

PLEASE NOTE! THIS IS PARALLEL PUBLISHED VERSION /
SELF-ARCHIVED VERSION OF THE OF THE ORIGINAL ARTICLE

This is an electronic reprint of the original article.
This version *may* differ from the original in pagination and typographic detail.

Author(s): Hopia, Hanna; Raitio, Katja

Title: Gamification in Healthcare: Perspectives of Mental Health Service Users and Health Professionals

Version: accepted manuscript

Please cite the original version:

Hopia, H. & Raitio, K. (2016). Gamification in Healthcare: Perspectives of Mental Health Service Users and Health Professionals. *Issues in Mental Health Nursing*, 37 (12), 894-902.

DOI: 10.1080/01612840.2016.1233595

URL: <https://doi.org/10.1080/01612840.2016.1233595>

HUOM! TÄMÄ ON RINNAKKAISTALLENNE

Rinnakkaistallennettu versio *voi* erota alkuperäisestä julkaistusta sivunumeroiltaan ja ilmeeltään.

Tekijä(t): Hopia, Hanna; Raitio, Katja

Otsikko: Gamification in Healthcare: Perspectives of Mental Health Service Users and Health Professionals

Versio: accepted manuscript

Käytä viittauksessa alkuperäistä lähdettä:

Hopia, H. & Raitio, K. (2016). Gamification in Healthcare: Perspectives of Mental Health Service Users and Health Professionals. *Issues in Mental Health Nursing*, 37 (12), 894-902.

DOI: 10.1080/01612840.2016.1233595

URL: <https://doi.org/10.1080/01612840.2016.1233595>

Gamification in Healthcare: Perspectives of Mental Health Service Users and Health Professionals

Hanna Hopia, RN, PhD and Katja Raitio, RN, MSc

JAMK University of Applied Sciences, School of Health and Social Studies, Jyväskylä, Finland

Address correspondence to Hanna Hopia, RN, PhD, JAMK University of Applied Sciences, School of Health and Social Studies, PL 207, FI – 40100 Jyväskylä, Finland. E-mail: hanna.hopia@jamk.fi

The purpose of this descriptive qualitative study is to explore the perceptions and experiences that mental health service users (n = 10) and healthcare professionals (n = 32) have regarding the use of gamification in mental health care. Data was gathered by interviews. The mental health service users described promoting and retarding factors in the use of gamification, while professionals described the requirements for using gamification and changes occurring in the work culture. Additional research is needed on how game-playing elements could be integrated as a systematic part of mental health practice and how the digital skills of professionals could be effectively developed.

INTRODUCTION

A large portion of the world's adult population suffers from a mental disorder such as schizophrenia, bipolar disorder or depression. For example 27% of the European adults aged between 18 and 65 have experienced at least one of a series of mental disorders in the past year (WHO, 2016). According to the National Institute of Mental Health (2016) approximately 18% of the adults aged 18 or older have suffered from a mental illness in the United States. Meanwhile, the focus in mental health care has shifted from institutional care to outpatient care, with services increasingly being provided where clients spend their daily lives (Shen & Snowden, 2014). Indeed, it is clear that new, person-centered practice and effective methods are needed for mental health work (Zauszniewski, Bekhet, & Haberlein, 2012; WHO, 2009). Moreover, there is a need to facilitate true serviceuser engagement in mental health care (Newman, O'Reilly, Lee, & Kennedy, 2015; Tse, Tang, & Kan, 2015; WHO, 2009). Newman et al. claim that a focus in mental health practice over the last 20 years has been to focus on involving people in their care planning but, as they explained further, service users' involvement in mental health services has so far been somewhat limited.

The term service user is widely accepted in the fields of mental health research. A number of recent studies have been conducted from the perspective of mental health service users (e.g., Dahlqvist Jönsson, Schön, Rosenberg, Sandlund, & Svedberg, 2015; Newman et al., 2015; Nieminen, Kylmä, Astedt-Kurki, Kulmala, & Kaunonen, 2016; Twomey et al., 2015). Furthermore, service user as a term has been incorporated into national mental health policy documents in the UK (Five Year Forward View for Mental Health, 2016). In this particular study, service user means a person who is a patient or otherwise a user of mental health services. In addition to that, service users have been diagnosed with mental illnesses such as schizophrenia, bipolar disorder, or depression. Because of their illness service users have experience of using mental health services for many years and from variety of health care sectors. They are considered to be experts about their own illness and need for care. Their experiences are an important resource that can help to improve individual packages of care

as well as services generally. Mental health service users are, in fact, able to develop alternative approaches and intervention to mental health care that can complement existing services.

In recent years, more people than ever before are playing different types of online games (GameTrack, 2016), and mental health service users are not an exception. Despite this, digital methods and, in particular, gamification, are infrequently used in mental health care. According to study results, the digital health tools employed by health professionals have not been updated in the desired manner (Ketikidis, Dimitrovski, Lazuras, & Bath, 2012; Lluch, 2011; Rogers, Griffin, Wykle, & Fitzpatrick, 2009), even though positive results have been achieved with the implementation of digital tools in mental health work. For example, Andrew, Cuijpers, Cradke, McEvoy, and Titov (2010) have found web-based cognitive-behavioural programs to be effective in the treatment of anxiety disorders and depression. Christensen, Batterham, and Callear (2014) have obtained similar results. Furthermore, Lal et al. (2015) reported that young clients diagnosed with early psychosis are interested in using the Internet, social media, and mobile technologies in mental health services. Hanusova, Tomanova, Stepankova, Dockalova, and Papezova (2016) discovered that web-based interventions were effective as an early intervention for eating disorders.

