

CAN CLINICAL USE OF SOCIAL MEDIA IMPROVE QUALITY OF CARE IN MENTAL HEALTH? A HEALTH TECHNOLOGY ASSESSMENT APPROACH IN AN ITALIAN MENTAL HEALTH SERVICE

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SUMMARY

Clinical use of modern Information and Communication Technologies such as Social Media (SM) can easily reach and empower groups of population at risk or affected by chronic diseases, and promote improvement of quality of care. In the paper we present an assessment of SM (i.e. e-mails, websites, on line social networks, apps) in the management of mental disorders, carried out in the Mental Health Service of Trento (Italy) according to Health Technology Assessment criteria. A systematic review of literature was performed to evaluate technical features, safety and effectiveness of SM. To understand usage rate and attitude towards new social technologies of patients and professionals, we performed a context analysis by a survey conducted over a group of 88 psychiatric patients and a group of 35 professionals. At last, we made recommendations for decision makers in order to promote SM for the management of mental disorders in a context of prioritization of investments in health care.

Key words: mental health – information and communication technologies - Health Technology Assessment – systematic review – social media - survey

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BACKGROUND

In Europe, mental disorders are estimated to concern 38.2% of the whole population, meaning that approximately 165 million persons suffer or suffered of mental diseases (Gustavsson 2011). According to the results of a study commissioned by the European Brain Council, the most frequent disorders are anxiety disorders (14.0%), insomnia (7.0%), major depression (6.9%), somatoform (6.3%), alcohol and drug dependence (>4%), ADHD (5%) in the young, and dementia (1–30%, depending on age).

Despite factors such as the high prevalence of mental health conditions and the expected economic impact on individuals affected, their families and communities, people with mental health disabilities have been historically marginalized, neither they nor their families having been involved in decision-making on mental health services. A significant number of people with mental illness do not use mental health services to receive treatment for their symptoms (Pallab 2009). Nowadays, there is compelling evidence that persons with mental and psychosocial distress are achieving growing awareness and ask for increasing influence and control over events in their lives and over treatments. Self-help interventions, empowerment efforts and co-production of care are growing in importance for mental health settings (World Health Organization 2001, 2008).

In this context, Social Media (i.e. e-mails, video calls, text messages, chat lines, on line social networks),

emerged over years on the back of the exponential growth of Web 1.0 and Web 2.0 (Moorhead 2013). Dissemination of such technologies can enable patient-centered services, strategies for patient empowerment and personalization of care, together with a reduction of costs. Interest is also increasing in the application of SM in mental health care (Lal 2013).

Currently, mental health organizations are challenged with the adoption of e-mental health solutions in the real context of care (Kalkreuth 2014). In recent years it is becoming clear that there is a necessity of developing novel services and researching effective means of providing interventions to psychiatric patients (Prociow 2012).

In order to redesign services that guarantee the cost-effectiveness of the system, the technology to be introduced should be accompanied by a robust scientific body of evidence, assessment frameworks and standards (regulation of technical, legal and organizational content) to support its safety, patient-centeredness and efficacy, as well as an economical analysis to investigate the potential impact on budget. In addition, the main target in the development and deployment of such initiatives is the engagement of consumer and other key stakeholder groups (Lal 2013). The Health Technology Assessment (HTA) framework (Banta 2003) provides a valuable set of tools and methods to support such evaluation process.

Health Technology Assessment is the systematic evaluation of the properties and effects of a health technology, addressing the direct and intended effects of this technology, as well as its indirect and unintended

consequences. Its aim is that of providing decision makers with reliable and comprehensive information about all aspects related to the introduction of a health technology.

METHODS

We adopted the Health Technology Assessment approach to clarify the potential impact of the introduction of SM on mental health care, considering dimensions of technical features, safety, effectiveness and acceptability, as anticipated in the article published on *Psychiatria Danubina* in November 2014 (Di Napoli 2014). The impact of the new social technologies, intended as the whole array of SM (i.e. e-mail, websites, on line social platforms, interactive multimedia therapeutic programs), was evaluated by studying the body of evidence available and the results coming from a survey performed locally to understand habits and attitudes towards SM of patients and professionals.

We established a multi-disciplinary and multi-professional working group made up by professionals with technical, clinical and organizational competencies. We conducted our study in the Mental Health Service (MHS) of Trento.

