

General

# PERCEPTIONS AND EXPERIENCES OF M-HEALTH TECHNOLOGIES AND SOCIAL MEDIA: A QUALITATIVE STUDY IN PATIENTS WITH SCHIZOPHRENIA

Pasquale Caponnetto<sup>1,2</sup>, Maria Salvina Signorelli<sup>3</sup>, Jennifer Tiralongo<sup>1</sup>, Alessandro Rodolico<sup>3</sup>, Carmen Concerto<sup>3</sup>, Antonino Petralia<sup>3</sup>, Lucio Inguscio<sup>4</sup>

<sup>1</sup> Department of Educational Sciences, Section of Psychology, University of Catania, 95121 Catania, Italy, <sup>2</sup> Center of Excellence for the Acceleration of Harm Reduction (COEHAR), University of Catania, 95121 Catania, Italy, <sup>3</sup> Department of Clinical and Experimental Medicine, Psychiatry Unit, University of Catania, 95123 Catania, Italy, <sup>4</sup> Department of Dynamic, Clinical Psychology and Health Studies, Faculty of Medicine and Psychology, Sapienza University of Rome, 00185 Rome, Italy

Keywords: schizophrenia, social media, m-health, mobile digital tools, mobile technologies.

<https://doi.org/10.52965/001c.89721>

---

## Health Psychology Research

Vol. 11, 2023

---

The growing influence of technology in the realm of mental health presents promising prospects for patients with psychiatric disorders like schizophrenia. The objective of this study is to investigate the perceptions of individuals with schizophrenia spectrum disorder regarding the utilization of technology and social media. The qualitative methodology used consists of an individual structured interview and the data were subjected to thematic analysis. The results show that the participants use digital tools for various activities such as work, searching for information, entertainment, and socialising. Their perceptions confirm the usefulness and easy accessibility of these tools, which enable positive changes in the organisation of daily life and social relationships. In general, it is possible to identify both positive and negative aspects of technology and social media, such as abuse and addictive behaviour, network and information overload problems, and the risk that privacy may not be guaranteed; among the positive ones, the promotion of remote sociability, speed in carrying out tasks and acquiring useful information emerge. Most of the participants express a positive perception of the possibility that digital tools can help in the field of mental health.

## INTRODUCTION

Schizophrenia is a heterogeneous chronic mental disorder characterized by disturbances of emotions, behavior and thinking. People with this disorder present a great challenge in treatment management, the most promising therapeutic approaches today emphasize the importance of both pharmacological, psychological and psychosocial interventions.

Internet use affects various aspects of human life; in the social sphere, online contacts constitute an important part where individuals interact with each other using tools such as computers and smartphones.<sup>1</sup> Technology is rapidly changing society, this poses new problems for different population groups, such as patients with mental illnesses. Data on the frequency of Internet use among psychiatric patients show an increase over time, with studies from 2008 reporting 64.7 %<sup>2</sup> while updates for 2020 report 98.3 %.<sup>3</sup>

The rise of new technologies has also affected patients with schizophrenia, who increasingly own technological devices and use them in a similar way to the rest of the general population; several studies have investigated their purposes of use and influences on symptoms.<sup>4,5</sup> Comparing the purposes of use of patients with those of healthy partici-

pants, in both groups the main purposes are entertainment and socialization.<sup>6</sup>

Participants with psychosis agreed that mobile technology is an acceptable and relevant way to gather information and access support for mental health problems.<sup>4</sup> Additional purposes identified include: identifying coping strategies, setting alarms and reminders for medication management, listening to music in order to block or manage voices, gathering information and receiving support from family and friends.<sup>7</sup> Studies published between 2005 and 2013, reported that social networks were used by people with psychosis to establish and maintain relationships and receive online support, this refers to online peer support. The peer support consisted mainly of receiving information on their illness and its treatment and on sharing experiences with fellow patients. Online forums were also used for discussion around the social-emotional aspects of having a diagnosis.<sup>8,9</sup> The study by Bauer et al.<sup>10</sup> reported that patients employed self-help mechanisms such as disclosure to discuss their experiences of having a diagnosis of bipolar. The notion of being part of larger online group was expressed by patients as well as providing with empathy and support.

Online interactions may be helpful in coping with negative symptoms, passive social withdrawal is specific to

schizophrenia and related disorders, which is why patients usually tend to reduce social networks.<sup>11</sup> This type of online contact may facilitate social interactions for people with psychosis as it does not require immediate responses as in face-to-face interactions, which may reduce difficulties related to psychotic symptoms.<sup>12</sup> This could be because online relationships do not require verbal communication or immediate responses, which may be more difficult due to the symptoms of mental illnesses; because social media interactions can often be anonymous and stigma might be less pronounced online than in face-to-face communication.<sup>13</sup> In a study by Brusilovskiy et al.<sup>12</sup> the findings suggest that social media use may not be harmful and does not appear to be negatively associated with psychosocial well-being.

