Social Networks in Health-Care Industry

Subjects: Health Care Sciences & Services | Communication | Management
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The application of social networks in the health domain has become increasingly prevalent. They are web-based technologies which bring together a group of people and health-care providers having in common health-related interests, who share text, image, video and audio contents and interact with each other. This explains the increasing amount of attention paid to this topic by researchers who have investigated a variety of issues dealing with the specific applications in the health-care industry. The aim of this study is to systematize this fragmented body of literature, and provide a comprehensive and multi-level overview of the studies that has been carried out to date on social network uses in healthcare, taking into account the great level of diversity that characterizes this industry. To this end, we conduct a scoping review enabling to identify the major research streams, whose aggregate knowledge are discussed according to three levels of analysis that reflect the viewpoints of the major actors using social networks for health-care purposes, i.e., governments, health-care providers (including health-care organizations and professionals) and social networks' users (including ill patients and general public). We conclude by proposing directions for future research.

Keywords: social media ; social network ; healthcare

1. Introduction

A Multi-Level Analysis of Studies Dealing with Social Network Use in HealthcareDiscussion of studies under review has been grouped according to the emphasis put on governments, health-care providers and social network users. The first describes the opportunities and challenges faced by governments because of the e-health and care management. The second focuses on the implications of social network use by (a) health- care organizations (HCO), intended as purposefully designed, structured social system developed for the delivery of health-care services by specialized workforces to defined communities; (b) health-care professionals, including individuals with specialized skills and knowledge, gained through formal training and experience, which provide health-care treatment and advice. The third refers to motivations, concerns, as well as the practices and appropriation of social networks by patients, i.e., a person who is receiving medical care or who is cared by a particular doctor, as well as by people that—even if not sick—may use social networks for health-related purposes. In the following, we discuss each of them in detail.

2. Governments

Some authors argue that social networks may be exploited to reduce social inequalities [1][2] and rural-urban health disparities [3]. Health-focused social networking sites (e.g., PatientsLikeMe, Mumsnet) have the potential to link people who have a health experience in common and who would otherwise not interact because they are geographically isolated from each other, because they are limited in their ability to interact socially or because interactions about their health conditions are stigmatized [1]. Patients may use social networks to amplify their voices and make pressure on relevant actors through supporting campaigns aimed to direct policies and practices toward issues critical to their pathologies (e.g., funding research on rare genetic diseases) [2], and even get to change health systems [1]. Likewise, by analysing the patterns of communications exchanged among users of online health communities, Goh et al. (2016) has found that social networks are likely to be instruments of social equity because people living in urban areas support those who live in rural areas by sharing health knowledge and increasing their capabilities, thereby alleviating disparities between urban and rural areas, which sometimes is significant [3].

Social networks are also viewed as powerful tools for bio-surveillance by several studies [4][5][6]. People use social networks to share with other users, personal experiences and opinions on medical conditions, therapies and side effects, which often they are reluctant to discuss with health-care workers. This real-time data is collected faster than clinical data and, if pre-processed (i.e., cleaned from useless and noisy text) and then analysed with appropriate techniques and software, enable a surveillance capability for governments [4]. This refers to the monitoring of health-damaging behaviours

(e.g., smoking, drugs and alcohol use), as well as to self-medication actions and side effects of medicines [4][5]. According to Moreno et al. (2011), Facebook can be used also as an innovative way to identify young people with mental health disorders or struggling with depression [6].

Despite recognizing their potentialities, another group of studies have pointed at the challenges that should be managed by institutions when considering the social network uses for health-related purposes [7][8][9][10].