This MHS operates in a catchment area of around 150,000 inhabitants (1,800 users in charge, of whom the 40% are “high users”), with 95 professionals. It belongs to the context of the so-called Italian Community Psychiatry (ICP) and operates on the basis of the recovery-based philosophy of “doing together” (Destefani 2011, Di Napoli 2014). For years, what was being implemented was a broad peer support initiative, wherein around 45 expert users and family members (in Italian, *Utenti e Familiari Esperti* (UFE)) were engaged in day-to-day activities with the patients while working alongside medical and nonmedical professionals. The MHS is the main psychiatric service of the Healthcare Trust of the Autonomous Province of Trento, the healthcare authority of the province of Trento. The Trust has been recognized in Italy for promoting a long lasting strategy for quality improvement (Favaretti 2015) and supporting the dissemination of HTA at national level (Favaretti 2009).

We performed a two steps assessment:

1) *Systematic review of the literature*

The PubMed database was searched from 1983 to October 2014 for relevant studies using the key terms “mental health” AND (“social media” OR “telemedicine” OR “telehealth” OR “internet” OR “smartphone” OR “informatics” OR “apps” OR “world wide web” OR “electronic support groups” OR “website*” OR “online social network” OR “google trends” OR “youtube” OR “facebook” OR “twitter” OR “patientslikeme” OR “e health” OR “e mental health” OR “ICT” OR “technolog*” OR “digital media” OR “electron-ic media” OR “social networking site*” OR “online

support” OR “online screening” OR “virtual communities”) NOT “animal model” NOT “in-vitro” NOT “addiction” NOT “gaming” NOT “plasm” NOT “cortex” NOT “brain” NOT “cyberbullying”.

The eligibility criteria for studies included in the review were: (1) randomised controlled trials (RCT) and (2) systematic reviews or reviews that examined SM applied to mental health to enhance the prevention of psychiatric illnesses, the treatment of patients with psychiatric disorders, the circulation of proper information about mental health and the improving of empowerment of psychiatric patients. Searches for grey literature such as published reports, theses, posters and conference proceedings were also excluded. Criteria for exclusion of a study in the current review were that: (1) it involved professional oriented interventions; (2) it concerned internet related illnesses like gaming, gambling, addiction, cyberbullying; (3) its discussion focused on brain, cortex, plasma; (4) it referred to mental disorders associated with other diseases; (5) it focused on alcohol or drug disorders or disorders other than psychiatric disorders; (6) it was not written in English.

2) *Survey*

A questionnaire was administered to a sample of patients affected by psychiatric diseases and mental health professionals. Common questions focused on technology ownership, comfort level, frequency of use, expectations and preferences in the use of SM in the clinical management of the illness and the enhancement of the patient-physician relationship. Additional questions that addressed only professionals were about preferred methods for the assessment and implementation of SM in the clinical setting.

We surveyed adult patients (18 years of age or older) attending local services. To limit response bias, staff and/or patients' family members could not read or complete the surveys for the patients. Surveyors (part of the research team) directly approached patients at Trento's mental health center during the months of June, July and August 2014. The questionnaire was administered to professionals working in the mental health center during the months of September and October 2014. This survey took on average 20 minutes to complete.

Surveyors entered data into Excel databases (Microsoft Office 2007; Microsoft, Redmond, WA) and corrected for discrepancies. Data were analyzed using descriptive and summary statistics. The data analysis did not include incomplete surveys.

RESULTS

Systematic review

The PubMed search yielded 2,131 results. After the screening of titles and abstract, 608 publications were identified for full-read screening. Of these latter, we included 42 reviews and 73 RCTs.

Out of the 42 reviews, eight were focused on depression and anxiety interventions, one on suicide, one on Post-traumatic Stress Disorder (PTSD), and one on Psychosis.

Eighteen reviews investigated tele-psychiatry interventions, 11 generic issues, four computer base Cognitive Behavioral Therapy (eCBT) interventions, four websites and four online peer support and social group, while only one was about smartphone application in e-mental health. Despite the methodological limitations and heterogeneity of the systematic reviews, there appears to be a general robust evidence of effectiveness (reliability and improved outcomes) and feasibility (use, satisfaction, acceptability and cost) for internet interventions in mental health internationally.

