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Title: Utilizing games in the co-production of mental health services

Year: 2020

Version: Published version

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Please cite the original version:

Raitio, K., Siitonen, M., & Hopia, H. (2020). Utilizing games in the co-production of mental health services. Finnish Journal of eHealth and eWelfare, 12(2), 117-126. https://doi.org/10.23996/fjhw.89600

FinJeHeW Finnish Journal of eHealth and eWelfare

SCIENTIFIC PAPERS

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Utilizing games in the co-production of mental health services

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Abstract

This study analyses the application of a co-production approach in utilizing digital games and game-related methods in mental health services. The goal is to offer a real-world experiment on co-production, focusing on mental health service users, active gamers and mental health practitioners who worked together in equal ways and valued each other's unique contributions during the experiment. The implications of a co-production approach for applying digital games in the field of mental healthcare are somewhat limited and under-explored. In this case study, seven workshop sessions were held involving service users, gamers and professionals. Participants were interviewed concerning their experiences with the activities and content of the co-production workshops. Thematic analysis of the participants' experiences and perceptions resulted in three main themes: 1) empowering participation; 2) cooperation on a level playing field; and 3) improving self-efficacy. The experiment showed that applying a co-production approach in utilizing digital games is worth implementing in mental health services, particularly when putting novel nursing approaches and procedures into practice. Overall, co-production turned out to be a beneficial approach to introduce and implement game activities into mental healthcare; therefore, it can be taken one step further, meaning that service users' experiences are truly valued, and they can play a crucial role in developing mental health services.

Keywords: co-production, digital games, game-related methods, mental health services

Introduction

This paper reflects on the application of a co-production approach in utilizing games and game-related methods in mental health services. The basic idea of co-production in mental health services is that people with lived experiences of mental health concerns (often referred to as service users) are brought together with health providers as equal partners to improve services. The co-productive approach applied here involved the following participants: mental health service users, active gamers and mental healthcare providers. This paper explains the reasoning for the selected approach, illustrates the content and the activities of the workshops in which the selected co-production approach was applied, and describes the experiences of participants who were engaged in this experiment.

Games and mental health

In recent years, there has been increasing interest in how to use games in the context of mental health. Games can have, for example, the potential to enhance commitment to care, self-care, and medication [1]. They also have a future in therapeutic application by

supporting psychological well-being and reducing stress and anxiety [2]. Games can offer knowledge about disorders, provide support in making better choices to improve one's health [3], and promote relaxation [4]. Additionally, game-based digital interventions might be effective treatments for depression [5]. For example, the avatar-based game SPARX was found to be as effective in treating adolescents' depression as traditional face-to-face treatment [6,7]. In Roepke and colleagues' [8] study, participants who played SuperBetter regularly experienced significantly greater reductions in depressive symptoms and anxiety than a control group. There have also been studies indicating the effectiveness of biofeedback-based games [9] and so-called exergames [10] in decreasing depression symptoms.

Moreover, positive results have been reported in gamification in the areas of attitudes, motivation, and satisfaction, for example, by providing feelings of immersion, success, cooperation, and control [11,12]. According to meta-analyses, gaming might also have positive effects on learning [13,14]. Therefore, it is not unexpected that games and game-based methods have also been tried as tools, for example, by examining the possibilities of virtual reality in mental healthcare [15].

Despite the existence of research evidence for the benefits of gaming, the implementation of game-based interventions within the field of mental healthcare has not necessarily been easy or straightforward. Previous studies have mainly been based on testing individual games in different contexts [16] or developing and prototyping games for mental health purposes [17]. However, two systematic reviews have been recently published that assessed video games applied in child and adolescent psychiatry [18] and computerized and blended treatment for depressive young people [19]. Rasing et al. [19] found out that in terms of effectiveness, adherence, dropout, and forming a therapeutic relation, computerized and blended treatments are regarded as promising treatments for depressed adolescent. Zayeni et al. [18] concluded that serious games can be considered as an innovative adjunct or alternative in the treatment and prevention of child and adolescent psychiatry, especially when treating depression and anxiety disorders among youth.

