Most interventions were about health promotion, focusing on empowering chronic sufferers about: living with their disease, managing their symptoms, and increasing awareness of their condition. Social media are easily accessible from personal computers or smartphones, opening up the possibility of the patient's home becoming the first place of care. (Smailhodzic et al., 2016; Stellefson et al., 2013). Thus, health promotion via social media could help improve the main activities of domiciliary care, among which there are both empowerment and psychological support (Cirio et al., 2021; Genet et al., 2011).

According to the affordances theory (Merolli et al., 2013), features offered to users are more important than the social media itself. For instance, among the affordances of social media assessed in our review, the possibility of anonymity helps sufferers to speak without fear of being judged, while asynchronous communication and flexibility allow participants to interact whenever they want. Additionally, social media are in constant evolution, adapting to users' needs.

In conclusion, social media could extend psychological care outside of healthcare facilities. The two most common interactions (peer-to-peer and psychotherapist) are both effective supports that are normally provided in health facilities for treating psychological issues. Administering them using social media might put patients at the center, providing a time and

space extension of routine care (Mohr et al., 2015). Considering the current decrease in human and financial resources faced by health facilities and, on the other hand, the increasing demand for a more holistic and patient-centered approach, social media could be an inexpensive, easy-to-use, and extremely diffused tool to face those issues.

Limitations

Regarding limitations, we decided to focus on the top 35 noncommunicable diseases causing DALYs in people over 15 years of age. Possibly, by extending the research to other chronic noncommunicable diseases and expanding the age range of the subjects, the results could change. Also, this study does not consider chronic conditions related to communicable diseases. The search was carried out using three databases, so the results could change by extending the search to other databases. Furthermore, scientific literature may be limited in showing the real-world use of apps or social media, which can be offered to the population without an evidence-based study of efficacy (Bert et al., 2016). Finally, given the heterogeneity of the results, we did not conduct a meta-analysis to assess whether the interventions were effective or not.

CONCLUSION

This work contributes to shed some light on the actual social media usage in clinical research, describing the characteristics of social media-driven interventions for psychological support in patients with chronic diseases and their potential application in future tailored interventions on the specific patients' needs.

In clinical research, it seemed that social media were not used to their full potential, chosen mainly by usability, rather than by their characteristics or those of the target population. Therefore, it will be essential to analyze how these tools evolve, understanding the complex interactions between participants to administer more efficient interventions, directly into the patient's house.

In conclusion, from a public health perspective, it will be fundamental for policymakers to consider the potential of social media for the implementation of telemedicine. This is relevant especially considering the COVID-19 pandemic, which highlighted the need for new approaches to patients that can quickly and effectively reach more people, overcoming physical, psychological, and geographic barriers to accessing care.

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The authors report there are no competing interests to declare.

Data availability statement

All relevant data are within the paper.

Ethics information

Not applicable.

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Table 1. PICOS approach
Table 2. Characteristics of the interventions
Figure 1. Study selection process