First, the digital divide, i.e., geographical areas have different access to technologies and/or people have different technology-related knowledge, remains a priority issue to be solved if governments intend to focus on technological innovations to improve the health systems [11]. Second, open social networks (e.g., Facebook) are important for governments to influence people to embrace healthy lifestyles and to understand the population sentiment about, e.g., vaccine and the behaviours that people are willing to engage in [12][13]. However, they are also channels for the spread of false, or incomplete health information that lack of scientific evidence, which has the potential to compromise governments' activities and image, as well as undermine progress in medicine and healthcare [14]. Misinformation is exacerbated by echo chamber effect—i.e., misinformation is amplified when network increases, as well as by social manipulations which may result from individual account activities ("social bots") and/or "inauthentic behaviors" referred to activities deliberately put in place to artificially manipulate the conversations to make them appear more popular than they are [8]. Third, governments have an incumbent obligation to intervene to ensure the balance among privacy (i.e., right to decide which, how and when communicate personal information), security (i.e., confidentiality, prevent disclosure personal information to unauthorized individuals) and sharing personal data on social networks to ensure that the disclosure of sensitive health information does not harm the person and his or her family and friends [7][10]. Studies have found that many people release personal information on social networks because they do not realize the risks associated with it, nor do they know what tools are available to protect themselves and which privacy policies are in place. They feel a social pressure to be present on social networks and share information assuming incorrectly they interact only with their closest contacts [10]. The literature has addressed the privacy issue and underlined that the designers of social networks should help people configure their sharing setting appropriately [7]. Likewise, Lau et al. (2012) put in evidence the need that governments establish a regulatory body and policies ensuring that social media are used in a safe and effective manner, to educate users' skills in order to improve their attitude to social media (safe access and/or production of contents and materials); to develop a scientific approach in design the public health-related campaigns in order that people can really understand the message sent by government and public bodies [9].

3. Health-Care Providers

3.1. Health-Care Organizations

Social networks represent an effective and costless tool for health-care organizations to communicate with patients, having huge potential for their engagement through institutional as well as informal posts, photos, and videos sharing [15]. They offer room for an interactive environment where clinics may communicate in real-time with patients, getting them engaged in ongoing dialogues beyond doctor consultations that allow healthcare information to be provided, treatments to be followed up and questions to be answered, making processes more efficient and customer oriented, and facilitating the development of closer relationships with patients [1][16][17]. Health messaging may also be acted on by the patients, thereby opening a dialogue with the organization that allows both parties to work collaboratively to address issues affecting the health and well-being of the social networks' users [15]. These digital platforms also offer the opportunity to provide information about the organizations, to inform and keep the public up to date with themes of public interest, as well as to report about internal research activities [18].

Nevertheless, most studies have so far showed a scarce adoption of social networks by health-care organizations, mainly due to a poor managerial culture, which is many because practitioners do not recognize their potentialities, e.g., to reinforce the relationship with patients and improve the reputation of the organization [19][18][20]. Even those that are currently using social networks (mainly Facebook or Twitter) do not fully exploit them to create positive interactions with their patients and dialogically communicate about health-related themes with followers. Social networks are used to distribute information (e.g., news and events about the hospital), rather than capitalizing on the interactivity enabled by a constellation of tools and technologies that support peer-to-peer conversations among the health-care organizations, patients, and all stakeholders, crucial to engage and maintain a relationship with them [18][20].

The challenge for health-care providers is to understand where the conversation is already being held and intervene to direct it in the desired direction [21][22]. Several studies have underlined the importance that health-care organizations elaborate a strategic plan for digital communication centred around informational as well as emotionally focused conversations [23][15][24] that consider the specificities of the health-care consumers, who usually are more sensitive to

potential risks associated with health-related information-seeking and sharing behaviours on social networks [24][25][26]. Health-care staff actively contribute to this conversation so that the inappropriate use of social networks (e.g., complaints about patients which evidence, even if anonymous, a lack of empathy and respect) may damage the organization and raise legal and/or ethical issues with negative consequences for organizational reputation [27][28].

From an operational point of view, a team of professionals should be devoted to the digital communications, i.e., to keep the social networks' page dynamic, attractive as well as updated and interactive with frequent and co-shared posts in order to build and maintain relationships with patients and followers [15][20]. The demanding task is stimulating the participation of followers based on the credibility and usefulness of health information provided on the page [24] and/or leveraging "opinion leader", i.e., public health influencers driving online conversation on health [23][29]. If, at the beginning, it is quite manageable to get the first impulse for social networks' pages, their maintenance is not so simple. Indeed, it is necessary to keep the page alive, monitor information for quality and reliability, minimize the privacy risks, respond timely to questions or comments received via social media channels, and create opportunities for users to engage with the organization and with each other [23][21][16][24].