There have been a very limited number of publications concerning interventions or models that utilize the broader idea of digital games implemented in the field of mental health services. There might be various reasons for this small number, such as the novelty of the subject, the prejudices of practitioners towards new working methods or a lack of suitable approaches and models for helping to implement digital games and game activities in health services. Hopia and Raitio [20] explored the perceptions and experiences of mental health service users and healthcare professionals regarding the use of gamification in mental healthcare. According to their findings, professionals were often suspicious of the idea of using games as a tool, and they did not see it as a "proper" way to work. Furthermore, there is an indication that professionals do not necessarily recognize the potential of digital work methods in general, nor do they consider their own competence adequate for applying them, although health providers are expected to deploy modern tools as a part of their everyday work [e.g. 21]. On the other hand, it might also be good that health providers react cautiously when using digital games as treatment or treatment adjuncts. As Shah et al. [22] recommend in their review, clinicians should consider the severity of diagnosis of patients as well as the availability of social support carefully when applying therapeutic games as part of treatment. They further state that currently, therapeutic games do not have enough research evidence to support them as stand-alone treatment for any mental health conditions. [22]

We propose that one way to overcome healthcare practitioners' suspicions or feelings of inadequacy is to use a co-productive approach to utilizing game-based methods in mental healthcare. Co-production involves both professionals and service users in the joint development of services. The basic premise is that service users have the necessary knowledge about how services are experienced and how to develop them further [23]. Although co-production is used widely in the healthcare sector [e.g. 24,25], organizations and healthcare providers in mental health services still require actual examples on how to apply the approach in practice and

how to work with service users in a goal-directed manner.

This study analyses the application of a co-production approach in utilizing digital games and game-related methods in mental health services. By offering an analysis of a real-world experiment on co-production, we aim to answer the following research question: How do mental health service users, active gamers and mental health practitioners experience co-production approach for applying digital games in the field of mental healthcare?

Material and methods

Co-production approach

Since there was no pre-existing framework for facilitating the implementation of game-based interventions in mental health services, a project entitled "Get involved by gaming" was implemented between 2015 and 2017. Its aim was to test the use of games and game-based methods in mental health to strengthen participants' self-efficacy, sense of involvement, and digital skills. The underlying idea was to conduct all of the planning and testing in a co-productive manner that was put into practice in a series of workshops. All of the activities followed the principles of equality, dialogue, collaboration, and empowerment, which can be considered important elements of a co-productive approach [26].

First, the examples of existing health-related games and applications were selected in an online repository, which was named *the Game Catalogue*. It was essential to create the catalogue due to the realization that a large number of serious games and game-based applications already existed, which were aimed at the field of mental healthcare. The criteria for choosing games to include were as follows: free to play, good functionality of the game, and the game's relevance to the one of the following health-related topics: 1) brain training; 2) everyday life management; 3) sports and exercise; 4) mental well-being; and 5) relaxation and mindfulness. The finished *Game Catalogue* included a total of 35 games and applications.

Second, a plan for the workshops was drafted, as well as the activities in them. The purpose of the workshops was to test and introduce existing serious games and health games in collaboration with the participants (service users, active gamers, healthcare providers) and to co-produce new mental health working approaches to meet the needs of today's consumers of health services. The workshops were based on shared experimentation and a dialogical approach, meaning that participants with experience in digital gaming introduced the context to professionals and other service users who, conversely, could share their experiences of mental health services. While acknowledging the existing research on the possible harmful effects of gaming, we consciously decided not to centre on them and focused instead on examining the possibilities of gaming and the utilization of games to promote mental well-being. Moreover, since many mental health service users already play games, we felt that our approach of implementing and utilizing games as a part of treatment was well justified. Thus, our focus was on examining experiences and attitudes towards gaming and the ways in which people talk about gaming. The workshops were organized monthly over a period of seven months. The participants received homework between the workshops, mostly to pick up games from *the Game Catalogue* produced in the first phase of this experiment and to play actively. The themes and activities of the workshop sessions are illustrated in Table 1.

Table 1. Themes and activities of the workshops.