Today, the term gamification does not only mean gaming, but also the application of game-playing elements in motivating people. Elements, such as flow, absorption, reward, immersion, recognition, advancement from one level to the next and competing with others are included in gamification (Connolly, Tomanova, Stepankova, Dockalova, & Papezova, 2012; Proffitt, 2016). Although Browning (2016) claims that games are a successful tool to change attitudes and behaviours, one should notice that a delicate balance of the demands of the task and the service user's abilities must be achieved (Proffitt, 2016). A new and fast-growing field in gamification is serious games, which are primarily designed for nonentertainment purposes (Hanusova et al., 2016). According to Mohr, Burns, Schueller, Clarke, and Klinkman (2013), serious games aimed at children and adolescents have been researched to a certain extent, but those aimed at adults have not been researched at all particularly from a client standpoint. Above all, there is a lack of controlled studies dealing with serious games as an additional therapeutic tool for mental disorders (Fernández-Aranda et al., 2012; Schoech, Boyas, Black, & Elias-Lambert, 2013). In recent years, there has been a growing interest in games that support learning and teaching (Khenissi, Essalmi, & Jemni, 2015), but thus far the focus on the impact of different types of serious games on people with mental health disorder has been inadequate. In one of the few systematic reviews available, Li, Theng, and Foo (2014) found that game-based digital interventions were beneficial for people who suffer from depression. This is in line with Pinton's (2013; also, Pinton, Hickman, Clochesy, and Buchner, 2013) study which found a significant decrease in depression symptoms among clients who played the game eSMARTMH compared to the control group. Merry et al. (2012, also Fleming, Dixon, Frampton, & Merry, 2012) examined the use of fantasy game SPARX in the treatment of adolescents with mild or moderate depression. The game was as effective as conventional methods in the treatment of adolescents suffering from depression. However, as Lee (2016) points out the SPARX did not achieve wider success due to its inherent weaknesses in its design. Lee is of the opinion that health professionals who work with game developers often have a lack a fundamental understanding of design principles and how to effectively communicate their vision to the general public.

Increasingly, more health professionals are becoming interested in innovative treatment approaches (Fernández-Aranda et al., 2012). For example, Tatla et al. (2015) found that therapists primarily approve of the use of video games in the rehabilitation of young hemiplegics. On the other hand, Ricciardi and Tommaso De Paolis (2014) demonstrated how serious games are still minimally utilized in the training of health professionals. Above all, the interventions used in health care must be based on strong evidence (Polit & Beck, 2014; Stein, 2009; Zauszniewski et al., 2012). Therefore, more research data is needed particularly regarding the perceptions that service users and the health professionals treating them have regarding gamification and its use in mental health care.

OBJECTIVE AND RESEARCH QUESTIONS

The purpose of this study is to explore the perceptions and experiences that mental health service users and health professionals have regarding the use of gamification in mental health care.

Gamification involves the application of game-playing elements as well as the use of serious games and web-based applications in mental health care. Some members of the target group have experience with digital games primarily as a form of entertainment, while others have no experience whatsoever. This is why the study will describe not only the experiences, but also the perceptions that participants have regarding the phenomenon being examined.

Research Questions

1. How can game-playing elements, serious games, and web-based applications be used as part of the mental health care process?
2. What possibilities do these offer when being used in mental health care?
3. What potential obstacles might be involved when these are used in mental health care?

Research Design

Participants

There were a total of 42 participants, 10 of which were mental health service users, 24 were health professionals, and 8 were working as regional eHealth experts. Service users' median age was 39 years, with the youngest being 20 years old and the oldest 55 years old. The median age of health professionals and eHealth experts was 38 years, with the youngest being 22 years old and the oldest 62 years old. Mental health service users were people who have been diagnosed with mental illnesses such as schizophrenia, bipolar disorder and/or major depression, and they have used different mental health services for years. Most of the service users were patients in an outpatient care visiting mental health clinic regularly in order to receive treatment. Health professionals were nurses or mental health workers and eHealth experts who were working in the mental health care sector as technology advisers. Table 1 shows the background information of the participants.

Data Collection Procedure

The study is qualitative descriptive, with data being gathered in one-on-one, pair and focus group interviews conducted in 2014. Table 2 shows the distribution of participants by interview type. The planning and conducting of focus group interviews were based on the views of Krueger and Casey (2015), while the pair and one-on-one interviews were based on descriptions of method applications by Patton (2015). Mental health service users were recruited through non-governmental organisations, which offer rehabilitative activities to service users suffering from mental health problems. The one-on-one and group interviews were conducted on the premises of the non-governmental organisations and lasted 40–60 minutes. Health professionals, including eHealth experts, were recruited through private and public mental health sector organisations. Each interview lasted approximately 60 minutes. The interview topics, which were used to obtain answers to research questions, are presented in Table 3. The interviewees freely discussed each topic, after which the topics were examined more in-depth by asking more incisive questions. The chosen topics are based on earlier research data (e.g., Ketikidis et al., 2012; Ricciardi & Tommaso De Paolis, 2014) as well as specified research questions.