3.2. Health-Care Professionals

A variety of motivations for health-care professionals (including physician, surgeons, psychologists, etc.) to use social networks have been reported in the literature. These include the opportunity to exploit these platforms for professional development, i.e., exchange of information and experiences among colleagues within community of practices [30][1][31][32]; for improving therapies by combining physical and online sessions [33] and for self-promoting interests to increase his/her own professional reputation and attract new patients [28][34][35].

Social networks have emerged as platforms for knowledge dissemination, exchange of medical information with peers, and interpersonal communication for healthcare professionals [31]. Clinicians/doctors share online treatments and therapies on patients and access data on similar situations (i.e., validation of experience, information, treatments) through colleagues included in their professional network usually organized around clinical speciality. They are available to share knowledge and information because in these virtual communities—structured as community of practices—it prevails a culture of altruism, trust, collectivism and reciprocity, as well as a respectful non-competitive environment [32]. This makes social networks a source of medical opinion that improve medical decision-making quality and support individual learning and development [30][1][32].

As for the specific field of counselling with psychologists, Kerr and Van Houten (2020) have investigated the use of digital tools (e.g., smartphones, tablets) and social media by a group of Australian therapists during in-presence sessions and during what is called online counselling, web counselling, or internet psychotherapy [33]. Their study has shown an ongoing transformation of therapeutic practices toward a "comprehensive therapy" where e-therapy is combined with face-to-face sessions, which lead the patients to perceive that therapy goes beyond 1-h consultation per week. Indeed, they have at their disposal, e.g., online programs to learn new skills (such as anxiety management skills); exercises to train at home with audio-recorded of in-session relaxation exercises led by the therapist; tools for sending synchronous and asynchronous messages to the therapist (e.g., WhatsApp and emails). As for social networks, they are used for non-intrusive connections through therapists' curated tools and patients' generated tools, including sharing posts, pictures, videos that support the patients in developing cognitive coping skills and driving positive behavioural changes. Therapists also leverage social networks to analyze the motivations to use (e.g., social pressure) and online self-representation of patients and thus evaluate their mental health [36].

Finally, Social networks, such as Facebook, Twitter, Instagram and Youtube have been also started to be used by professional for marketing activities [10]. Meng et al. (2021) have shown that physicians devote voluntary time to share online general and specific health knowledge (e.g., free health articles) to increase their online reputations and attract more patients for paid health services, thus gaining economic returns [35]. In this process, patient involvement is important to physicians, because high involved patients are willing to read, e.g., free articles, evaluate his/her expertise and competences, which influence their willingness to engage with the physician (e.g., paying for health consultations) and recommend to other users, family and friends. However, some studies have pointed at the extra-work placed on professionals, as well as at the risks associated with e-professionals. These studies have stressed the importance of maintaining professional boundaries, and thus clearly separate professional and personal accounts on social networks to avoid those online interactions that negatively affect their professional reputation and career [28][34].

4. Social Networks' Users

4.1. Ill Patients

Patient groups have benefited from the use of social networks for health purposes [37] which enable them to have interactions with health-care professionals; other patients, who offer narratives about their experiences; and caregivers, i.e., friends and family, who support patients mainly from an emotional point of view [7].

As to which categories of patients use more social networks, most studies have focused on young people and found that they choose the social networks (Facebook, Twitter, Instagram, YouTube) which they consider to be more beneficial to themselves, e.g., to reduce loneliness, exchange information and health advices with their physicians, find contents to positive entertainment [6][36][38][39].