Seventy-four RCTs were identified, among which 24 on telepsychiatry, 16 online self-help interventions, 15 web interventions, 14 eCBT, four mobile application on smartphone, one e-screening. 40 studies concerned interventions on depression and anxiety, five on PTSD, five on suicide, two on psychosis, one on Obsessive Compulsive Disorder (OCD), one on Bulimia, while only two (2.70%) investigated bipolar disorders. Of the reference lists of identified reviews and RCTs, appropriate articles were identified and accessed.

The largest number of selected articles (reviews and RCTs) concerned efficacy of enabling technologies as eCBT and telemedicine, while very few included cost analysis and other issues as privacy, safety, ethical and legal issues.

A review dated 2011 reported 23 trials of the 26 selected, concluding that there is evidence of effectiveness of SM methodologies relative to controls for eCBT (Griffiths 2010). Moreover, a more recent RCT study suggests that eCBT interventions are cost-effective, often being cheaper than usual care (Musiat 2014). Another review found out that “videoconferencing appears to be as effective as in-person care for most parameters, such as feasibility, outcomes, age, and satisfaction with a single assessment and consultation or follow-up use, while may be cost-effective if someone does not have to travel or transfers as “expensive” services are avoided or for patients with high consultation rates” (Hlity 2013). These results were confirmed by another article, published in 2014, which observes that scientific literature indicates “videoconferencing, Internet and other technologies having the potential for delivering better mental health information, improved and cost effective mental health services and greater opportunities for the prevention of mental health disorders”. This scoping review has showed consistent, accurate and comprehensive data about safety of information, fidelity of treatments and prompt retrieval of relevant information enabled by the Internet (Boydell 2014).

A study dated 2012 shows that mistrust in formal treatment as taking medicines or hospitalizations, fear of coercion, and the costs of traditional mental health services were important predictors of Internet support group use (Townsend 2012).

Another systematic review about mobile phone applications (apps) in mental health showed promising results in reducing depressive symptoms and caseness, stress, anxiety, and substance use, similar to previous reviews of mHealth (Donker 2013).

Another study regarding a mobile phone self-monitoring tool used by young people experiencing mild or more depressive symptoms supports previous research suggesting that simple self-monitoring techniques effectively increase self-awareness (in this specific case, awareness of one’s own emotions) (Kauer 2012).

Recent studies demonstrated how young people were shown to prefer treatments offered via technology and were generally satisfied with online mental health resources (Kauer 2014). Eventually, 75–92% of patients of another review perceived web-based interventions as positive and useful (Alvarez-Jimenez 2014), even if a recent RCT failed in demonstrating that a Web-Based Tailored Intervention and Consultation status of adolescents (E-health4Uth) was effective in promoting other health behaviors or the mental health (Bannink 2014).

Survey

The majority of responders were women (56.8% among patients and 68.5% among professionals) and the median age was 51 years in the patient group (42% of patients were 60 years or older) and 43 years in the professional group. Psychiatric patients were mainly affected by bipolar disorders, but also by other diseases. The Professional group included educators, nurses, psychologists, psychiatrists, students and others. Most patients and professionals were regular PC users (64.8% and 94.3%). The activity most frequently performed by patients “connecting regularly” was internet surfing (61.4%), followed by the use of the e-mails (51.1%). The access to social networks was less frequent (30.7%). Among mental health staff, most performed activity was the use of e-mails (91.4%) followed by internet surfing (82.9%) and access to social networks (40%). Owning and using a smartphone was declared only by 16% of patients versus 54.3% of professional staff. Tablet was used for internet connection by 58.3% of patients and 71.4% of professionals.

A meaningful proportion of patients and professionals (38.9% and 60.0%) reported to connect to the internet every day, indicating an integration of internet use into daily life. Around a quarter of patients (25.4%) never used Internet. However, this group included either non-respondents or those not displaying any preference. Median connection time was 5 hours/week for patients and 12.6 hours per week for professionals.

Concerning the use of social networks, 44.1% of responders among patients and 57.1% among professionals used Facebook, while only by 13.8% of professionals and 14.3% of patients were users of Twitter. Nearly 22% of patients have used e-mails to contact or send documents to their attending physician, while 28% of professionals have undertaken electronic

communication with patients. Considering the perception of validity of the e-mail, approximately 61% of patients and 40% of professionals think that the use of the e-mail could reduce the number of visits or exams.