Within a theoretical framework that embraces the possibilities presented by technology, we find the concept of Positive Technology (PT). PT is a scientific application approach that leverages technology to enhance the quality of personal experiences by modifying certain characteristics. The term 'digital health' pertains to the utilization of information and communication technologies for managing illnesses and associated risks, while simultaneously fostering well-being through the delivery and support of health-care services. Technology represent an enormous potential to facilitate mental health care, foster research and clinical practice, and support the rehabilitation of individuals with psychiatric conditions. Several studies have examined the application of technologies to support diagnostic and intervention procedures in mental disorders; the literature shows examples of the use of these tools in patients with schizophrenia spectrum disorder.

In a study by Bowie et al.<sup>14</sup> video-conferencing group therapy was evaluated and two therapies were proposed to improve cognitive functioning: Action-Based Cognitive Remediation (ABCR) is a programme characterized by neurocognitive techniques which included activities with defined goals, the therapy sessions promoted computerised cognitive exercises, therapist-led group discussions to develop problem-solving strategies, and role-plays to apply skills and strategies to everyday life; Moritz and Woodward<sup>15</sup> have used Metacognitive Training (MCT) to increase awareness and improve cognitive and behavioral biases based on inferences drawn from research on cognition and metacognition in schizophrenia; through psycho-education and group exercises, reflections on the inference and integration of new information were promoted. Considering various measures of feasibility such as attendance and drop-out rates, as well as the use of questionnaires and the Positive and Negative Symptom Scale (PANSS), the results show that distance group therapies can be considered feasible and acceptable by patients and therapists.

It has been stated that patients express favorable attitudes towards digital health interventions and self-management systems; several sources show high response rates to such interventions, along with results indicating better medication adherence, increased social interactions and decreased hallucinations.<sup>13,16</sup> It is important to state that new technologies are not intended to replace traditional

procedures but to complement them by providing new opportunities, in fact, digital health can be a resource that can expand existing services and provide new tools to manage illness.

The qualitative literature on the use of technologies by people with schizophrenia and what their experiences and opinions are still limited. However, to benefit the development of the field and introduce interventions into health-care, it is also important to investigate patients' perceptions.<sup>17</sup>

To promote this area, knowledge of patients' experiences with digital tools and the use of technology enables the identification of factors that support or hinder their involvement. Qualitative research has assessed opinions on the potential of the tools to foster psychological support: positive factors include symptom monitoring, non-stigmatizing properties, and the ability to promote doctor-patient communication, whereas, challenges include navigational difficulties, symptom-related obstacles such as suspiciousness, and privacy. Studies with respect to Internet use in patients with schizophrenia spectrum disorder indicate that they search for online information on diagnosis, medication and mental health services.<sup>18</sup>

The study by Palmier-Claus et al.<sup>19</sup> explores patients' perceptions of the monitoring of their symptoms by mobile phone, with the aim of understanding its usefulness in daily life and clinical care. Three themes were identified from the thematic analysis: interest and familiarity, validity and integration into daily routine, and perceived impact on clinical care. With respect to the first theme, participants appreciated the familiarity and convenience of using a text messaging system on their phones. Patients also stated that the repetitiveness of the questions caused them to become disinterested, especially if they had to complete them for too long periods of time. Some patients noted that focusing on symptoms made them more anxious, which led to worsening paranoid symptoms and suspiciousness about data use. The integration of technology into daily routines was considered acceptable, the devices were described as non-stigmatizing. About the perceived impact on clinical care, participants expressed positive considerations regarding the collection of information on their mental state, identifying benefits for researchers and clinicians who can use the data obtained to propose more effective interventions. Another benefit is the ability to promote better communication between doctors and users. Some negative aspects also emerged, with participants considering mobile devices impersonal and inadequate in dealing with practical problems, emphasizing the importance of social contact and interaction with the clinical team to promote greater social support. The results presented suggest that patients are aware of the benefits that mobile phone-based assessment could bring to clinical care, but to overcome some of the obstacles it may be important to provide assistance in the early stages of technology integration and to provide more flexibility during this process.

In the qualitative study by Bucci et al.<sup>4</sup> semi-structured interviews were conducted with the aim of exploring perspectives and attitudes on digital health interventions

(DHI) in patients with psychosis. Patients' opinions indicated that technology could increase access and support for mental health; it was stated that apps can overcome some of the barriers of traditional therapies by increasing access to care and services. digital tools should complement and not replace contact with the doctor. Barriers to the adoption of digital health interventions relate to the lack of emotional reassurance and interpersonal contact while connected to smartphones and the Internet, limiting interactions on an emotional level.

