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Effectiveness of immersive virtual reality therapy on pain and anxiety among children undergoes painful procedures in UMAID hospital

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Introduction: Virtual reality (VR) is a computer technology that creates an artificial 3-dimensional simulated environment. Virtual reality consists of a head-mounted display and a thick pair of goggles that are connected to either a computer or a cell phone. Although originally designed for entertainment purposes, the potential use of VR in the medical field has recently been explored. Experimental trials using VR in therapy for anxiety or posttraumatic stress disorder and for coping with pain demonstrate potential for this technology. Distraction is a common non-pharmacologic technique used by health care professionals to manage and attenuate anxiety, and possibly pain, during painful procedures in pediatric patients. Both passive distraction (e.g., watching television, listening to a book) and active distraction (e.g., interactive toys, electronic games) have been extensively studied and cause a decrease in pain and anxiety. Virtual reality might offer even more distraction, as it completely immerses the patient in another world and involves multiple senses.

Method: This study is conducted to assess the effectiveness of immersive virtual reality therapy on pain and anxiety among 60 children aged between 3 years to 12 years undergoing various painful procedures in UMAID Hospital, Jodhpur. India. Post-test only designs were adopted. The invasive procedure includes collecting blood samples, venipuncture, IM injection and SC injections. Ethical permission was obtained from institutional ethical committee and informed consent was obtained from children above 7 years and from parents of children below 7 years. Randomly children were assigned to control group and experimental group; 30 in each group. The children in control group received standard care (toys and verbal distraction, etc.) during invasive procedure and they were assessed for pain and anxiety level after 60 seconds of procedure by using numerical visual pain scale and Wong Baker facial expression scale. Children in the experimental group given head-mounted virtual reality display connected to smart phone (played 3D video) during invasive procedures and allowed to play the video for 5 minutes before the procedure and until 60 seconds after the procedure. The child pain and anxiety was observed during the time of procedure through Wong Baker pain scale and after the procedure children were asked to describe the level of pain and anxiety through numerical visual pain and anxiety scale for further validation.

Result: The result showed that children in the experimental group experienced less pain and anxiety than the children in the control group. There is positive correlation exists between pain and anxiety level. The age and type of procedure has significant association with level of pain. The age, sex and type of procedure had significant association with level of anxiety.

Conclusion: VR distraction appears to be most effective for children with the pain during invasive procedure. VR is thought to reduce pain and anxiety by directing children's attention into the virtual world, leaving less attention available to process incoming neural signals from pain receptors. This solution can be easily applied by nurses in their clinical practice.

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Biography

S K Mohanasundari is currently pursuing PhD in INC and working in College of Nursing as Faculty in AIIMS Jodhpur, India. She has published more than 40 articles in various national and international journals and published one book (*Entrance Guide for Nurses to Succeed*). She is the Member of Editorial and Review Board of three national and two international journals and Life Member of four associations such as TNAI, NRSI, IANN and NNF. She received Best Lecturer Award from Tayma General Hospital, Saudi Arabia. She has worked as an Assistant Professor in private nursing colleges in India, also worked in MOH Saudi Arabia as a Nurse Educator (2013 to 2014) and later worked in All India Institute of Medical Sciences Rishikesh, India. Presently she is working in College of Nursing as Faculty in All India Institute of Medical Sciences Jodhpur, India.

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