We investigated the extent to which patients and professionals perform on-line activities related to mental illness. The use of social networks, blogs, forums, videos or apps related to the pathology is limited, especially for patients.

As shown in Figure 1, searching information on the disease (44.4% and 13.9%), diagnosis (33.3% and 13.9%), symptoms (27.8% and 16.7%) and therapy

(33.3% and 16.7%), were activities most frequently (respectively, sometimes and often) carried out on line by patients.

As shown in Figure 2, on-line activities most frequently performed by professionals (respectively, sometimes and often) were: searching for information about specialized centers (40.0% and 2.9%), searching for apps related to the disease (31.4% and 8.5%), reading patients stories (sometimes 22.9% and often 5.7%), searching for video on Youtube (sometimes 17.1% and often 5.7%) and reading or commenting patient's blog (20.0% and 2.9%).

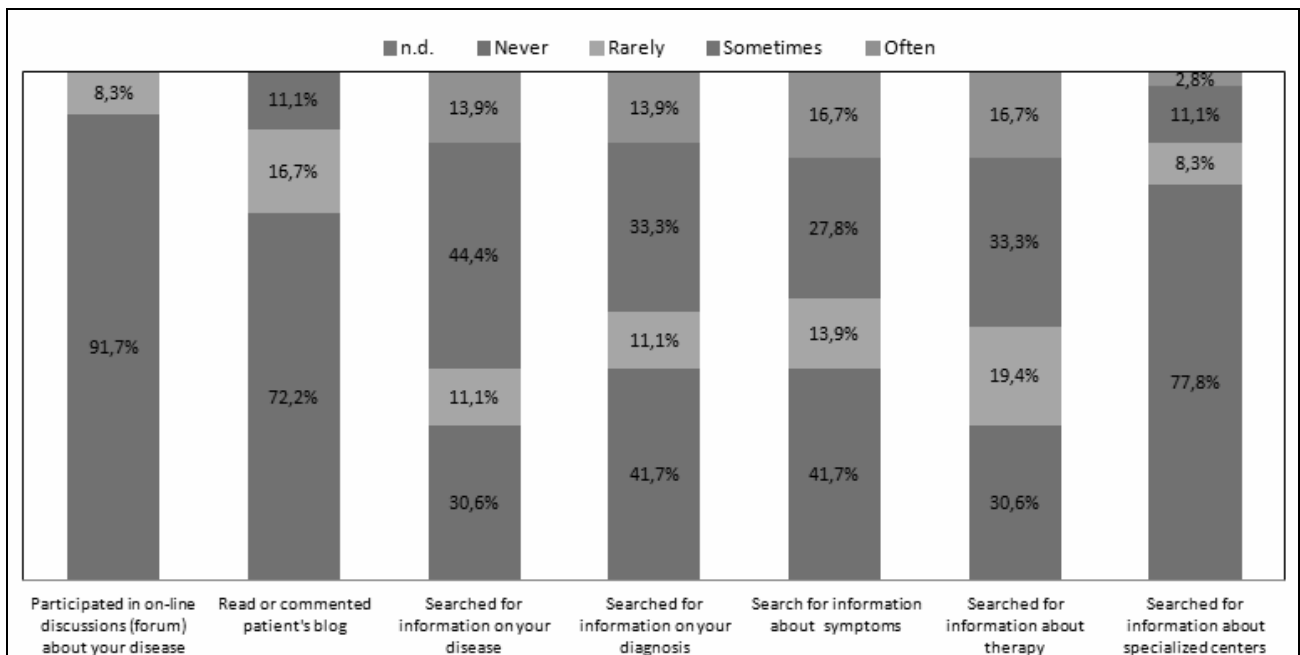


Figure 1. Frequency of activities performed in internet by patients

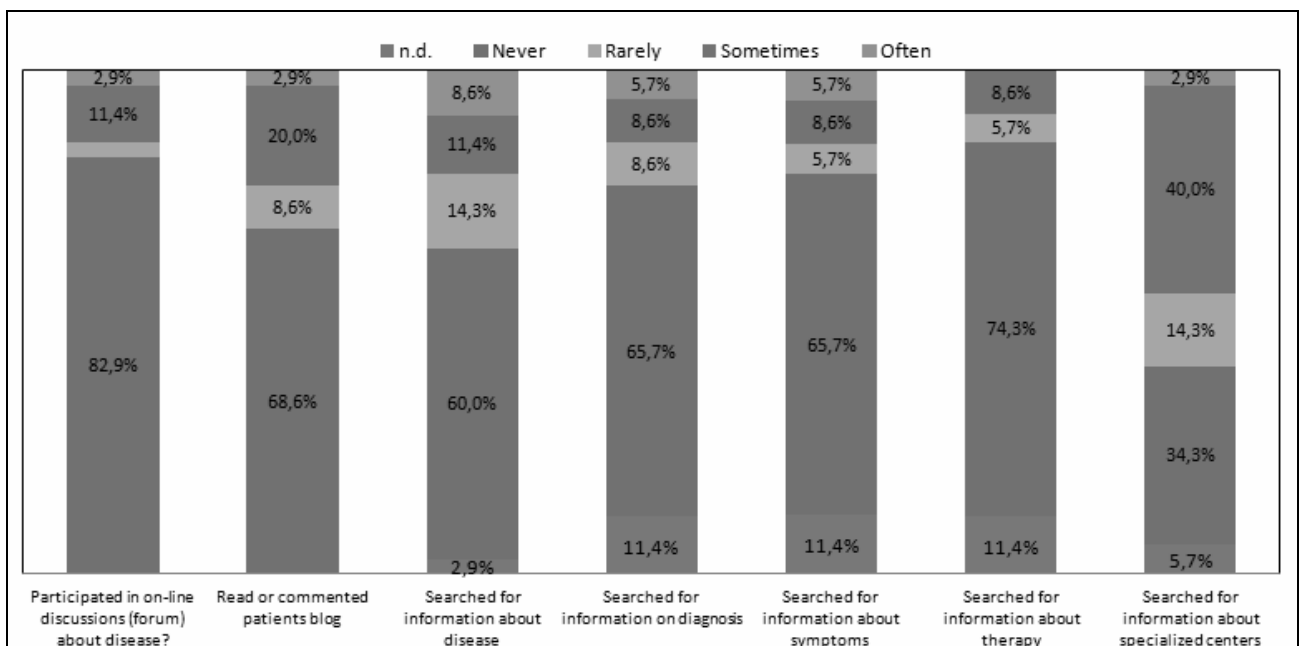


Figure 2. Frequency of activities performed in internet by professionals

We surveyed also features and contents of an internet site dedicated to the disease. Results indicated that information about the disease was of primary interest for both patients (61.1%) and professionals (68.6%). The interest to use a forum was relatively high for either patients (36.1%) and professionals (45.7%). A patient forum moderated by physicians was more welcome by patients (52.8%) than by professionals (42.9%), who seemed to like more an unmoderated forum. Interest towards bureaucratic/legislative issues related to the disease was expressed by 54.3% of professionals and only 11.1% of patients.