Themes	Activities
1. Workshop **Utilizing games in mental health services**	• Activity: Online quiz about gaming statistics • Service user's story: "How games supported my rehabilitation?" • Lecture: Concepts of gamification, serious games, health games • Discussion: Attitudes towards utilizing games in mental healthcare
2. Workshop **Pros and cons of playing digital games.**	• Activity: Game workshop (testing a broad spectrum of games, e.g., board games, hand consoles, digital games) • Lecture: Research on gamification in mental health • Discussion: How can playing games together support co-production in mental health services?
3. Workshop **Motives for playing digital games.**	• Activity: Creation of gaming motivation profiles • Lecture: Differences and similarities between gambling and digital gaming • Discussion: Advantages and disadvantages of gaming and the role of motives in playing digital games
4. Workshop **Managing everyday life with the help of games**	• Activity: Team-building exercise • Lecture: Myths regarding gaming, digital natives and digital exclusion • Discussion: Do games support everyday life?
5. Workshop **Improving health with games**	• Activity: Game workshop (testing exergames, e.g., Nintendo Wii, and serious and health games, e.g., NeverMind) • Lecture: Research on digital health games • Discussion: What are the digital skills that mental health practitioners need for the future?
6. Workshop **Game development and production**	• Activity: Creation of visual representations of the use of gamification in mental health services in the future • Lecture: A start-up entrepreneur in the game industry sector tells his company's story • Discussion: How does one develop a game? How do I learn to create a game?
7. Workshop **Co-producing game-based mental health services.**	• Activity: Decision-making exercise • Group work: Reviewing good and poor experiences of mental health services; making a short video about how services can be developed using co-production approaches and gamification • Discussion: Key takeaways from the seven workshops

Workshop participants

Twenty-three participants represented three distinct groups: 1) young adults (aged 20 years old and older) who self-identified as regular gamers and were recruited through collaboration with mental health service units; 2) other mental health service users (non-gamers); and 3) professionals working in units providing mental health services. The participants' median age was 36 (range 22-47), and 13 were female, while 10 were male. The guiding principle of the workshops was to utilize the experience of the participants, especially

those young adults who had extensive experience in gaming. These participants were considered as content specialists in the field of gaming, indicating that the other participants had the opportunity to learn from them. Another guiding principle was to use the knowledge of service users to evoke reflection about the developmental needs of mental health services and to reflect on the overall attitudes towards game-based methods in the field of mental healthcare. Initially, the participants were not aware of each other's backgrounds (who was a gamer/service user/professional), nor were their backgrounds conveyed in any way by the organizers during the implementation of the workshops. Each participant had the opportunity to share as much or as little information about himself/herself as he/she wanted. This principle emphasized the equality between the participants and de-emphasized expert roles.

Data collection and analysis

The experiences and perceptions of the participants were collected regarding the content and activities used in the workshops via open-ended, thematic interviews after the last workshop. All of the participants signed an informed consent form before participating in the interviews. The interviewees were allowed to withdraw from the interview at any point if they so wished without it affecting their participation in the workshops. The total number of interviews was 16. Some of the participants who took part to the workshops did not take part in the interview (n=7), which may have had an impact on the kind of experiences and perceptions reported. Some of these participants were unable to attend the interview at the scheduled time, or did not want to participate in it, while others had discontinued their participation in the workshops. Reasons for discontinuing included limitations imposed by the participant's personal life (e.g. employment, move to another city, changes in wellbeing).

Interview themes covered the following areas: participants' role in the workshops; how the workshop principles were realized; the structure and content of workshops; learning and highlights during the workshops; ideas gained during the workshops for participants' own work and life; and suggestions for future workshops. All interviews covered all of the themes, but the exact questions and the way they followed one another varied from interview to interview, based on the interviewees' responses and flow of conversation. The interviews occurred in the university's facilities or the interviewees' homes or workplaces and lasted approximately 30–75 minutes. All of the interviews were recorded and then transcribed verbatim.

Thematic analysis [27] was applied to analyse the participants' experiences regarding their participation in the workshops. First, two authors read the transcribed material several times to form a comprehensive understanding of the content. Then, meaningful preliminary codes were identified and grouped into themes. The first author performed the initial coding, which was then discussed among all of the authors as a type of subjective assessment aimed at increasing the reliability of the analysis. The identified themes formed the basis of three overlying themes, which will be looked at in more detail over the next section.

Results

The participants' experiences and perceptions related to the workshop activities formed three themes: 1) empowering participation; 2) cooperation on a level playing field; and 3) improving self-efficacy.