The literature has identified two major motivations for ill people to use social networks. The first concerns the "informational support" and relates to getting information and increasing knowledge about one's own disease and its therapies by sharing the experiences with other users [34][36]. Social network enables patients (mainly those with chronic illness and disability) to access, combine and contribute health information by sharing—through video and text—their experiences with other patients and their social circle (i.e., their families and friends) having the same illness [37][1]. In this regard, communities (e.g., groups focused on diabetes management on Facebook) have been shown to help to share specialized knowledge with peers, create a self-image representation of diabetics, and used Facebook as community mobilization tool to exert pressures on politicians [37].

The second motivation concerns the "social and emotional support" gained from peer-to-peer interactions, which have been emphasized as the most critical benefits of social media settings [40][34]. Digital environments facilitate the empathy with online peers where each person (ill person or his/her own family members) can access help from the virtual communities while controlling their level of disclosure of their identity and condition [40][38]. This online peer-to-peer support has been revealed to be crucial for individuals with serious mental illnesses such as schizophrenia, schizoaffective disorder, or bipolar disorder who are turning to self-forming online communities to talk about their illness experiences, seek advice and learn from and support each other [41]. For young people, it has been showed that social networks may be the channel through which they publicly express their discomfort and depression as emerged in Moreno et al. (2011) who have found several posts on Facebook profile of college students referring explicitly to depressed mood (i.e., angry, empty, crying), decreased interest and pleasure in doing something, loss of energy, etc. [6].

However, according to Liu et al. (2020), these categories of support are strictly interrelated. Indeed, informational, emotional, esteem, and companionship supports positively influence members' belongingness to online health communities, which affects information sharing, responsible, feedback, and advocacy behaviours [42]. The greater the sense of belongingness to an online community, the more people—even those with chronic or dependent illnesses—are willing to help others in the same situation by sharing experiences and by offering advice and suggestions to health providers.

4.2. General Users

Social networks are used by public for obtaining information about healthy lifestyle, general understanding of health conditions and symptoms, side effects of medications, minor health issues having no social stigma (i.e., diseases people do not want to share publicly), as well as, to a lesser extent, for rating health-care providers [40][24][43][44]. Even though users look frequently for information on health communities and/or social networks' pages of health-care providers, Thackeray et al. (2013) have noted that they are less likely to contribute by commenting or creating posts [45].

Some studies have underlined differences in using social networks depending on the users' age. Old people use regularly social networks to complement information given by physicians, for finding about doctors' experiences and career, for discovering potential therapies [46]. In contrast, young people are prolific users of social networks for materials on healthy lifestyle, i.e., physical activity, diet/nutrition and body image. Goodyears et al. (2019) distinguish five typologies of contents, i.e., (1) automatically sourced contents promoted to young people (Instagram section "search and explore") based on their likes, followers, etc.; (2) recommended health-related content, i.e., contents on specific health-related information deliberately searched by young people; (3) Peer contents, created by other young people (e.g., selfies) which encouraged bodies comparison; (4) Likes, which include the affirmation and endorsement of health-related information; (5) reputable contents published by official organisations, sports men and women, commercial brands [47]. Nevertheless, both groups of users have expressed concerns in terms of abundance and redundancy of information, lack of guarantee of professionalism, privacy and psychological risks for vulnerable people [24][26][46].

The studies reported in the literature have also addressed distinct process of appropriation of social networks. Some people use Instagram for self-representing a healthy identity. In so doing, they are subject to the persistent pressures from self and from the community. Both impose to perform the identity of being a healthy role model, with the following development of compulsions to use technologies to document and share many aspects of health and lifestyle, in which they remain blocked also when they attempt to disengage and detox temporarily or permanently [48]. Others use Facebook for acting as an opinion leader in their circle of virtual friends and, thus, advertising weight-loss products through news feeds and walls posting [49]. Interestingly, the more they are perceived to be benevolent, the more they obtain their followers purchase a sponsored weight-loss product after seeing their advertisement. Finally, Hacker et al. (2017) have evidenced that some people use a specific application on Facebook (i.e., Crunch calories) to get the support from their friends (i.e., social capital) to engage in health behaviours (diet and physical activity) [50][51][52].

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