An application of serious game to alleviate preoperative anxiety of pediatric patients

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A serious game, defined as ‘a game designed for a primary purpose other than pure entertainment’ is gaining popularity in education. Serious games can be applied in healthcare and patient education to increase the pleasure of learning and motivation of patients. Preoperative anxiety has been reported to be found in 40-60% of pediatric patients. Pre-operative visiting of mock operation room or preoperative detailed multimedia information has been reported to reduce preoperative anxiety effectively.

In this case report, we provided virtual reality (VR) video games to pediatric patients. This VR serious game was designed to let the children have virtual experience of the process of preoperative preparation and general anesthesia induction during the play.

A 4-year-old boy and a 5-year-old girl were admitted to day-care surgery center to undergo short operating procedure. Each patient played VR games as a 360 degree 3 dimensional VR video game through a head mount display and a hand and finger motion controller (Fig.1). Preoperative anxiety was assessed two times with modified Yale preoperative anxiety scale: before experiencing the VR game and at the reception of the OR, in each case. The anxiety scores of the boy and the girl were 86.7 and 60 before the intervention and 23.3 and 36.7 at the reception, respectively. Both the patients also showed perfect compliance during anesthetic induction.

These cases suggested the feasibility and anticipate the positive effect of the VR video serious game in pediatric patient care.