TABLE 1
Participants' Background Characteristics ($n = 42$)

Characteristics	Service users	Professionals
Participants	$n = 10$	$n = 32$
Sex	3 Female 7 Male	25 Female 7 Male
Age (median, range)	39 median 20–55 range	38 median 22–62 range
Profession		24 Health professionals 8 eHealth experts

Analyses

The data was analysed by using a content analysis method (Patton, 2015; Polit & Beck, 2014). The data from the both participant groups (mental health service users and health professionals including eHealth experts), were analysed separately. First, two researchers read through the transcribed interviews several times in order to obtain a sense of the content as a whole. Then, they worked separately to break down the data into smaller units, coding and naming the units according to the content they represent. As Polit and Beck (2014, p. 306) suggest, the units were based on grammatical divisions within the data: words, sentences or paragraphs. Next, the researchers discussed the initial categorising, followed by a grouping of code data based on shared concepts. At this point, several themes emerged from the data. The analysis was continued by identifying the commonalities and differences between themes. The third stage of analysis involved the categorising of emerged themes into subcategories. In the last phase, the subcategories were grouped into main categories. The division into main categories and subcategories was repeated and revised several times by both authors, working in collaboration until an agreement was reached.

Ethical Consideration

Permission for conducting the study was granted (August 25, 2014) by the Central xxx Health Care District. Participants were informed of the study and they provided informed consent for the use of their interview as research data. The identity of the participants was not disclosed at any stage when reporting the results.

TABLE 2
Distribution of Participants by Interview Type

Type of interview	Number of interviews	Participants
One-to-one interview	11	7 health professionals 1 eHealth experts 3 service users
Pair interview	4	4 eHealth experts 4 service users
Group interview	5	17 health professionals 3 eHealth experts 3 service users

TABLE 3
Interview Topics

Mental health service users	Health Professionals
Gamification and online games in mental health care: How can these be used? What should be considered in their use?	The impact that using online games and new technologies has on work.
The use of digital tools in mental health care: How can these be used? What should be considered in their use?	The use of elements of gamification in the routines of mental health service users.
	The digitalisation of mental health care services: What kind of expertise does this require?

FINDINGS

The mental health service users described promoting and hindering factors in the use of gamification, while health professionals (including eHealth experts) described the requirements for using gamification and changes occurring in the work culture.

Mental Health Service Users: Promoting Factors

Recognising the Benefits of Game Playing

According to the participants, game playing could bring ambition and regularity to daily routines by offering a meaningful activity. They emphasise the importance of community in their recovery process and felt that game playing could offer new opportunities for networking and social interaction. Game playing was seen as a social activity, in which a player is included in a group. The participants felt that playing games with others might alleviate feelings of loneliness and increase their interpersonal skills, because game play offers an opportunity to acquaint oneself with new people as one participants described: “It’s a whole lot more fun doing stuff with others than alone” (U9). Playing games could also make it possible for people who are shy and more sensitive to join in shared activities. The sense of community and team spirit that games offer could offer a common goal. Indeed, the participants emphasise that it is not always necessary to play against each other, but also working together as a team. In addition, it is also possible to play games regardless of time or place. One participant stated: “You can link up and play together, even if you’re not physically in the same place, like if you live far away or something” (U7). They described how playing games might provide a momentary escape “from the stress of illness” (U3), because it forces the players to focus their full attention on the game itself. In addition to providing an escape, the participants feel that gaming hones their concentration, improves their memory and helps to eliminate the stigma of suffering from a disorder: “It’s way easier to say, ‘Hey, I’m going gaming now’ than ‘I’ve gotta go to rehab’” (U7).

Proper Game Content

The participants felt that games should be fun and have a positive attraction and sufficient level of quality. They had doubts about professionals developing games that would not meet their abilities: “The game has to be good enough, “cause if it’s lousy, no one’s gonna play it” (U9). If the client has a great deal of playing experience, the standard of the games also rises: “Nowadays, games have to have, like, a whole lot more graphics and stuff like that” (U3). On the other hand, the participants felt that easy applications were also needed for mental health care. The learning process for games should

also be simple enough and incremental. According to them, the games should satisfy their thirst for competition. The participants gave examples of games, in which the player earns points for cooking, going to the store or doing exercises: “So, when you make it through something, you get points; then you get some kind of prize - you’ve gotta get points in the game” (U7). The participants would like to see more functional elements in the games that motivate them to perform daily chores. During the game, it is vital for the player to immediately receive positive feedback. This tends to encourage them to continue playing and has an impact on the client’s self-esteem.

The connection between promoting mental health with improving physical fitness was considered one alternative of games in rehabilitation. One participant described how, for example, one could use a game for orienteering in nature. Games could also provide current information on health and mental health problems. The participants also suggested that games could be used to help in managing finances, such as keeping track of their own income and expenses, to remind players to pay bills and help monitor their spending. While online, players should be given an opportunity to give and receive peer support. One participant recommended: “Maybe there should, like, be somebody who would always be asking “Hey, how’s it going?” (U7). In all the interviews conducted, the interactivity of games was considered a key feature. At the same time, the games should be individualised enough to ensure that they would take into consideration the different phases of mental health care process as participant described: “Then there would be sort of different levels, and you’d have to think about where you are in life” (U5). The participants thought it was important for them to be able to tell their own story, such as a mind map of their own situation: “You should be able to tell your own story and then, like, read it from the outside - that might give some kind of insight or something” (U10). The participants also felt that the game users should be included in the development of games from the very beginning of the process. In their opinion, it is of paramount importance to take into consideration the needs of the service users.