The study by Arnold et al.<sup>18</sup> investigated participants' perceptions in relation to watching videos in which other patients recount their experiences with the disease. Two central themes were identified from the interviews: challenges and positive factors in using the website. Symptom-related issues influence involvement in the use of technology, participants spoke of difficulties related to motivation, mood and paranoid thoughts that reduce interest and engagement in such activities. Some negative perceptions towards the proposed website emerged, it was considered irrelevant to their needs, in other cases, patients preferred not to think about their mental illness as it was associated with difficult and negative emotions. Further obstacles included lack of access to the Internet, difficulties in navigating the site and low levels of computer skills. Other patients were, however, interested in hearing about experiences similar to their own.

Considering the theoretical and methodological premises derived from the literature, the present qualitative study aims to explore perceptions regarding the use of technology and social media in patients with schizophrenia spectrum disorder. Regarding these topics, the aim is to understand the uses of digital tools, patients' opinions on the main social networks, positive or negative aspects, impact on symptoms, and consideration of these in the context of mental health. What we intend to investigate are these people's experiences with new technologies, to understand what they think both regarding personal use and about the possibility of digital tools to support and improve mental well-being.

## 2. MATERIALS AND METHODS

Qualitative research is a method of investigation that relies on observation or interaction with participants to gain an in-depth understanding of human behavior; it consists of describing the perspectives of those participating in events and deriving possible explanations of the observed phenomena.<sup>20</sup> The phenomenological approach guides the present qualitative study, it is a methodology that seeks to discover how individuals construct the meaning of experiences, investigating their perspective in order to improve the accuracy of the representation of the phenomenon.<sup>21</sup> This interpretative paradigm considers each situation as unique and its meaning as the result of various circumstances and argues that the behaviors derived from experiences help to describe reality. Furthermore, interpretation may be possible by analyzing recordings and formulating the categories against which a text is analyzed.<sup>22</sup>

In purpose to define the objective, questions were developed to guide the study (Table 1). An individual structured interview was used to collect the data, created and discussed with two psychologists and supervised (Table 2). People with schizophrenia spectrum disorders may be suspicious, have difficulties with attention and concentration, or have poverty of thought or in some cases logorrhoea; therefore, a structured approach provides more focus for both interviewer and interviewee than an unstructured or semi-structured approach. The interviews followed a structured thematic guide covering the following aspects: perceptions on mobile digital tools; perceptions on social networks; opinions on the use of technology in the mental health field.

Before the interview participants were informed about the purpose of the research, after which permission was asked to record the conversation, explaining that the audio recording would be used for transcription and data analysis. Participants were made clear that they could refuse to answer the questions and could end the interview at any time, they were also informed about the confidentiality of what they said. The duration of the interview ranged from 5 to 10 minutes, depending on the extent of the answers and the readiness of the subjects to report their opinions. They were given the opportunity to report what they thought was important in response to the interview questions; if the patient gave unrelated answers to the questions, an attempt was made to bring the focus back to the proposed topics by rephrasing or repeating the question.

Regarding sampling, the sample size was predetermined, quota sampling is a sampling technique whereby a quota of participants is preset; in this study, 28 participants were recruited. Table 3 shows the characteristics of the participants.

Several interviews took place in specialized locations, including a smoke-free center at a University Hospital in Catania and two Therapeutic Assisted Communities (ATCs) in Avola and Noto. In addition, interviews were held at a Family Home in Nicolosi. Some interviews were conducted remotely via telephone, due to the inability of patients to reach the centers designated for our survey. The causes involved health problems or travel difficulties due to worsening symptoms. In addition, participants were also recruited from a hospital in Ancona, Italy. A total of 6 telephone interviews and 22 face-to-face interviews were conducted.

Thematic analysis was used to analyze, synthesize and interpret data. It is a method for identifying and analyzing themes within the data, it is also described as a flexible research tool that provides a detailed account of information and can be used within different theoretical frameworks.<sup>22</sup> In thematic analysis, a theme is defined as "a pattern found in information that at a minimum describes and organizes possible observations and at a maximum interprets aspects of the phenomenon".<sup>23</sup>

Braun and Clarke suggest a six-phased guide:

- Familiarization: the first step is to familiarize oneself with the data and develop an in-depth knowledge by re-reading the interview transcripts.

**Table 1. Research questions.**

1. What are their perceptions of mobile digital tools (smartphones, computers, tablets, smartwatches, virtual reality)?
2. What are their perceptions of the main social networks (Facebook, Instagram, Twitter, TikTok)?
3. What are patients' perceptions of the use of technology in improving mental health?

