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Ask your dentist: Does virtual reality support treatment? A Preliminary survey. Part II

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Abstract

Introduction. Despite advances in dental treatment, people avoid dental care because of pain, fear or anxiety. Distraction techniques such as television watching, listening to music, use of audio-visual eyeglasses, may effectively help to distract the patient's attention away from anxiety. Virtual Reality is a premedication tool utilized more common in medicine. Objective. Aim of this study was a preliminary questionnaire about relaxation of virtual reality after dental treatment. Materials and methods. 20 adult patients have been qualified for the anonymous original questionnaire about postoperative quality sense with or without Oculus Go virtual reality relaxing movie. During the first call, after the direct restorative treatment in local anaesthesia has been completed, no virtual reality has been used, while after the second appointment there has been utilized a post-treatment screening with relaxing movie. Results. 19/20 patients responded positively to the use of virtual reality. Conclusion. The responses to the questionnaire confirm the preliminary advisability of using VR after treatment. Further research is necessary in order to develop or introduce virtual reality during dental operations.

Keywords: dentistry, distraction, virtual reality

Discussion

Dentistry, unlike other medical disciplines (1-4) has received relatively little attention from VR researchers in a few original studies (5-15).

With high probability just one work from 2018, by Barbara Atzori with research team (14), described a study on Oculus, but Rift line DK2 and CV1 virtual reality goggles¹, with two miniature computer screens, one screen per eye. The goggles received video and audio input from an MSI GT Series GT72 Dominator Pro G-1252 Gaming Laptop 6th Generation Intel Core i7 6700HQ (2.60 GHz) 16 GB Memory 1 TB HDD 512 GB SSD NVIDIA GeForce GTX 980M 4 GB GDDR5 17.3" with Windows 10 Home 64-Bit. They tested this equipment in the field of paediatric dentistry with results that provide preliminary evidence of the feasibility of using immersive, interactive VR to distract paediatric dental patients and increase fun of children during dental procedures. The Oculus Go, a stereoscopic 360 o google system is entirely innovative and differs significantly from previously 'flat' VR glasses. Thus, an attempt to referee the obtained patients' answers in this preliminary survey to previous studies, despite clearly encouraging results obtained, is, for now, beyond direct compare; also, in terms of Oculus Rift, that has been used in children, and as a tool that is designed mainly for games assumption. Our preliminary questionnaire has been dedicated to adults of working age, with the utilization with Oculus Go line, which might be more a tool for deep immersion projection, rather than for interactive games, what is essential during static position treatment.

A group of 21 international experts was recruited based on their contributions to the VR literature. The resulting Virtual Reality Clinical Outcomes Research Experts held iterative meetings to seek recommended consensus on best practices for the development and testing of VR in medical applications (16). Several broader barriers exist to fully exploiting the potential of VR technology. First, the pace of new technology adoption by therapists is generally slow. Second, the growing number of VR products and apps can make it difficult

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to decide what to purchase. Third, presently, not all patients become immersed in the currently available virtual environments; this may reflect differences in patient ability, therapist skills, and a need for more clinical VR content. Lastly, therapist interest in using VR in therapy is increasing, but training in VRET is generally unavailable (17).

In 1989 results emphasized the value of determining the presence of competing contingencies, such as negative reinforcement via temporary escape from invasive dental procedures, and the necessity of evaluating psychological interventions across successive visits and procedures (18).

After less than 200 years since Charles Wheatstone described stereopsis, it seems that nowadays deeply immersive VR for operative dentistry, combining a dedicated composing of sound, movie production, accompanying smell, in consultation with neuroscientists, psychologists, clinicians, might be a worthy continuation of the never-ending work.

Considering the serious general complications of untreated caries disease, actions should be aimed at effective prediction, which will allow patients to have more free and aware access to dental treatment. In this context the skill of virtual reality can become invaluable support.

Conclusion

The responses to the preliminary questionnaire confirm the advisability of using Oculus Go VR after treatment. Further research is necessary in order to develop or introduce Virtual Reality support during dental operations.

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