Empowering participation

The participants approved of the workshops' clear structures and pre-defined themes. They valued the workshops not being excessively expert oriented, but they also considered the visits by external experts important for particular topics. The relatively relaxed schedule and the way in which the workshops progressed from one theme to another based on the flow of the group were also considered positive. According to the interviewees, the best activities in the workshops were the game workshops and the testing of different games.

> *"That was at least pretty fun when we tested all those different games when the group had people who had not played games before -- kind of like handing a controller over to our parents ... It looked funny like that, when it's such an obvious thing for me that you don't have to look at the keyboard and mouse and stuff; when new people try it, it's maybe not that easy ... " (L2909P/Gamer)*

Other highlights of the workshops included the making of personal videos at the end, testing virtual reality, small group reflections, action-oriented tasks, and common discussions. The importance of homework also raised various opinions. Some participants considered it important from the perspective of exploring various games. In contrast, participants who already played often did not consider the homework very meaningful because they played anyway.

Cooperation on a level playing field

The interviewees noted that the workshops provided them with new information about concepts related to games, different ways of playing, and the possibilities of using and applying games. They also considered the introduction to the game development process and digital culture to be meaningful. The participants felt that they received information about gambling, as well as problematic gaming and the harmful effects of games, yet it did not cause them to consider gaming to be a negative phenomenon.

The participants described how the information provided during the workshops expanded their own thinking and helped them see things from new perspectives. Some of the interviewees noted coming to the realization that gaming is not only about being physically passive but that it can also invite people to move and do things in a concrete manner. They described not having thought about how much gamification has already been utilized and studied from the perspective of healthcare. The interviewees also expressed a wide range of ideas and thoughts about the potential of games and how gaming could be utilized in the future.

> *" … reduce those prejudices and somehow maybe your own as well since you always have your own agenda, and you want to shake up your own as well. I guess I've had to, in a way, in the context of this job, when you have to meet young people every day for whom gaming is a big thing; then, if you kind of like constantly push it away, then it doesn't really work, or it becomes a bit heavy -- you have to accept it with interest." (L0710TT/Professional)*

Interviewees were of the opinion that gaming could be an easy way to approach a person and start a dialogue. For example, getting to know a new person could be easier with the help of a game because playing a game can have an equalizing effect, and one does not necessarily need to talk while playing. In addition, the interviewees noted that gaming could be utilized in various ways as a means of strengthening a sense of community, for example, by testing games together or sharing gaming experiences. The participants noted that, when one gets into gaming oneself, one also becomes better equipped to think about how it could be used in everyday life and work. Personal experience also lowers the bar for trying out games and implementing them oneself.

> *"In a way it became a kind of eureka moment that nowadays this gaming is something else than just sitting in front of a computer with hunched shoulders. And it like opened up ideas that this could, for those target groups and so on, be a form of rehabilitation and other things; that's the kind of brainstorming sessions that it like resulted in." (L1406KA/Service user)*

The interviews also highlighted the diversity of gaming. Gaming is easily associated with harmful impacts. However, the interviewees pondered whether gaming itself is a problem or whether the problems might lie elsewhere, with gaming serving as a way to make life easier.

> *"I think it was pretty funny how people's opinions about gaming changed, especially the few mothers there (in the workshops), who first didn't let*

their children play much and then later were like, 'I guess they could play a little more.' Well, maybe it's when you get to try it out yourself too and then discuss how it's not necessarily just harmful and how it affects everything else too, instead of just negative things like that ... I brought up that like most of my friends are currently from gaming, so games are a pretty good way of making friends and stuff." (L2909P/Gamer)

Improving self-efficacy

One of the key findings is related to how the participants analysed their own roles in the workshops. As an approach, co-production necessarily leans on the agency of participants. Discussing their own actions and roles in the shared construction of the setting allowed the participants to engage in active introspection, which, in turn, may present a valuable step in the overall learning and change process. For example, some participants recognized actively participating in the discussions and keeping them going. Others felt that they played the role of an active listener instead and participated in this way. Overall, the interviewees emphasized that they always had their voices heard when they wanted. Such accounts highlighted becoming aware of the meaning that each individual participant had played in the creation of the workshops.