- Code generation: this consists of identifying items of interest, summarizing them and identifying them with codes, understood as words or short phrases. Thus, the aim of this second phase is to generate a coding system by two independent researchers, assigning initial codes to the units of analysis. The authors argue the importance of also paying attention to implicit and latent meaning.
- Searching for themes: the search for recurring and significant themes takes place, considering the developed codes. Based on how the codes combine, broad themes are identified that group them together.
- Revision of the themes: this phase is dedicated to the verification of the themes by checking their consistency with the data, it is also dedicated to the revision of the themes and their refinement, modifying and developing them, for example, it may be necessary to compress two themes or split them.
- Definition and naming of themes: the final themes are defined using clear names for each of them, in fact, each theme is given a label to name it.
- Production of the report: in the final phase, a final report is produced, giving more attention to the themes that answer the research questions, including extracts from the interviews to make the meaning of the themes and the report explicit.

Following the steps of the thematic guide, the participants' answers were synthesized into four themes together with their respective codes. The process was facilitated using NVivo software, a CAQDAS (Computer Aided Qualitative Data Analysis Software) programme for managing, exploring and modelling information. The software enables the collection, structuring, classification and grouping of data, as well as the presentation of results.

**RESULTS**

[Table 4](#) shows the themes and codes developed based on the participants' answers.

**THEME 1 PERCEPTIONS ON MOBILE DIGITAL TOOLS**

With respect to the knowledge and use of tools all participants state that they are familiar with smartphones, but not all of them are familiar with other devices, in fact, 18 responses refer to the computer, 9 to the tablet and 5 to the smartwatch. 24 participants state that they use smartphones, for 11 of them the use also extends to computers,

while with respect to tablets and smartwatches, fewer participants use them, 3 and 2 respectively.

The purposes related to these tools are multiple and concern different areas from work to entertainment: with respect to work, the possibility of improving work productivity is considered, in this area the activities carried out by the participants are related to opening attachments, sending e-mails, storing important data, sending resumes; access to the Internet is aimed at searching for information of various kinds, allowing the subject to read up on what is happening in the world, the main functions that emerged are reading the news, connecting on social networks, using the Internet also as a navigator. Obviously, the exchange of messages and calls is common, to keep in touch with the family, especially in the case of subjects placed in ATCs. Entertainment activities include listening to music, watching videos and films. Another use may be to write down some thoughts about oneself, one's life and what happens to him/her, and to keep personal memories. The use of the smartwatch for daily physical activity is indicated, although by a very small number of participants. The smartwatch is compared to a computer in the sense that it allows for different functionalities.

One concept dealt with is privacy, some are concerned about this topic as it may not be maintained and therefore they think they have to be careful, there is a perceived risk that someone may not guarantee the protection of their data and that they may control us, also fearing possible invasions. However, if the sources are secure it is unlikely that data theft will happen, moreover the participants consider that they do not have important material to protect, in other cases this topic does not cause doubts or concerns.

The perceptions on mobile digital tools that emerged show that they are considered useful and indispensable in everyday life, belonging to today's world where digitization is progressing. They are considered convenient and access to them is considered easy, and they make it possible to speed up and organize certain activities, such as work. They are perceived by some as an ecological alternative, important in limiting damage to the environment as they allow, for example, a reduction in paper consumption. In general, it is stated that these tools have positively changed the way of living and dealing with people.

**THEME 2 PERCEPTIONS ON SOCIAL NETWORKS**

With reference to social networks, 15 participants use them, 13 of them log into the Facebook platform, 7 into the Instagram platform, only 2 claim to use Twitter and Tik Tok and only one subject indicates Snapchat. The remaining 13

**Table 2. Structured interview.**

1. What mobile digital tools do you know? (if no answer within 1 minute suggest the following tools: smartphone, smartwatch, tablet, computer, virtual reality).
2. Which of these do you use?
3. For what main purposes?
4. What do you think about these tools? (if no answer within 1 minute please investigate aspects such as usefulness, ease of access and use, privacy, possible benefits or risks)
5. Do you use the main social networks? (Facebook, Instagram, Twitter, TikTok)
6. What do you think about them?
7. What do you think are the positive and negative aspects of social networks?
8. Do you think that tools and social networks can influence your symptoms and mental health?
9. Do you think these technologies can be helpful in psychological support and improvement of mental health?

**Table 3. Participants' Characteristics**

	Total (=28)
Men: n (%)	18 (64%)
Women n (%)	10 (36%)
Mean age (SD)	49.36 (10.2)
Age of onset of schizophrenia spectrum disorder: mean age (SD)	21.6 (3.5)
Patients in ATC: n (%)	14 (50%)
Years of education: mean (SD)	10.07 (3.3)
Years of smoking duration: mean (SD)	25.5 (11.4)

participants do not use any social networks, 4 of them do not own a smartphone, a few (2) state that their use used to be more frequent in the past, but has now decreased as a result of negative incidents that have occurred, the participants told of scams and deception. Regarding what participants think about social networks, various opinions emerged: they are considered to be more relevant for young people in the teenage age group, however, it is considered that social networks should not be used by children, or at least it is considered important that children use smartphones for a short time. Some social networks are described in a negative way such as Tik tok which is described as 'vulgar' and Instagram where one finds 'stupid things' and 'fake people', furthermore, in one interview the idea that due to one's mental disorder it is not possible to use them is expressed, stating 'they don't work with my mind'.

