

The use of Virtual Reality in the reduction of pain and anxiety during venipuncture in children with Cystic Fibrosis: a randomized controlled trial

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Background and rationale. From early childhood, patients with Cystic Fibrosis (CF) undergo at least 1 blood sample (BS) per year. As shown in previous studies it is common for children with CF to display distress and behavioural problems during invasive procedures (1). Indeed, the child with chronic disease has a lower threshold of pain compared to non-chronic patients (2, 3). Virtual Reality (RV) as a distraction technique was effective during painful procedures (4). Actually few studies have been published to assess its efficacy in reducing needle related pain and distress in children and none in children with CF.

Hypothesis and objectives. It is hypothesized that the use of RV during BS significantly reduces fear, anxiety and pain caused by this procedure. The main objective of this study is to estimate the effectiveness of RV in reducing anxiety and fear pain during PV in children with FC.

Essential methods. Patients between the ages of 6 and 16 years were considered eligible. Patients enrolled were randomized to the experimental group or control group, with a 1 to 1 allocation ratio. Children assigned to the experimental group used VR during the BS, those in the control group received routine care. Anesthetic cream has been applied to all patients. Behavioural distress has been measured with the OSBD-R scale and anticipatory anxiety with the M-YPAS scale, while fear, pain, and collaboration were measured with VAS scale.

Results. A total of 21 patients were enrolled, of whom 11 in the experimental group and 10 in the control group. Before the beginning of the procedure, behavioural distress did not appear to be different in the two groups (6.2 vs. 10.3), as

well as the fear perceived by the child and anxiety. 30 seconds after the start of the RV video, behavioural distress was significantly lower in the experimental group (0.1 vs. 8.9, p 0.018), as well as the pain expressed by the child (0.6 vs 4.1, p 0.013) and the pain perceived by the child evaluated by the parent (0.7 vs 3.44, p 0.018).

Spin-off for research & clinical purposes. This study demonstrates the effectiveness of RV in patients with FC, therefore it suggested that the use of VR will be systematic and widespread in all FC outpatient clinics. Further research will evaluate the effectiveness of this method even in subjects with cognitive impairment.

References

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