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Letter to Editor

Virtual Reality as Auxiliary Technology in the Operating Room

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Patients experience anxiety before the operating room for many reasons. These include fear of complications and pain, nausea or vomiting after surgery. There is also sometimes a fear of complete recovery after surgery. Unfortunately, the impact of such stresses on patients is manifested by increased blood pressure and heart rate and so on. Researchers found that patients who experience less postoperative pain experience faster recovery and longer hospital stay when using methods to reduce anxiety before surgery. Such anxieties can be resolved with the short acting benzodiazepine midazolam before surgery, but can also cause various side effects. Benzodiazepines have adverse effects, such as hemodynamic perturbations; respiratory depression; and paradoxical effects, such as hostility, aggression, and psychomotor agitation. It should be kept in mind that the patient's acceptance and willingness to use them should be assessed before providing the patient with complementary or alternative options to relieve anxiety. A number of cases that have been shown to be effective in reducing anxiety in these conditions include acupuncture, aromatherapy, music, dog therapy, visiting (OR team members), training and virtual reality [1].

Virtual reality (VR) has already been shown to be one of the most effective clinical cases. VR technology, which can alleviate acute pain through distraction in burn care and other settings, is becoming more available with recent advances in technology [2-3]. This technology can be used not only during the burn treatment process, but in most age groups before surgery and sometimes even during local anesthesia and any type of medical intervention [2-3].

The first use of the term "virtual reality" is attributed to Jaron Lanier, the founder of VPL Research, a pioneer in virtual reality development [4].

The first "virtual reality mirror box" was introduced by Ramachandran and Rogers-Ramachandran to investigate the effect of sight on false emotions. Huffman and his colleagues also examined the effect of VR distraction on pain-related human brain activity. Despite various limitations, VR researchers have achieved success in feasibility, satisfaction, and innovation to reduce pain associated with medical interventions. VR technology has also been shown to be effective in minimizing drug therapy, thereby reducing the risks associated with sedation. VR significantly reduced mental pain scores in addition to decreasing pain-related brain activity in all five areas of interest including the anterior cingulate cortex, primary and secondary somatosensory cortex, insula, and thalamus. Pain studies in children age groups have focused mainly on interventions such as coping strategies proposed by the US Department of Health and Human Services, such as imagery, breathing, relaxation, positive thinking, and social support [5].

In addition to the advertising applications seen in the entertainment industry of this technology, virtual reality techniques are now used in the industry as well. Power plant workers in Japan experience the next opportunity from computer-made virtual control rooms before taking on real-life situations [4].

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Reports of mental pain and functional magnetic resonance imaging results indicate that there is evidence of convergence on the analgesic effect of opioid use alone or the use of VR technology alone. In addition, pain-related brain activity patterns provide evidence that demonstrates the significant analgesic effects created by VR distraction when used as an adjunct to opioid analgesia. These results provide data supporting the clinical use of multimodal analgesic techniques (e.g., combination pharmacologic and no pharmacologic) [6].

Obstetricians often report anxiety during epidural delivery. Anxiety medications are rarely prescribed because of concerns about fetal exposure, and nonpharmacological methods such as music therapy and hypnosis are used with little efficacy; And increased satisfaction with using this method without side effects has been reported. Limitations of VR include side effects such as nausea, motor disease and dizziness and cost-effectiveness. These findings also suggest that VR can be a low-cost, low-risk complement to the distraction tools offered to patients undergoing epidural placement [7].

Subjective and objective evidence about the effectiveness of VR provides the pain relief experienced at TUMT. In addition, a statistically significant decrease in prostate blood flow index during VR use indicates that physiological changes occur as a result of VR distraction rather than its analgesic specificity. The hardware costs VR $ 25100 ($ 22,050 cap, $ 3000 hardware, trackball $ 50). The VR system is also easily portable into a small cart [3].

Finally, it can be noted that this technique leads to a pleasant feeling in the actual treatment of the patient and consequently reduces anxiety. The training of anesthesiologists is evolving, and compliance with the highest standards in the field should make people more secure. The importance of the role of training and evaluation of programs is important. With the increasing application of simulator technology, there is a need for further validation studies and efforts to investigate the results of knowledge translation in surgeries when using these devices. Demand for non-technical skills is evident despite demand.

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