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VIRTUAL REALITY OPENS NEW FRONTIERS IN PSYCHIATRIC TREATMENT AND EDUCATION

ABSTRACT

Virtual reality has been around the corner for quite some time. However, the technical development of the last few years has really brought affordable and easily usable virtual reality headsets to the larger public. Most studies on the use of virtual reality in psychiatry have focused on virtual reality exposure therapy, a form of exposure therapy using virtual reality to create environments which provoke anxiety. This has also been combined with elements of cognitive therapy. There are promising studies in using virtual reality to treat depression and psychotic delusions. Creating environments to represent the experiences of patients may also offer good ways of psychoeducation for parents, service providers and public alike.

DIGITAL PSYCHIATRY AND THE BASIC CONCEPTS OF VIRTUAL REALITY

Tools for digital psychiatry have been making their way into the clinic. Multiple different apps and websites provide features for mental health professionals to offer services over the internet, either live or automated. Covid-19 has made telepsychiatry a common tool for most mental health workers (1). One digital tool still finding its steam is virtual reality, which has taken leaps and bounds the last few years in the consumer market. The launch of consumer-grade virtual reality devices in 2016 brought virtual reality devices to affordable levels and made them available even for everyday users. Devices can vary from computer-connected headsets (2) to mobile phones inserted inside cardboard boxes (3) and even full movement providing systems (4).

Virtual reality can be described as a digital environment where the user no longer interacts with the digital space through a screen, but is immersed as an active participant within a computer-generated three-dimensional environment. Its history in the world of psychiatry can be traced in theory back decades, but the first detailed descriptions of the concept began to appear in the 1990s, when the first studies on the use of virtual reality started to appear for phobias and PTSD (5). This article will briefly overview some of the more novel ways the use of virtual reality is being researched.

VIRTUAL REALITY EXPOSURE THERAPY (VRET)

The most studied field on the use of virtual reality is virtual reality exposure therapy (VRET) for anxiety disorders. Exposure using virtual reality is done through generating a digital environment where one can interact with an environment that creates a sense of anxiety. Immersive digital environments can provide a safe and adjustable way that allows exposure. It is already an effective alternative to traditional treatments, but the challenges have been the ease of use of devices, acceptance by clinicians and availability (6).

VRET has been tested with agoraphobia, fear of heights to arachnophobia, and provides an intuitive method for the use of virtual reality. An early meta-analysis on the effectiveness of VRET has already shown a good effect on anxiety and phobias (7). It was also found to be an acceptable treatment for social anxiety in a recent meta-analysis and, interestingly, seemed to be even more effective than in vivo exposure at 6-month post-intervention, though effect size was smaller compared to in vivo exposure at 12 months and 6 years post-intervention (8).

VRET has been actively studied for the treatment of PTSD, especially in cases of war veterans for whom virtual reality scenarios have been developed, with clinicians able to increase stimulus and control exposure (9). However, a recent 2019 meta-analysis found that VRET for PTSD had only a medium or non-significant effect when compared to active controls, and that there was generally a lack of large sample size studies with only few studies done with civilians (10).

PSYCHOSIS AND DELUSIONS

While virtual reality for use in anxiety disorders has been well established, there have been fewer publications on its use for treatment of psychosis and persecutory delusions. A study by Freeman et al. tested the difference between virtual reality exposure and virtual reality cognitive therapy (11).

In this test setting, the chosen patients had a diagnosis of psychosis with persecutory delusions, such as that other people were going to cause harm to them. Patient groups were provided with the same virtual reality environments of an underground train ride and a lift. One group was provided with the instructions for basic virtual reality exposure, where they were told to just observe their surroundings while it changed in difficulty with added exposure. The other group was provided with guidance on cognitive therapy methods to test and try breaking their safety behaviour methods for added effect. Both groups had a reduction in conviction of delusions, but in the group using the cognitive therapy method it seemed to have a greater effect (11).

DEPRESSION

Depression seems to be a more difficult case for virtual reality, as there is no specific environment that can be created to treat it. However, a team from University College London and University of Barcelona were able to create a method of approach for the treatment of self-criticism in depression using virtual reality avatar therapy (12). The group first modelled a child version of the patient into the virtual environment, where the patient was taught to say encouraging lines to the child. After that the patients were given body tracking suits and first heard compassionate responses from the child, were then embodied in the child virtual body and then heard their own compassionate lines they had previously told the child. The experimental treatment setting was well regarded by the patients and findings indicated a reduction in depression and self-criticism (12).

VIRTUAL REALITY IN PSYCHOEDUCATION AND AS A WAY TO INCREASE AWARENESS

As well as providing tools for treatment, virtual reality seems to provide a good platform for education of patients, family, caregivers and the public. The United Kingdom's National Autistic Society had a campaign called Too Much Information, where they created a virtual reality video which reflected on the experience of an autistic child (13). The video provided an experience on how lights, colours and sounds are felt by the child, and also simulated a panic attack. The 360 VR videos were viewed by over 56 million people (13). Virtual reality could be a powerful tool for the future of patient education.

ETHICAL CONSIDERATIONS AND ADVERSE EFFECTS OF VR

A side effect of using virtual reality is "VR sickness", which can include nausea, dizziness and blurred vision. The content of the virtual reality environment has a marked effect on the sickness felt, with gaming and 360 videos causing higher sickness, and minimal content and scenic content causing less sickness (14).

Concerns have also been raised about the possibility of virtual reality causing psychological harm to the users, and the principle of non-maleficence should be applied in a manner that experiments should not be conducted if foreseeable harm to the subjects can be seen. Effects of long-lasting immersion should also be considered and especially evaluated with vulnerable patient populations, such as patients with depersonalization-derealization disorder (15).

FINAL NOTES

The use of virtual reality seems to offer possibilities in multiple treatment directions for the care of psychiatric patients. Most studies and meta-analyses have been done on the use of virtual reality exposure therapy, and this could offer a good solution of bringing exposure therapy to patients where there is a lack of personnel. If exposure can be done by patients safely on their own, interesting possibilities have been found in treatment-resistant delusions, and there are also active projects going on with this topic in Finland. Treatment of depression seems to need more customization but might offer tools for personalized treatment in the future. Consideration should be used on how to reduce possible VR sickness when developing virtual reality treatment programmes as well as how to take into account possible harmful effects to the patients.

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