"There wasn't like somehow that kind of employee-client-oriented feeling, like a wall there or something ... And somehow, in my opinion, the young men and women who had played a lot, they got their voices heard really well -- that it was for them a kind of valuable experience that they were asked questions; they were experts in a lot of things. I think it was a pretty great premise." (L2404TT/Professional)

According to the interviewees, the workshops had a good group spirit and a nice atmosphere. The open exchange of opinions was considered important, as was humour and that the participants did not need to feel anxious about other people's reactions. The participants expressed feeling that the discussion was open and that nobody was put down or belittled based on his/her knowledge or lack thereof.

"Even I got to relax and be a stupid middle-aged woman, hah hah; like at least here, in this area, and the young people were eager to give advice, they didn't look at me and go, 'Wow, that lady doesn't know anything!' And it also became that kind of very natural meeting between different ages." (L2810KA/Service user)

The participants reported that reflecting on things together opened up new perspectives and ideas and increased their understanding of the different stories underlying gaming. The emphasis on multiple perspectives and dialogue was considered important, and the interviewees noted that the discussions would have been completely different had the workshops consisted exclusively of professionals, for example. The interviewees also felt that it was essential that they did not know each other's backgrounds.

Discussion

Currently, attitudes towards game-based working methods are changing steadily but slowly among service users and professionals. Our study contributes to the understanding of how implementing games and game-based methods in mental health services may occur in practice.

The workshops were consciously designed to bring together people from very different backgrounds and with a range of knowledge levels regarding games and gamification. The participants noted that the idea of not knowing the other participants' backgrounds felt strange at first but lost its significance during the first workshop. According to the participants, the decision to not to discuss backgrounds enabled genuine dialogue and equality, and they considered this fact to be one of the best parts of the workshops. The power structure between service users and employees was also turned upside down in the workshops, with service users who were avid gamers playing the role of experts and professionals assuming more of a learner role. It seemed

that the professionals not being required to hold up their professional roles freed them to reflect more freely on their own thoughts. Voicing things together is meaningful in enabling dialogue from different perspectives, which is one of the key aspects of co-production and dialogue-based approaches [24, 28] and something that we witnessed working well in this experiment.

While there has been research on the effectiveness of including game-based approaches in treating mental health disorders, such methods have not yet been widely adopted as everyday tools in the field [29]. There might be some explanations for this fact. For people with significant experience in digital gaming, many so-called serious games may appear too simplistic and not sufficiently entertaining. For example, such games' graphics and other elements might not be sufficiently engaging for regular gamers who are used to commercial games. Another possible reason might have to do with healthcare professionals' prejudices towards gaming, as well as a general lack of knowledge regarding the possibilities of game-based approaches. It is quite difficult to recommend something that one does not know or something that goes against one's established view on how to organize treatment in the first place. On the other hand, longitudinal studies of game-based treatment methods in mental healthcare are still missing [18, 22]. There are also some barriers (e.g. severity of symptoms, acceptability and facilities of computerized treatment), which need to take into consideration, when professionals apply game-based methods in their everyday work [19]. Finally, since game-based approaches are still new within the field of mental healthcare, there are few to no procedures on how to implement serious games as a part of treatment processes.

It is essential to note, that the idea of "one size fits all" does not work when applying games and game-based elements into the context of mental healthcare. There are existing therapeutic games to use [e.g. 22], but also games that have not been specifically designed for therapeutic use can be utilized in various ways. However, just like with music, literature, or arts, choosing what content to use and how to frame it for the purposes of the intervention have to be considered carefully. In our study, we chose both to use a curated list of games (game catalogue) as a starting point, and then guided the participants to build on that starting point in their own analyses of the possibilities and benefits of games for mental healthcare. Our study highlights the possibilities of using games in a co-productive setting to get to know others, to start dialogue, to share experiences and to increase communality.

Relevance for practice

This experiment demonstrated clearly that it is possible to create an intervention that helps various stakeholders, including service users and practitioners, and broadens their perspectives on games and gaming as they connect with the topic of mental health. The co-productive approach used in this experiment helped to demonstrate how existing schema can change, for example, when a professional decides to expose himself/herself willingly to the development of his/her own thinking and step out of his/her comfort zone. In this regard, the participants' experiences underscored the importance of flexible thinking and a setting where people were not afraid to ask "stupid" questions. Without this kind of approach, the probability of adjusting attitudes is undoubtedly low. Another important aspect learned from this experiment was the need to involve gamers, as well as mental health service users, in the development of new ways to work co-productively. One could go as far as to say that people who are already regular gamers should be seen as potential experts when adapting game activities to the field of mental healthcare. While it requires effort and does not come about without long-term collaboration with various stakeholders, experiments such as those that we illustrated here, could improve the quality of mental healthcare in the long run by providing and implementing new ways of using game-based methods and helping to demystify games as a practical tool.