Notably, most of patients and professionals believed that SM (respectively 63.9% and 68.6%) could improve at least partially the management of the disease together with the clinician of implementing psychiatric care. Results indicated a major interest of such patients towards e-mail (82.1%), followed by Skype (30.8%), WhatsApp (27.4%) and Facebook (20.5%). Professionals reported greater interest for: e-mail (65.7%), Facebook (51.4%), Skype (40%) and WhatsApp (31%).

The last section of the questionnaire for professionals regarded SM assessment and implementation. Professional staff think that new technologies should be managed by the National Health Service or no profit organizations (77%), but also by private companies (40%). Issues considered most important (quite or very important) to implement SM in health systems were: safety (85.7%) and free (85.7%) connection, and integration with existing systems (74.3%).

Concerning ethical and legal implications of SM adoption in health systems, the most important (quite or very important) aspects resulted: privacy (88%), data safety (88%), informed consent (82.9%), organizational responsibilities for internet-based consultations of patients (82.9%). Preferred (quite or very important) assessment approaches to support adoption of technologies in mental health systems were: clinical studies (80%) and assessment by clinical experts (77.1%) and peers (77.1%). Treatment compliance (74.3%), quality of life (71.6%), and technical suitability (68.4%) were key (quite or very important) assessment variable for adoption of SM in mental health settings.