**THEME 3 BENEFITS AND RISKS OF TOOLS AND SOCIAL NETWORKS**

The interviews show that participants consider both positive and negative aspects of technology and social media.

For some subjects, addiction is a problem related to these tools, as many children use them for too long with the risk of abusive behavior; moreover, in general, the central aspect of possible addiction is identified in the detachment from real relationships in favor of excessive involve-

ment in virtual reality. In addition to this, use by children without parental supervision is considered dangerous due to the tendency to imitate the behavior observed in videos, which is often not educational.

Internet-related problems refer to computer viruses caused by accessing unprotected sites, the risk that privacy is not guaranteed, as well as negative aspects include encounters with unknown persons who may present themselves under "false identities" and encourage "scams" and "virtual falling in love". Social tools and platforms represent means for new ways of communicating, as a distant sociality is promoted. Participants describe the positive aspect of being able to communicate and get to know people, to share topics, passions and hobbies in common, for example as happens in forums or group chats; as well as the importance of being in touch with loved ones.

The participants' opinion emphasizes that technology allows us to get information quickly and perform tasks just as quickly, it allows us to keep up to date and we can read various news items in real time. However, the downside of information can be the presence of "fake news" and "useless news".

**Table 4. Themes and codes.**

Themes	Codes
Perceptions of mobile digital tools	<ul style="list-style-type: none"> <li>• Knowledge and use of digital tools</li> <li>• Purposes and utilities</li> <li>• Privacy</li> <li>• Perceptions</li> </ul>
Perceptions on social networks	<ul style="list-style-type: none"> <li>• Usage</li> <li>• Opinions: risk of fraud; use by children</li> <li>• Socialization</li> </ul>
Benefits and risks of social tools and social networks	<ul style="list-style-type: none"> <li>• Influence on social relationships</li> <li>• Internet addiction</li> <li>• Network-related problems</li> <li>• New ways of communication</li> <li>• News and information</li> </ul>
Relationship between technology and mental health	<ul style="list-style-type: none"> <li>• Influence on mental health</li> <li>• Improving psychological well-being</li> </ul>

#### THEME 4 RELATIONSHIP BETWEEN TECHNOLOGIES AND MENTAL HEALTH

Few participants compared to the total (7) consider that mobile digital tools and social networks can influence their symptoms and mental health, however various perceptions emerged such as isolation from normal social life causing symptoms to worsen; increased anxiety and agitation as a result of reading negative news and accessing information that is presented in social networks. Furthermore, according to some participants, the arrival of many messages diverts attention from other activities causing easy distraction. For one subject, it turned out that when he used Facebook, he felt more euphoric than when he was not connected to the platform. Finally, for one participant, the influence on mental health from technology occurred during the lockdown period due to Covid-19, as it was mandatory to maintain social distance.

Regarding the possibility of digital tools being able to help with psychological support and improve mental well-being, most of the participants (22) responded positively, with some referring to the possibility of exchanging opinions and ideas in group chats, increasing sociability even if at a distance, and others referring to the use of tools for entertainment purposes to increase their wellbeing.

## 4. DISCUSSIONS

### PERCEPTIONS OF MOBILE DIGITAL TOOLS AND SOCIAL NETWORKS

New technologies influence different aspects of human life and different population groups, one group under study in this case being people on the schizophrenic spectrum. Through the use of digital tools such as computers and smartphones, individuals interact in a virtual social and communication space. The results of several studies confirm that a large percentage of patients own a mobile phone, have access to the Internet and frequently use digital devices.<sup>7,12</sup>

Studies on the perception of technologies by patients with mental disorders assessed views on the potential of the tools in fostering psychological support and increasing access to mental health services. Patients are aware of the benefits that mobile phone-based assessment could bring to clinical care. The study by Aref-Adib et al.<sup>24</sup> regards opinions on the potential of apps to promote self-management: patients expressed a positive attitude, confirming the usefulness of obtaining mental health information by means of tools that are easy to use. In a study by Phang et al.<sup>25</sup> was evaluated the perceived usability, acceptability, and usefulness of a stress management and coping website among individuals with diagnosed mental disorders in a clinical setting. The website designed to potentially be used by clinicians as an adjunct therapeutic aid for patients with clinically diagnosed mental disorders. The results show that website is generally acceptable to participants with mental disorders, these are consistent with the findings from a meta-analysis that found iCBT platforms were acceptable and effective for patients with depression and anxiety disorders.