Mental Health Service Users: Hindering factors

Doubts and Concerns

The participants felt that not everything related to recovery process could be gamified. One of the participant felt that “Nothing can beat real, face-to-face human contact” (U2). They thought that contact with others should absolutely be maintained as an integral part of their care. There were also doubts as to how a service user could play a game during an acute phase of their disorder, which is why the role of games was considered to be of minimal importance in such situations. Doubts among the participants were also raised by the idea that “There might not even be a person behind the game” (U9). The participants felt that being on a computer is not the same thing as face-to-face interaction, and the thought of eliminating human contact scared them. One of the participants described how “Social interactions is so much more effective when it’s face-to-face” (U6). The participants were also concerned that, while being online, there was a lower threshold for lying, which might cause problems in care. Some of the participants suspected that playing certain types of games might label them as mental health patients. When playing games is included as part of mental health care, extra emphasis was placed on privacy and data security.

Playing games also makes it possible for the service users to be at home, which the participants felt was an advantage and disadvantage. It is an advantage because games and digital applications offer flexibility for the service user. They do not need to travel, sometimes even long distances, for a short sessions with a professional: “I mean, you don’t always need to go to their office or wherever in person” (U9). On the other hand, the participants suspected that gaming made it possible for the mental health client to stay at home more, which they felt was an undesirable outcome. The participants described their concerns regarding the addictiveness of gaming and potential for a loss of income: “The first thing that comes to mind with gaming is gambling” (U5). Equality in the procurement and use of games was brought up in the interviews. According to the participants, games must not be made too expensive, so as not to create inequality among the users. According to

the participants, income is a major challenge for many service users, so it should be taken into consideration when including gamification in mental health care.

Role and Attitudes of Professionals

The participants felt that playing games together with professionals would be important, especially to begin playing together and then working gradually toward more independent play. According to the participants, the service user should receive encouragement and support from professionals when starting out with game applications: “The psychologist kind of shows you the way, so it’s not too hard” (U5). Participants were of the opinion that it is important for the professionals to have a positive attitude toward the possibilities that gamification offers in care. In their opinion, employees could see gamification as one of multiple mental health caring methods, an alternative method or a supplement to existing methods. Conversely, some participants doubted whether professionals would approve of playing games as part of their daily work: “They might see it as a threat, more work to do or whatever” (U10).

Health Professionals: Requirements

Identify the Routines of Mental Health Service Users

According to the professional participants, the Internet is part of the mental health service users’ social lives and, for some users, it may be the only way to maintain social relationships. Gaming makes it possible to establish contacts all over the world and, in particular, adolescent mental health service users could actually lead a very cosmopolitan life online. Games also allow for an escape from reality, in both good and bad ways as participant commented “The virtual world is always there” (P20). At the same time, the differences between service users were also identified; not all are interested in digital services as part of care and not all have the money for the necessary hardware: “Not everyone has a device” (P4).

According to the participants, it is important to tailor the services to each service user. The individual needs of users and the fact that they will be assuming greater responsibility for their own health and recovery in the future must be taken into consideration: “There are some who would never come in to the office; they won’t come see us, they won’t go to see you—they won’t go anywhere. And they need help, too” (P14). The participants felt that serious games make it possible to train the service user’s cognitive skills, get immediate feedback on progress, provide information and exercise problem-solving skills. The perspectives of prevention and social networks were also addressed in interviews. The sense of belonging, peer support, and working in groups offered by games and digital services, were considered vital.

Carefully Designed Game Content

The participants thought that games used in mental health care should have a strong theoretical foundation and that content should be based on evidence-based knowledge. According to the participants, an important question to ask is “Why is this game in particular useful?” (P20). It is also important to note that gaming is not suitable for all users, and, therefore, careful thought should be given to the target group for a game. The object of the game should be clearly-defined, and its user-friendliness should be taken into consideration when choosing online games for service users. According to the participants, the games should emphasise the mental health service users’ individual strengths and offer opportunities for success. A good game provides feedback, it “hooks” the user and allows for a progression from one level to the next: “The player should have some kind of motivation, some kind of reward to shoot for” (P3). Games should also be sufficiently personalised. In this case, creating a character and escaping from one’s routine, were considered important. The participants felt that it might be therapeutic to, for example, a service user suffering from depression to choose their own game character, who would have an entirely different personality than that of the depressed person, who often has a negative self-image.

Health Professionals: Change in Work Culture

Role of the Professional is Changing

The participants described the change in work culture brought about by gamification. In their view, the introduction of online games would alter the role of professionals, making them less of an adviser and more of a coach. In this case, the mental health service users would also have to assume greater responsibility, which would, in turn, require them to adopt a more independent role in care. The participants thought that this would change the conventional professional-client relationship. According to them, the professional would then be on a more equal footing with the service user. The participants described that it was important to offer more alternatives for mental health work. They believed that the use of games and development of digital services is cost-effective and makes remote rehabilitation possible. The number of choices that service users are given through the addition of new services is growing, thus making it possible to tailor the care to each client personally “Rehabilitation doesn’t need to be boring– we could come up with something new” (P14).