Conflict of interest statement

There are no conflict of interests.

Acknowledgement

The data in question was collected in the "Get involved by gaming" project. The project was active 1 August 2015 - 31 December 2017 and the European Social Fund (ESF) funded it.

References

[1] Khalil G. Change through experience: How experiential play and emotional engagement drive health game success. In: Novák D, Tulu B, Brendryen H (eds). Handbook of research on holistic perspectives in gamification for clinical practice. Hershey, PA: IGI Global; 2016. p. 10-34. https://doi.org/10.4018/978-1-4666-9522-1.ch002

[2] Griffits M, Kuss DJ, Ortiz de Gortari AB. Videogames as Therapy: An Updated Selective Review of the Medical and Psychological Literature. Int J Priv Health Inform Manag 2017; 5(2):71-96. https://doi.org/10.4018/IJPHIM.2017070105

[3] Krebs P, Burkhalter JE, Snow B, Fiske J, Ostroff, JE. Development and alpha testing of QuitIT: an interactive video game to enhance skills for coping with smoking urges. JMIR Res Protoc 2013 Sep 11;2(2):e35. https://doi.org/10.2196/resprot.2416.

[4] Haaranen A, Rissanen T, Laatikainen T, Kauhanen J. Digital and video games in health promotion: Systematic review of games and health behavior. FinJeHeW 2014;6(4):153-163.

[5] Li J, Theng YL, Foo S. Game-based digital interventions for depression therapy: A systematic review and meta-analysis. Cyberpsychol Behav Soc Netw 2014 Aug;17(8):519-27. https://doi.org/10.1089/cyber.2013.0481

[6] Fleming T, Dixon R, Frampton C, Merry S. A pragmatic randomized controlled trial of computerized CBT (SPARX) for symptoms of depression among adolescents excluded from mainstream education. Behav Cogn Psychother 2012 Oct;40(5):529-41. https://doi.org/10.1017/S1352465811000695

[7] Merry S, Stasiak K, Shepherd M, Frampton C, Fleming T, Lucassen M. The effectiveness of SPARX, a computerised self-help intervention for adolescents seeking help for depression: Randomised controlled non-inferiority trial. BMJ 2012 Apr 18;344:e2598. https://doi.org/10.1136/bmj.e2598

[8] Roepke A, Jaffee S, Riffle O, McGonigal J, Broome R, Maxwell B. Randomized controlled trial of SuperBetter, a smartphone-based/Internet-based self-help tool to reduce depressive symptoms. Games Health J 2015 Jun;4(3):235-46. https://doi.org/10.1089/g4h.2014.0046

[9] Stasiak K, Fleming T, Lucassen M, Shepherd M, Doherty I, Merry S. The Journey towards new generation e-therapy for adolescents with depression. Neuropsychiatrie de´Enfance et de l´Adolescence 2012; 60(5):S144. https://doi.org/10.1016/j.neurenf.2012.04.130

[10] Li J, Theng YL, Foo S. Effect of Exergames on depression: a systematic review and meta-analysis. Cyberpsychol Behav Soc Netw 2016 Jan;19(1):34-42. https://doi.org/10.1089/cyber.2015.0366

[11] Granic I, Lobel A, Engels R. The benefits of playing video games. Am Psychol 2014 Jan;69(1):66-78. https://doi.org/10.1037/a0034857

[12] Hamari J, Koivisto J, Sarsa H. Does gamification work? – A literature review of empirical studies on gamification. In: 47th Hawaii International Conference on System Sciences. Washington DC: IEEE Computer Society; 2014. https://doi.org/10.1109/HICSS.2014.377

[13] Clark D, Tanner-Smith E, Killingsworth S. Digital Games, Design, and Learning: A Systematic Review and Meta-Analysis. Rev Educ Res 2016 Mar;86(1):79-122. https://doi.org/10.3102/0034654315582065