Some studies reported that people with psychosis use social media to establish and maintain relationships and receive support online, this kind of interactions can be helpful in coping with negative symptoms.<sup>13,26,27</sup> However, social relationships are not always supportive, for example, emotionally over-involvement and hostile interactions can lead to higher rates of relapse in individuals diagnosed with schizophrenia. Social networks may lead to improved symptoms by buffering stress associated with schizophrenia, but negative symptoms such as anhedonia and apathy may also impede individuals' motivation and social skills and reduce their tendency to build relationships.<sup>28</sup>

In the present study, most of the participants use a smartphone for different purposes, such as work purposes, searching for information, using social networks, exchanging messages and calls, entertainment activities, and storing personal data. Digital tools are described as useful in everyday life, easy to use and access, helping to organize

certain activities more quickly, and allowing them to change the way we live and relate to others.

#### BENEFITS AND RISKS

From the qualitative analysis carried out, social networks are used by about half of the sample (15 out of 28), mainly Facebook. Both positive and negative perceptions of the tools and social networks emerged, with the positive perceptions referring to contact with family and loved ones, meeting new people and sharing topics of common interest, the tools promote, in fact, a distant sociality and new ways of communicating.

Among the risks identified by the participants is internet addiction that causes detachment from real relationships, with over-involvement behavior. Other risks are some network-related problems such as computer viruses and lack of privacy. With respect to privacy, concerns emerge about the risk of being monitored and not having one's data safe, ideas probably related to the symptoms of suspiciousness. In addition, negative aspects described refer to online encounters of people presenting themselves under false identities and risks of scams. The arguments regarding suspiciousness and privacy confirm the results of qualitative research in the literature evaluating the opinions of patients with schizophrenic spectrum disorders. Some issues related to symptoms that influence involvement in the use of technology were investigated, these are: difficulties related to motivation, mood, paranoid thoughts, these reduce interest and engagement in such activities.<sup>18</sup>

On the one hand, social network may protect from mental illness, as they support and enable social interaction and connection and allow users to reflect aspects of their identity and express emotion that may be relevant to their lived experience. On the other hand, there are many opportunities for miscommunications and mismanaged expectations, and maladaptive tendencies can be exaggerated, leaving individuals feeling a greater sense of isolation.<sup>29</sup>

#### RELATIONSHIP BETWEEN TECHNOLOGY AND MENTAL HEALTH

The results of the study under discussion show that technological tools and social media represent means for new ways of communicating, which can be both an advantage and a limitation. Sociability and communication processes are fostered even at a distance; however, isolation from normal social life may cause symptoms to worsen. According to some participants (7 out of 28), technology abuse behavior influences mental health in some way, causing a withdrawal from social life. Access to various information also has a twofold significance, on the one hand, participants view the apprehension of real-time news in a positive light (16 out of 28), as searching on the Internet also enables problem solving, but on the other hand, according to other patients, an overload of information can cause negative feelings such as increased anxiety and agitation (17 out of 28). This perception may refer to the concept of information overload, of which there is no single, generally accepted definition, but which can best be understood as

the situation that occurs when so much relevant and potentially useful information is available that it becomes an obstacle rather than a help; information overload can lead to mental and physical health problems, as well as a loss of efficiency in performing tasks.<sup>30</sup>

The qualitative literature on the use of technologies by persons with schizophrenia and what their experiences and opinions are still limited. However, the studies conducted aim to benefit the development of the clinical field through the possible contribution of technology. The identified research investigates factors that support or hinder involvement in the use of digital interventions, challenges and positive factors in the use of technologies, as well as opinions in favoring psychological support.<sup>4,18</sup> Participants appreciated the familiarity and convenience of using a text messaging system on their phones. Some patients noted that focusing on symptoms made them more anxious, leading to worsening paranoid symptoms and suspiciousness regarding the use of data. In general, the integration of technology into daily routines was considered acceptable, the devices were described as non-stigmatizing. About the perceived impact on clinical care, participants expressed positive considerations regarding the collection of information on their mental state, identifying benefits for researchers and clinicians who can use the data obtained to propose more effective interventions.<sup>19</sup>

In the study sample, most participants (22 out of 28) positively perceived the possibility that digital tools could contribute to psychological support.

## 5. CONCLUSIONS

This qualitative study explores perceptions regarding the use of technology and social media in patients with schizophrenia spectrum disorder. To understanding the impact of digital tools on symptoms and the relationship between these technologies and whether they can contribute to psychological support.