Expertise and Change in Work Content

The participants were concerned about whether professionals would possess sufficient expertise to adopt new digital tools. In their view, the digital environment could be difficult to understand. The Internet and digital services were seen as being “amorphous” and hard to grasp. The future also raised some fears in the participants regarding the loss of work: “So, will this now be taking jobs away?” (P18). The participants also contemplated whether maintaining client relationships would be more difficult with digital services and doubted whether it could be considered real work: “Is playing games really work here??” (P6). Some of the participants made a decision to refrain from using digital tools in their work: “I’ve decided that I will not try it, I will not” (P20).

DISCUSSION

Summary of Main Findings

Mental health service users felt that the most important factors promoting gamification were identifying the advantages of gaming and ensuring that the content of games was sufficiently meaningful. With regard to hindering factors, they described the concern that face-to-face interaction with health professionals would be eliminated, and that professionals would not approve of including game playing as part of care. According to health professionals, the use of game playing in mental health care requires that the professionals have an understanding of the service users’ routines and that the game content is carefully designed. Professionals recognise changes occurring in the work culture, and are concerned about the adequacy of their own digital expertise. Both groups considered it important that the games used in mental health care would be tailored to meet the needs of the clients and contain the appropriate content.

Comparisons With Other Studies

In this study, the service users discussed the benefits related to gaming as part of mental health care. Similar results were obtained by Anttila et al. (2014), according to whom a web-based program offered adolescent mental health rehabilitation clients receiving outpatient treatment an alternative possibility for communication. Indeed, Anttila et al. (2014) state that a web-based program will be helpful, provided that it is easy to access, the availability of support is ensured and privacy is secured. These things are also emphasised in this study. Service users and professionals discuss that the use of games as part of mental health care allows for rehabilitation regardless of time or place. In this case, the service user does not need to travel long distances to meet professionals. Conversely, they are concerned about the service user spending too much time at home playing games. The advantage of web-based mental health services is their ability to overcome time and distance constraints. According to Andrew et al. (2010) and Li et al. (2014), digital interventions are effective in the treatment of depression and anxiety disorders, and they also offer treatment opportunities for those who might not

otherwise receive treatment. The same finding was made by Ellis et al. (2013), according to whom combined online meetings and office visits were the most effective form of therapy for anxiety and depression.

Gamification has also raised concerns and doubts among the participants; whether human contact would eventually be replaced by games and whether the games would actually be too addictive. It is critically important to ponder if digital games will be able to substitute for health professionals in the near future or not. Although digitalisation provides many benefits for clients and professionals in mental health care, games and other digital-based interventions do not have real emotions which still play an important role in treatment. However, there is a new generation who are fluent in the digital world and are native speakers of the digital language of games. They will likely eventually change the current practice in mental health care. Participants also brought up their concerns of addictions associated with the games. This concern is not necessarily unfounded. Maras et al. (2015) found that video game play and computer use were risk factors in the incidence of adolescent anxiety and depression. A link between playing violent video games and violent behaviour was established in a meta-analysis conducted by Anderson et al. (2010). The respondents to this study feared that they would be labelled mental health patients by playing the games aimed at them. Stigma is a heavy extra burden to bear for people suffering from mental disorders. This weakens the individual's sense of their own capabilities and their ability to feel sympathy for themselves. It also increases the feeling of being excluded (Horsfall, Cleary, & Hunt, 2010).

The mental health service users interviewed in this study were concerned about the attitudes that professionals had toward gaming. The health professionals, on the other hand, were concerned about possible changes in their work. They felt that, although the introduction of digital methods is indeed important, they were also concerned about their expertise and the potential loss of work. Some of the same results were obtained by Kurki (2014) when describing nurses' acceptance of a web-based support system in the care of adolescents with depression. She found out that the nurses' technology skills were good and their attitudes towards computer use were positive (Kurki, 2014). However, the introduction of digital tools and, in particular, games to mental health nursing must still clear several hurdles. According to a review written by Lluch (2011), despite a promising start for health care technology, its actual implementation has proven difficult. Although the use of web-based interventions has enjoyed excellent results, the use of mobile applications and serious games is still minimal in mental health services (Mohr et al., 2013). Indeed, researchers feel that additional research is required on the use of digital methods and applications, obstacles to implementation and their cost effects (Clarke & Yarborough, 2013; Hopia, Punna, Laitinen, & Latvala, 2015).

Strengths and Limitations

According to Patton (2015, p. 653), the credibility of qualitative inquiry depends on the following elements: in-depth fieldwork; systematic analysis of data; credibility of the inquirer; and readers' and users' belief in the value of qualitative inquiry. Data was collected systematically by a one researcher, who has extensive experience in mental health nursing. Initially, she became acquainted with the mental health service users, thus earning their trust before conducting the interviews. In spite of this, the service users' interviews proved to be quite challenging due to the fact that some of them had only played board games during their rehabilitation periods. In addition, a few of them had difficulties expressing themselves clearly in terms of the research subject. However, a sufficient amount of data was obtained from the service users for analysis.