[14] Wouters P, van Nimwegen C, van Oostendorp H, van der Spek ED. A meta-analysis of the cognitive and motivational effects of serious games. J Educ Psychol 2013;105(2):249-265. https://doi.org/10.1037/a0031311

[15] Riva G, Dakanalis A, Mantovani F. Leveraging Psychology of Virtual Body for Health and Wellness. In: Shyam Sundar S (eds.) The Handbook of the Psychology of Communication Technology. New York: Wiley Blackwell; 2015. p. 528-547. https://doi.org/10.1002/9781118426456.ch24

[16] Fleming TM, Bavin L, Stasiak K, Hermasson-Webb E, Merry S, Cheek C et al. Serious games and gamification for mental health: current status and promising directions. Front Psychiatry 2016;7:215. https://doi.org/10.3389/fpsyt.2016.00215

[17] Turner WA, Thomas B, Casey LM. Developing Games for Mental Health: A Primer. Prol Psychol Res Pr 2016;47(3):242-249. https://doi.org/10.1037/pro0000082

[18] Zayeni D, Raynaud JP, Revet A. Therapeutic and Preventive Use of Video Games in Child and Adolescent Psychiatry: A Systematic Review. Front Psychiatry 2020 Feb 6;11:36. https://doi.org/10.3389/fpsyt.2020.00036

[19] Rasing S, Stikkelbroek Y, Bodden D. Is Digital Treatment the Holy Grail? Literature Review on Computerized and Blended Treatment for Depressive Disorders in Youth. Int J Environ Res Public Health 2019 Dec 24;17(1):153. https://doi.org/10.3390/ijerph17010153

[20] Hopia H, Raitio K. Gamification in Healthcare: Perspectives of Mental Health Service Users and Health Professionals. Issues Ment Health Nurs 2016 Dec;37(12):894-902. https://doi.org/10.1080/01612840.2016.1233595

[21] Mitchell A, Rowe J, Counihan S. On line forums: implications for mental health nurses. J Mental Health Train Educ Pract 2013;8(2):60-65. https://doi.org/10.1108/JMHTEP-03-2012-0009

[22] Shah A, Kraemer KR, Rong Won C, Black S, Hasenbein W. Developing Digital Intervention Games for Mental Disorders: A Review. Games Health J 2018 Aug;7(4):213-224. https://doi.org/10.1089/g4h.2017.0150

[23] Lamph G, Sampson M, Smith D, Williamson G, Guyers M. Can an interactive e-learning training package improve the understanding of personality disorder within mental health professionals? J Mental Health Train Educ Pract 2018; 13(2):124-134. https://doi.org/10.1108/JMHTEP-03-2017-0023

[24] Batalden M, Batalden P, Margolis P, Seid M, Armstrong G, Opipari-Arrigan L, Hartung H. Coproduction of healthcare service. BMJ Qual Saf 2016 Jul;25(7):509-17. https://doi.org/10.1136/bmjqs-2015-004315

[25] Lwembe S, Green SA, Chigwende J, Ojwang T, Dennis R. Co-production as an approach to developing stakeholder partnerships to reduce mental health inequalities: an evaluation of a pilot service. Prim Health Care Res Dev 2017 Jan;18(1):14-23. https://doi.org/10.1017/S1463423616000141

[26] Roper C, Grey F, Cadogan E. Co-production – putting principles into practice in mental health contexts. Roper C, Grey F, Cadogan E; 2018. Available from: https://recoverylibrary.unimelb.edu.au/data/assets/pdf_file/0010/2659969/Coproduction_putting-principles-into-practice.pdf.

[27] Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol 2006;3(2):77-101. https://doi.org/10.1191/1478088706qp063oa

[28] Piippo J, MacGabhann L. Open dialogue: offering possibilities for dialogical practices in mental health and psychiatric nursing. J Ment Health Train Educ Pract 2016;11(55):269-278. https://doi.org/10.1108/JMHTEP-04-2016-0023

[29] Lee MD. Gamification and the psychology of game design in transforming mental health care. J Am Psychiatr Nurses Assoc Mar-Apr 2016;22(2):134-6. https://doi.org/10.1177/1078390316636857