The results show that participants use digital tools for various purposes and activities such as work, information seeking, entertainment, and socializing. Their perceptions confirm the usefulness and easy access of these tools, which allow them to positively change the organization of daily life and social relationships. However, with respect to 'social' communication and interactions, there is not always positive agreement. First of all, about half of the participants use social networks, and some opinions emerged that they are risky due to possible scams and deception. In general, it is possible to identify both positive and negative aspects of technology and social media: the abuse and addictive behavior that can cause detachment from real social relationships, problems related to the network and the excess of negative or false information and news, the risk that privacy is not guaranteed; the promotion of social networking is a new way of communicating and getting to know other people, speed in carrying out tasks and acquiring useful information.

Digital tools can be useful for psychological support and mental health. This usefulness relates in part to re-

searchers' collection and evaluation of data, as well as the ability to monitor their own changes by identifying motivational aspects. As has been shown in our research, the pos-

sibility of using technology to monitor symptoms and behaviors is welcomed by participants.



## REFERENCES

1. Riva G. *Psicologia dei nuovi media*. Il Mulino; 2008.
2. Khazaal Y, Chatton A, Cochand S, et al. Internet Use by Patients with Psychiatric Disorders in Search for General and Medical Informations. *Psychiatr Q*. 2008;79(4):301-309. [doi:10.1007/s11126-008-9083-1](https://doi.org/10.1007/s11126-008-9083-1)
3. Weibelhorst C, Jepsen L, Rummel-Kluge C. Utilization of e-mental-health and online self-management interventions of patients with mental disorders—A cross-sectional analysis. *PLoS one*. 2020;15(4):e0231373. [doi:10.1371/journal.pone.0231373](https://doi.org/10.1371/journal.pone.0231373)
4. Bucci S, Morris R, Berry K, et al. Early Psychosis Service User Views on Digital Technology: Qualitative Analysis. *JMIR Ment Health*. 2018;5(4):e10091. [doi:10.2196/10091](https://doi.org/10.2196/10091)
5. Gumley AI, Bradstreet S, Ainsworth J, et al. Digital smartphone intervention to recognise and manage early warning signs in schizophrenia to prevent relapse: the EMPOWER feasibility cluster RCT. *Health Technol Assess*. 2022;26(27):1-174. [doi:10.3310/hlze0479](https://doi.org/10.3310/hlze0479)
6. Fernández-Sotos P, Fernández-Caballero A, González P, et al. Digital Technology for Internet Access by Patients With Early-Stage Schizophrenia in Spain: Multicenter Research Study. *J Med Internet Res*. 2019;21(4):e11824. [doi:10.2196/11824](https://doi.org/10.2196/11824)
7. Gay K, Torous J, Joseph A, Pandya A, Duckworth K. Digital Technology Use Among Individuals with Schizophrenia: Results of an Online Survey. *JMIR Mental Health*. 2016;3(2):e15. [doi:10.2196/mental.5379](https://doi.org/10.2196/mental.5379)
8. Miller BJ, Stewart A, Schrimsher J, Peeples D, Buckley PF. How connected are people with schizophrenia? Cell phone, computer, email, and social media use. *Psychiatry Research*. 2015;225(3):458-463. [doi:10.1016/j.psychres.2014.11.067](https://doi.org/10.1016/j.psychres.2014.11.067)
9. Highton-Williamson E, Priebe S, Giacco D. Online social networking in people with psychosis: A systematic review. *Int J Soc Psychiatry*. 2015;61(1):92-101. [doi:10.1177/0020764014556392](https://doi.org/10.1177/0020764014556392)
10. Bauer R, Bauer M, Spiessl H, Kagerbauer T. Cyber-support: An analysis of online self-help forums (online self-help forums in bipolar disorder). *Nordic Journal of Psychiatry*. 2013;67(3):185-190. [doi:10.3109/08039488.2012.700734](https://doi.org/10.3109/08039488.2012.700734)
11. Naslund JA, Grande SW, Aschbrenner KA, Elwyn G. Naturally occurring peer support through social media: the experiences of individuals with severe mental illness using YouTube. *PLoS ONE*. 2014;9(10):e110171. [doi:10.1371/journal.pone.0110171](https://doi.org/10.1371/journal.pone.0110171)
12. Brusilovskiy E, Townley G, Sneathen G, Salzer MS. Social media use, community participation and psychological well-being among individuals with serious mental illnesses. *Computers in Human Behavior*. 2016;65:232-240. [doi:10.1016/j.chb.2016.08.036](https://doi.org/10.1016/j.chb.2016.08.036)
13. Firth J, Torous J. Smartphone Apps for Schizophrenia: A Systematic Review. *JMIR mHealth uHealth*. 2015;3(4):e102. [doi:10.2196/mhealth.4930](https://doi.org/10.2196/mhealth.4930)
14. Bowie CR, Grossman M, Gupta M, Holshausen K, Best MW. Action-based cognitive remediation for individuals with serious mental illnesses: Effects of real-world simulations and goal setting on functional and vocational outcomes. *Psychiatric Rehabilitation Journal*. 2017;40(1):53-60. [doi:10.1037/prj0000189](https://doi.org/10.1037/prj0000189)
15. Moritz S, Menon M, Balzan R, Woodward TS. Metacognitive training for psychosis (MCT): past, present, and future. *Eur Arch Psychiatry Clin Neurosci*. 2023;273(4):811-817. [doi:10.1007/s00406-022-01394-9](https://doi.org/10.1007/s00406-022-01394-9)
16. Granholm E, Ben-Zeev D, Link PC, Bradshaw KR, Holden JL. Mobile Assessment and Treatment for Schizophrenia (MATS): a pilot trial of an interactive text-messaging intervention for medication adherence, socialization, and auditory hallucinations. *Schizophrenia Bulletin*. 2012;38(3):414-425. [doi:10.1093/schbul/sbr155](https://doi.org/10.1093/schbul/sbr155)
17. Forchuk C, Reiss JP, O'Regan T, Ethridge P, Donelle L, Rudnick A. Client perceptions of the mental health engagement network: a qualitative analysis of an electronic personal health record. *BMC Psychiatry*. 2015;15(1):250. [doi:10.1186/s12888-015-0614-7](https://doi.org/10.1186/s12888-015-0614-7)
18. Arnold C, Williams A, Thomas N. Engaging With a Web-Based Psychosocial Intervention for Psychosis: Qualitative Study of User Experiences. *JMIR Ment Health*. 2020;7(6):e16730. [doi:10.2196/16730](https://doi.org/10.2196/16730)
19. Palmier-Claus JE, Rogers A, Ainsworth J, et al. Integrating mobile-phone based assessment for psychosis into people's everyday lives and clinical care: a qualitative study. *BMC Psychiatry*. 2013;13(1):34. [doi:10.1186/1471-244x-13-34](https://doi.org/10.1186/1471-244x-13-34)