As suggested by Krueger and Casey (2015, p. 81), the interviews with professional focus groups were organised so that people with similar backgrounds participated in the same group. This was likely to help the interviewer keep responses on target. Furthermore, the interviewer encouraged participants who tended not to be highly verbal to share their experiences and perceptions. Two researchers participated in analysing the data, which may strengthen the reliability of the results. In the course of the analysis process, special attention was paid to researchers' own presumptions and biases.

Therefore, alternative explanations were continuously looked for and checked against coding and categories. Patton (2015) recommends this practice to avoid shaping the findings according to the analyst's own predispositions. To strengthen the credibility of this study Tong, Sainsbury, and Craig's (2007) criteria for reporting qualitative research (COREQ) were carefully reviewed to ensure that all the necessary components were taken into account regarding this study. The findings of this research illuminate a rather small number of participants. As a result, the findings cannot be generalised to a wider population. However, the findings can be used when developing and applying digital tools for mental health services.

CONCLUSIONS

The results of this study demonstrate that using the elements of gamification as well as various serious games as part of mental health care still requires a great deal of research. Study results are needed for, among others, how game use and content are constructed so that they will meet the needs of service users as individually as possible and are easy to use. In addition to this, issues dealing with the data security of digital tools must be actively researched. It was surprising that, despite their doubts, the mental health service users interviewed had a positive attitude toward the use of gamification and introduction of games. It is also worth noting that, according to the service users, their abilities should never be underestimated in the design and adoption of games. Conversely, the results of this study also raise concerns regarding how health professionals feel about the use of serious games as part of mental health care and how their expertise can be developed. Mental health care using digital tools and face-to-face interaction should, above all, supplement one another, not compete. However, the fact is that an increasing percentage of mental health service users play games every day.

Relevance to Clinical Practice

Traditionally, a health professional is an expert in their own field, possessing the necessary information on how to guide their patient. Many years of work experience is believed to deepen knowledge and, in turn, strengthen the expertise needed for work. However, in the digital realm, years of experience does not necessarily mean deep expertise, which is why the roles might even be reversed: professionals with years of experience need more help with online gaming and understanding the digital realm than modern-day adolescents and young adults in mental health rehabilitation.

As Lee (2016, p. 135) stresses, games have an enormous potential to transform the future of mental health care. In any case, digital tools will be in daily use and the changes in job descriptions and work content resulting from their introduction must be dealt with in health care more flexibly and quickly (Deloitte Center for Health Solutions, 2015; Hopia & Hakala, 2016). Furthermore, special attention must be given to the data security of digital applications when using them as tools in rehabilitation. A cautionary example is given by Huckvale, Prieto, Tilney, Benghozi, and Car (2015) in a recent paper, which examined the data security of mobile applications related to health and well-being. The study found that some applications had extremely weak data security protection, and their use in health care was not recommended (Huckvale et al., 2015).

ACKNOWLEDGEMENTS

H. Hopia and K. Raitio contributed to the conception, design, analysis, interpretation, and critical revision of the study. K. Raitio acquired the data. H. Hopia drafted the article.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

FUNDING STATEMENT

This research received no specific grant from any funding agency in the public, commercial, or nonprofit sectors.

REFERENCES

- Anderson, C., Shibuya, A., Ihori, N., Swing, E., Bushman, B., Sakamoto, A., Rothstein, H., & Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behaviour in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin*, 136(2), 151–173. doi:10.1037/a0018251
- Andrew, G., Cuijpers, P., Cradke, M., McEvoy, P., & Titov, N. (2010). Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: A meta-analysis. *PLoS One Journal*, 5(10), e13196. doi:10.1371/journal.pone.0013196
- Anttila, K., Anttila, M., Kurki, M., Hätönen, H., Marttunen, M., & Välimäki, M. (2014). Concerns and hopes among adolescents attending adolescent psychiatric outpatient clinics. *Child and Adolescent Mental Health*, 20(2), 81–88. doi:10.1111/camh.12074
- Browning, H. (2016). Guidelines for designing effective games as clinical interventions: Mechanics, Dynamics, Aesthetics, and Outcomes (MDAO) Framework. In D. Novak, T. Bengisu, & H. Brendryen (Eds.), *Holistic perspectives in gamification for clinical practice* (pp. 105–131). Hershey, PA: Medical Information Science Reference, IGI Global.
- Christensen, H., Batterham, P., & Clear, S. (2014). Online interventions for anxiety disorders. *Current Opinion in Psychiatry*, 27(1), 7–13. doi:10.1097/YCO.0000000000000019
- Clarke, G., & Yarborough, B. (2013). Evaluating the promise of health IT to enhance/expand the reach of mental health services. *General Hospital Psychiatry*, 35(4), 339–344. doi:10.1016/j.genhosppsy.2013.03.013
- Dahlqvist Jönsson, P., Schön, U.-K., Rosenberg, D., Sandlund, M., & Svedberg, P. (2015). Service users' experiences with participation in decision making in mental health services. *Journal of Psychiatric & Mental Health Nursing*, 22(9), 688–697. doi:http://dx.doi.org/10.1111/jpm.12246
- Deloitte Center for Health Solutions. (2015). *mHealth in mWorld. How mobile technology is transforming health care?* Retrieved from <http://www2.deloitte.com/content/dam/Deloitte/us/Documents/life-sciences-health-care/us-lhsc-mhealth-in-an-mworld-103014.pdf>
- Ellis, L., Collin, P., Hurley, P., Davenport, T., Burns, J., & Hickie, I. (2013). Young men's attitudes and behaviour in relation to mental health and technology: Implications for the development of online mental health services. *BMC Psychiatry*, 13(119), 2–10. doi:10.1186/1471-244X-13-119
- Fernández-Aranda, F., Jiménez-Murcia, S., Santamaría, J. J., Gunnard, K., Soto, A., Kalapanidas, E., & Penelo, E. (2012). Video games as a complementary therapy tool in mental disorders: PlayMancer, a European multicentre study. *Journal of Mental Health*, 21(4), 364–374. doi:10.3109/09638237.2012.664302
- Five Year Forward View for Mental Health. (2016). A report from the independent Mental Health Taskforce to the NHS in England. Retrieved from <https://www.england.nhs.uk/wpcontent/uploads/2016/02/Mental-Health-Taskforce-FYFV-final.pdf>
- Fleming, T., Dixon, R., Frampton, C., & Merry, S. (2012). A pragmatic randomized controlled trial of computerized CBT (SPARX) for symptoms of depression among adolescents excluded from mainstream education. *Behavioral and Cognitive Psychotherapy*, 40(5), 529–541. doi:10.1017/S1352465811000695
- GameTrack. (2016). *GameTrack Digest: Quarter 1, 2016*. Retrieved from http://www.isfe.eu/sites/isfe.eu/files/attachments/gametrack_european_summary_data_2016_q1.pdf