DISCUSSION

After the first trial about SM methods in medicine published in 1983, the publication trend of articles on this subject experienced a rapid rise, showing an exponential increase over the last 5 years. United States, Australia, United Kingdom, Netherlands and Canada revealed to be the most active countries in the field, while other European countries such as Germany, Spain, Switzerland are getting more involved in the last three years. Finally, 2014 showed several studies published in different countries all across the world, witnessing the eager growing interest for SM application to

be implemented in mental health. None of the studies suggested an inferiority of E-Mental Health for self-care, independently on the outcome chosen for the evaluation, while many suggest an actual superiority. This can be considered as a strong indicator of the potential positive impact of SM methods in mental health care, although there are major limitations to the conclusion that can be drawn from the systematic review performed. Indeed, while the number of studies and reviews on the topic is increasing, there is still a general lack of homogeneous methods to evaluate these new technologies. This is reflected in a marked heterogeneity in the outcomes investigated, making it difficult to perform a direct comparison of results among different studies. In addition, only few studies address the investigation of dimensions different from efficacy: acceptability, costs, social issues related to the implementation of SM for mental health care.

Within the world of SM for health care, another compelling application in mental health include Web-based communities, hosted services, social networking sites, video sharing sites, blogs, mashups, wikis, and apps. Such user-friendly and interactive methods can increase information share and collaboration between users. Although there is a paucity of literature describing social network use in mental health, there is an increasing interest of providers in this alternative to traditional Web pages or Intranets.

The (non) use of social media in health care should be evaluated investigating participants' underlying motives, barriers and expectations (Antheunis 2013) and target group's demand (Kalkreuth 2014). Few studies investigated psychiatric patients' Internet use (Kalkreuth 2014) and addressed mental health practitioners' use and attitude (Deen 2013).

Our survey indicated that patients used frequently computers but mostly in a traditional way: e-mail and internet surfing are preferred to social networks. Professionals, displaying an average younger age, are more experienced with new social media.

International research findings in high-income countries showed that psychiatric patients do not rank below the general population concerning the frequency of Internet use, which is especially important for accessing health related information online or participating in online programs (Trefflich 2015). Our data on psychiatric patients showed a number of people using internet similar to what reported in other Italian surveys related to Internet usage and population choices (Siliquini 2011).

From our findings, professionals seemed more interested in medical information (i.e. looking for specialized centers), applications related to the Web 2.0 (i.e. reading blogs and patients stories, using Youtube, looking for apps). Patients were more interested in a traditional use of the web-based resources (i.e. surfing the web) and mainly focused on searching for information related to their disease and its treatment.

We confirm, as reported elsewhere, that most psychiatric patients are Internet users. Differently, despite mental health, Internet use may be common among patients, while social media use is less frequent (Kalckreuth 2014). The limited use of social media may be due to a general lack of confidence with such communication tools, but also to available contents not reflecting the expectations of the patient. Patients are less familiar with the new technologies and more traditional in their use. Notably, patients over 50 years may be less competent or may have more difficulties learning the new technological content. Elderly people use the Internet less frequently than young people for health information (Brodie 2000), but their interest is growing rapidly (Singh 2008).

In this perspective, patients exhibit a major arrangement to internet use for communication with mental health professionals in line with other studies (Kalckreuth 2014) and a rate of interest higher than professionals (61% vs 40%) in adopting the e-mail for contacting specialists with the expectation of decreasing the average number of visits and exams. Probably we might explain this result taking into account the considerable importance always assigned to relationship and direct communication in psychiatric care, so that professionals may be more uncertain about the strength and reliability of relations and contacts mediated by technological tools.

Concerning a website dedicated to specific diseases, either patients and professionals are looking for the possibility of easily achieving free and correct information about diseases; professionals are interested in legal and ethics subjects, while a forum ruled by patients appears a good resource to both professionals and patients, even if people with mental disorders are more confident in a forum with a physician's moderation, appreciating the chance of matching together peers opinions with the security of a specialist's advice.

Questions targeting professionals only were those referring to the barriers and facilitators for the introduction of SM to support mental health care. As predictable, most professionals are concerned about safety and privacy issues, also because of potential related legal issues. A major facilitator was identified in having the possibility to get free internet access. Mental health care professionals are starting to incorporate Internet technologies into their professional lives but they remain divided on the ethics and utility of using these technologies in clinical care (Deen 2013).