20. Gorman GE. *Qualitative Research for the Information Professional: A Practical Handbook*. 2nd ed. Facet; 2005.
21. Moustakas C. *Phenomenological Research Methods*. SAGE Publications, Inc.; 1994. [doi:10.4135/9781412995658](https://doi.org/10.4135/9781412995658)
22. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):77-101. [doi:10.1191/1478088706qp063oa](https://doi.org/10.1191/1478088706qp063oa)
23. Boyatzis RE. *Transforming Qualitative Information: Thematic Analysis and Code Development*. Sage; 1998.
24. Aref-Adib G, O'Hanlon P, Fullarton K, et al. A qualitative study of online mental health information seeking behaviour by those with psychosis. *BMC Psychiatry*. 2016;16(1):232. [doi:10.1186/s12888-016-0952-0](https://doi.org/10.1186/s12888-016-0952-0)
25. Andrews G, Basu A, Cuijpers P, et al. Computer therapy for the anxiety and depression disorders is effective, acceptable and practical health care: An updated meta-analysis. *Journal of Anxiety Disorders*. 2018;55:70-78. [doi:10.1016/j.janxdis.2018.01.001](https://doi.org/10.1016/j.janxdis.2018.01.001)
26. Bawden D, Robinson L. Information Overload: An Introduction. In: Redlawsk DP, ed. *Oxford Encyclopedia of Political Decision Making*. Oxford University Press; 2020. [doi:10.1093/acrefore/9780190228637.013.1360](https://doi.org/10.1093/acrefore/9780190228637.013.1360)
27. Goldberg RW, Rollins AL, Lehman AF. Social network correlates among people with psychiatric disabilities. *Psychiatric Rehabilitation Journal*. 2003;26(4):393-402. [doi:10.2975/26.2003.393.402](https://doi.org/10.2975/26.2003.393.402)
28. Degnan A, Berry K, Sweet D, Abel K, Crossley N, Edge D. Social networks and symptomatic and functional outcomes in schizophrenia: a systematic review and meta-analysis. *Soc Psychiatry Psychiatr Epidemiol*. 2018;53(9):873-888. [doi:10.1007/s00127-018-1552-8](https://doi.org/10.1007/s00127-018-1552-8)
29. Seabrook EM, Kern ML, Rickard NS. Social Networking Sites, Depression, and Anxiety: A Systematic Review. *JMIR Ment Health*. 2016;3(4):e50. [doi:10.2196/mental.5842](https://doi.org/10.2196/mental.5842)
30. Bawden D, Robinson L. Information Overload: An Introduction. In: Redlawsk DP, ed. *Oxford Encyclopedia of Political Decision Making*. Oxford University Press; 2020. [doi:10.1093/acrefore/9780190228637.013.1360](https://doi.org/10.1093/acrefore/9780190228637.013.1360)