- Hanusova, J., Tomanova, J., Stepankova, T., Dockalova, S., & Papezova, H. (2016). Online prevention and early intervention in the field of psychiatry using gamification in internet interventions. In D. Novak, T. Bengisu, & H. Brendryen (Eds.), *Holistic perspectives in gamification for clinical practice* (pp. 358–389). Hershey, PA: Medical Information Science Reference, IGI Global.
- Hopia, H., & Hakala, A. (2016). Finnish social and health care professionals' perspective of the future. *International Journal of Healthcare*, 2(1), 12–20. doi:10.5430/ijh.v2n1p12
- Hopia, H., Punna, M., Laitinen, T., & Latvala, E. (2015). A patient as a selfmanager of their personal data on health and disease with new technology – challenges for nursing education. *Nurse Education Today*, 35(12), e1–e3. doi:10.1016/j.nedt.2015.08.017
- Horsfall, J., Cleary, M., & Hunt, G. E. (2010). Stigma in mental health: Clients and professionals. *Mental Health Nursing*, 31(7), 450–455. doi:10.3109/01612840903537167
- Huckvale, K., Prieto, J. M., Tilney, M., Benghozi, P-J., & Car, J. (2015). Unaddressed privacy risks in accredited health and wellness apps: A cross-sectional systematic assessment. *BMC Medicine Open Access*, 13(214). Retrieved from <http://www.biomedcentral.com/1741-7015/13/214>. doi:10.1186/s12916-015-0444-y
- Ketikidis, P., Dimitrovski, T., Lazuras, L., & Bath, P. A. (2012). Acceptance of health information technology in health professionals: An application of the revised technology acceptance model. *Health Informatics Journal*, 18(2), 124–134. doi:10.1177/1460458211435425
- Khenissi, M., Essalmi, F., & Jemni, M. (2015). Comparison between serious games and learning version of existing games. *Procedia - Social and Behavioral Sciences*, 191, 487–494. doi:10.1016/j.sbspro.2015.04.380
- Krueger, R., & Casey, M. (2015). *Focus groups. A practical guide for applied research*. Thousand Oaks, CA: Sage.
- Kurki, M. (2014). Nurses' acceptance of an internet-based support system in the care of adolescents with depression. Department of Nursing Science, Faculty of Medicine, University of Turku, Finland. *Annales Universitatis Turkuensis*. Finland: Painosalama Oy.
- Lal, S., DellÉlce, J., Tucci, N., Fuhrer, R., Tamblyn, R., & Malla, A. (2015). Preferences of young adults with first-episode psychosis for receiving specialized mental health services using technology: A survey study. *JMIR Mental Health*, 2(2), e18. doi:10.2196/mental.4400
- Lee, M. D. (2016). Gamification and the psychology of game design in transforming mental health care. *Journal of the American Psychiatric Nurses Association*, 22(2), 134–136. doi:10.1177/1078390316636857
- Li, J., Theng, Y. L., & Foo, S. (2014). Game-based digital interventions for depression therapy: A systematic review and meta-analysis. *Cyberpsychology, Behaviour, Social Networking*, 17(8), 519–527. doi:10.1089/cyber.2013.0481
- Lluch, M. (2011). Healthcare professionals' organisational barriers to health information technologies— A literature review. *International Journal of Medical Informatics*, 80(12), 849–862. doi:10.1016/j.ijmedinf.2011.09.005
- Maras, D., Flament, M., Murray, M., Buchholz, A., Henderson, K., Obeid, N., & Goldfield, G. (2015). Screen time is associated with depression and anxiety in Canadian youth. *Preventive Medicine*, 73, 133–138. doi:10.1016/j.ypmed.2015.01.029
- Merry, S., Stasiak, K., Shepherd, M., Frampton, C., Fleming, T., & Lucassen, M. (2012). The effectiveness of SPARX, a computerised self-help intervention for adolescents seeking help for

depression: Randomised controlled non-inferiority trial. *BMJ British Medical Journal*, 344, e2598. doi:<http://dx.doi.org/10.1136/bmj.e2598>