The use of social media is growing and studies have found that physicians have begun to develop an interest in interacting with patients online (Ventola 2014).

This may confirm that advantages of e-health outweigh the disadvantages if we use such technologies as an addition to, not a replacement of, the traditional communication that frames the clinical relationship.

Study limitations

Our survey carries also some limits. Although the purpose of the study was to evaluate its use in a non-selected population of psychiatric patients and professionals working in a community mental health setting.

Patients and professionals who participated in the survey were probably different from those not interviewed, as despite the random selection process, only motivated patients or those more interested in new technologies patients may have accepted the invitation for participation to the survey. The sample is limited. Therefore, the present study may have overestimated the use of these technologies.

CONCLUDING REMARKS

In the 21st century, SM has revolutionized society, and healthcare is not an exception. In the mental health field, digital technology offers many opportunities that can change rapidly the way service users and health service may interact, empowering service users to exercise greater choice and control and to manage their own conditions more effectively. Although some benefits related to the use of SM have been shown in scientific studies, bringing new tools for social communication into the routine clinical management in mental health is still a challenging topic for most healthcare systems, including Italian community mental health services. Mental health providers (Deen et al. 2013) are increasingly using internet-based technologies, such as SM.

However, while the opportunities for treatment may seem promising, the integration of such tools in different psychiatric contexts of care is not straightforward. Scenarios change quickly and there is need to establish timely and flexible investigation of business cases to match potential solutions with real demands of users. Understanding stakeholders perspective right from the preliminary stages of planning applications of new technology is crucial for establishing requirements of services that can be arranged into care settings (Wac 2015). Health Technology Assessment can lead to a shared knowledge with all stakeholders and enable a better understanding of new technologies (Ehlers 2006) in a social context (Gagnon 2006). Through local participation in analysis and continuous assessment, HTA can provide valuable suggestions and recommendations to support decision making (Favaretti 2007). It is a long-term process rather than one short-term self contained activity, because of the technological advances in time, along with the changing individuals' needs and expectations for these technologies.

Our assessment indicates that use of new technologies and in particular website platforms, social networks as well as mobile apps, for the management of mental chronic disorders is promising. Patients and professionals were aware of the relevance of new

technologies for improving clinical treatment. Findings show a comfortable degree of interest and acceptability either by patients and professionals. However, digital literacy is crucial for picking up the most valuable application for a certain population target.

Although the findings of this study cannot be generalized, they may be transferred to similar contexts. To carve out a vision of person-centered care in community psychiatry, evaluation of these new technologies should be accompanied by embedment into existing care frameworks and deployment supported by strong partnership with patients and professionals. Implementation should be gradual and allow integration with existing systems and processes of care. Further research is needed on how to incorporate SM into clinical practice and services.

Recommendations:

- SM can be effective and safe in supporting the management of mental health care. However, the difficulties in harmonizing methods to evaluate such tools makes flaws in evidence;
- SM are likely to enable a direct relationship between patients and professionals;
- both professionals and patients largely agree in indicating SM as a potential method to proficiently improve the management of mental health disorders;
- although PCs are still the most widely used devices to access the internet among both patients and professionals, extension of solution available for portable devices should be implemented to allow wider use at home and in mobility;
- e-mails appears to be the preferred elective method for the exchange of information between patients and professionals and might be incorporated into their practices;
- if websites are considered to be implemented, solutions chosen should allow sharing of contents covering all aspects of the disease, especially reliable information about the pathology;
- the use of forums or other on line social networks could be successfully implemented with the direct engagement of a physician;
- professionals express concerns about delivering information about legal and bureaucratic aspects of the pathology, as well as concern about privacy issues related to SM use;
- designing of tools based on SM to support the management of mental health diseases, with specific reference to the communicative aspect, should take into account specific features of the target population (as age or disease) and its interests, expectations and desires to provide effective, useful and appreciated service;
- person-centered clinical pathways appear fundamental for proper integration of online and in-persons resources;
- post-implementation assessment should be carried out, in order to build evidence on the topic and support sharing of achievements with others;
- in particular, evidence should be collected about economic and organizational aspects, in order to clarify the cost-effectiveness of SM for management of mental health disorders.

Acknowledgements: None.

Conflict of interest: None to declare.

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