Mohr, D., Burns, M., Schueller, S., Clarke, G. & Klinkman, M. (2013). Behavioral intervention technologies: Evidence review and recommendations for future research in mental health. *General Hospital Psychiatry*, 35(4), 332–338. doi:10.1016/j.genhosppsych.2013.03.008

National Institute of Mental Health. (2016). Health Education. Statistics. Retrieved from <http://www.nimh.nih.gov/health/statistics/index.shtml>

Newman, D., O'Reilly, P., Lee, S. H., & Kennedy, C. J. (2015). Mental health service users' experiences of mental health care: an integrative literature review. *Journal of Psychiatric and Mental Health Nursing*, 22(3), 171–182. doi:10.1111/jpm.12202

Nieminen, I., Kylma, J., A°stedt-Kurki, P., Kulmala, A., & Kaunonen, M. (2016). Mental health service users' experiences of training focused on empowerment: Training environment and the benefits of training. *Archives of Psychiatric Nursing*, 30(3), 309–315. doi:10.1016/j.apnu.2015.11.011

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Thousand Oaks, CA: Sage.

Pinton, M. (2013). eSMART-MH pilot helped young adults. *Federal Telemedicine News*. Retrieved from <http://federaltelemedicine.com/?p=1246/>

Pinton, M., Hickman, R., Clochesy, J., & Buchner, M. (2013). Avatar-based depression self-management technology: Promising approach to improve depressive symptoms among young adults. *Applied Nursing Research*, 26(1), 45–48. doi:10.1016/j.apnr.2012.08.003

Polit, D., & Beck, C. (2014). *Essentials of nursing research. Appraising evidence for nursing practice*. (8th ed.). Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams and Wilkins.

Proffit, R. (2016). Gamification in rehabilitation: Finding the “just-right challenge.” In D. Novak, T. Bengisu, & H. Brendryen (Eds.), *Holistic perspectives in gamification for clinical practice* (pp. 132–157). Hershey,

Ricciardi, F., & Tommaso De Paolis, F. (2014). A comprehensive review of serious games in health professions. *International Journal of Computer Games Technology* 2014, Article ID 787968. Retrieved from <http://www.hindawi.com/journals/ijcgt/2014/787968/> doi:<http://dx.doi.org/10.1155/2014/787968>

Rogers, V. L., Griffin, M. Q., Wykle, M. L., & Fitzpatrick, J. J. (2009). Internet versus face-to-face therapy: Emotional self-disclosure issues for young adults. *Issues in Mental Health Nursing*, 30(10), 596–602. doi:10.1080/01612840903003520

Schoech, D., Boyas, J., Black, B., & Elias-Lambert, N. (2013). Gamification for behavior change: Lessons from developing a social, multiuser, web-tablet based prevention game for youths. *Journal of Technology in Human Services*, 31(3), 197–217. doi:10.1080/15228835.2013.812512

Shen, G. C., & Snowden, L. R. (2014). Institutionalization of deinstitutionalization: A cross-national analysis of mental health system reform. *International Journal of Mental Health Systems*, 8(47), 2–23. doi: 10.1186/1752-4458-8-47

Stein, K. F. (2009). Evidence-based psychiatric and mental health nursing: Responsibilities and their distribution. *Journal of the American Psychiatric Nurses Association*, 15(3), 170–171. doi:10.1177/1078390309339158

Tatla, S., Shirzad, N., Lohse, K., Virji-Babul, N., Hoens, A.M., Holsti, L., & Van der Loos, HF. (2015). Therapists' perceptions of social media and video game technologies in upper limb

rehabilitation. *JMIR Serious Games*, 3(1), e2. Retrieved from http://games.jmir.org/article/viewFile/games_v3i1e2/2. doi:10.2196/games.3401

Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349–357. doi:<http://dx.doi.org/10.1093/intqhc/mzm042>

Tse, S., Tang, J., & Kan, A. (2015). Patient involvement in mental health care: culture, communication and caution. *Health Expectations*, 18(1), 3–7. doi:<http://dx.doi.org/10.1111/hex.12014>

Twomey, C., O'Reilly, G., Byrne, M., Bury, M., White, A., Kissane, S., McMahon, A., & Clancy, N. (2014). A randomized controlled trial of the computerized CBT programme, MoodGYM, for public mental health service users waiting for interventions. *British Journal of Clinical Psychology*, 53(4), 433–450. doi:10.1111/bjc.12055

WHO. (2009). Improving health systems and services for mental health. Retrieved from http://apps.who.int/iris/bitstream/10665/44219/1/9789241598774_eng.pdf

WHO. (2016). World Health Organization. Regional office for Europe. Retrieved from <http://www.euro.who.int/en/health-topics/noncommunicable-diseases/mental-health>

Zauszniewski, A. J., Bekhet, A., & Haberlein, S. (2012). A decade of published evidence for psychiatric and mental health nursing interventions. *OJIN: The Online Journal of Issues in Nursing*, 17(3). doi:10.3912/OJIN.Vol17No03HirshPsy01