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FEELINGS AND EMOTIONS IN THE PEDIATRIC ICU: THE IMPACT OF USING VIRTUAL REALITY

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Abstract: Hospitalized children tend to become bored due to being restricted to bed, therefore, physiotherapy has been using virtual reality to provide an individualized experience, with emotional, physical and cognitive benefits. This study aims to analyze the implementation of VR as a physiotherapeutic tool in the PICU in relation to the impact on patients' feelings and emotions. Children from 6 years of age and with hospitalization from 48 hours were eligible. They received an evaluation of their feelings before therapy, using a playful feelings scale, and performed VR with active games for 15 minutes, once a day, after the feeling was reevaluated. Children with hemodynamic instability or delayed neuropsychomotor development were excluded. 61 children were evaluated between November/23 and February/24, respiratory diagnoses were the highest incidence, in 60% of cases. The assessment of emotion before VR therapy showed a prevalence of feelings of boredom in 40% of children, followed by sadness in 19%; fear in 14%; happiness at 11% and anger at 11%. After using the therapy, 93% of them indicated a feeling of happiness and only 4 evaluated themselves as sad. In this study, it was possible to observe the positive impact of VR immediately after its use, providing an improvement in emotions in the majority of patients.
Keywords: Pediatric Intensive Care, Virtual Reality, Physiotherapy; Technologic innovation

INTRODUCTION

The Pediatric Intensive Care Unit (PICU) is a highly complex environment intended to receive children with moderate and/or severe and unstable conditions, affected by clinical, surgical conditions or victims of trauma. The procedures that are performed are generally invasive and, therefore, stressful for both the children and the family. Hospitalization in the PICU can trigger a high level of stress and anxiety in family members, caused by several factors such as the severity of the disease, limitations in communication and even the risk of death. (Muller, et al., 2021)

The hospital environment starts to be seen by the child as a threatening and dangerous place, since it is there that invasive and painful procedures are carried out. By removing the child from activities of daily living, toys and games, hospitalization becomes potentially traumatic. (Santos, et al., 2020)

The results of the studies showed that hospitalized children tend to become bored due to being restricted to bed, due to the need to be connected to monitoring equipment wires most of the time, not allowing their body to be free to move. It also generates greater stress and the child's lack of interest in collaborating with the behaviors proposed by the team. (Santos, et al., 2020)

However, even in the face of difficulties, it is important to offer families humanized assistance, providing information in a simple and clear way, offering welcoming, effective and quality communication, in addition to creating bonds between the team and the family. (Maciel, et al., 2022)

Physiotherapy in the PICU aims to maintain vital functions, such as the treatment of respiratory and muscular diseases, which reduces the likelihood of possible clinical complications. It can act to improve invasive or non-invasive ventilatory support, increasing muscle strength and

reducing complications from immobilization. The physiotherapeutic intervention favors the reduction of hospitalization time. This way, the intensive care physiotherapist needs theoretical knowledge to face all the specificity and complexity that exists in the hospital environment, while being sensitive to the need to cultivate a humanized relationship with patients. (Zeni, et al, 2016; Cruz, et al., 2023)

Among many current technologies, physiotherapy has been using Virtual Reality (VR) as its greatest alignment to enable disconnection from the real world to the world of the metaverse, where the patient interacts through sensory, auditory and visual stimuli, which can be through games. only immersive or active. (Pinheiro, et al., 2021)

Within the hospital environment, VR offers an innovative approach and has become increasingly popular due to the benefits it provides, such as emotional, physical and cognitive. It has the potential to improve outcomes and experience during hospitalization. Through VR, the aim is to provide an individualized and personalized experience according to gaming preferences, making therapy with greater motivation and performance. (Bruno, et al., 2022)

Considering the relevance of carrying out studies on humanized care in the PICU environment, this work aims to analyze the impact of using Virtual Reality Glasses on the emotions and feelings of patients during hospitalization in the Pediatric Intensive Care Unit.

To evaluate emotion, a playful visual scale was used (figure 1), based on feelings, the following feelings were evaluated: Fear, Sadness, Boredom, Anger, Happiness - each one corresponded to an image that was presented to the child before carrying out therapy. and after the end of therapy as a way to directly understand the impact on these feelings. Virtual Reality therapy was applied for a maximum of 15 minutes once a day, using the Quest 2 Headset Glasses.

In addition to pre- and post-use emotions, vital signs (heart rate and saturation) were also assessed pre- and post-therapy. The scenario chosen for the immersion was made according to the children's tastes and preferences, as long as they were indicated for each case.

The inclusion criteria were: children admitted to the PICU for 48 hours, over 6 years of age, hemodynamically stable. Exclusion criteria: children admitted to the inpatient unit, moderate/severe ASD, facial/skin injuries, risk of emesis.

Figure 1: (Playful Feelings Scale)

A total of 61 children were evaluated between November 2023 and February 2024, the mean and median of 9 years of age, the proportion of girls and boys was the same (30/31) and respiratory diagnoses were the highest incidence, in 60% of the cases. cases.

The assessment of emotion before virtual reality therapy showed a higher prevalence of feelings of boredom in 40% of children (25), followed by feelings of sadness in 19% (21); fear in 14% (9); happiness in 11% (07) and anger in 11% (7). All definitions of feelings were made based on the playful and visual figures that represented each emotion. Only 1 child who identified with a feeling of boredom had mild pain, all the others who identified with boredom did not complain of pain, which may indicate that when pain is present, other

feelings arise as a result of it, but its absence can -if it indicates a lack of understanding of the reason for hospitalization, or non-acceptance and makes it reproduced in boredom. The feeling of fear was also related to the majority of children with mild to moderate pain (6 children) and with an average age of 9.8 years, which can translate into a better understanding of the context, the presence of pain and the risks highlighting fear. Happiness was seen at an average age equal to the general average, without a predominance of pain and anger was also felt at an average age higher than the general average (9.8 years) and without a predominance of pain.

After using the therapy, the children were asked to show which feeling predominated at that moment, 93% of them indicated the feeling of happiness as predominant (57) and only 4 evaluated themselves as sad, of which 2 already evaluated themselves as sad previously and the other 2 assessed themselves with fear and boredom previously (figure 2).

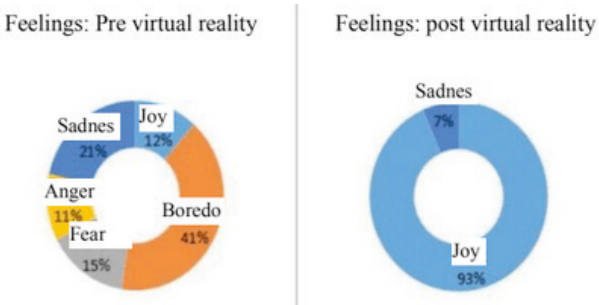

Figure 2: (Distribution of feelings assessed pre and post application of Virtual Reality)

Humanization is not a technique, it is an experiential process that must guide all professionals' activities, within the conditions and circumstances in which each individual finds themselves at the time of hospitalization. This study has some limitations, such as the non-validation of the playful feelings scale.

The VR environments show the possibility of changing the functions of anxiety, depression and cognition, presenting interactive virtual environments of cognitive-behavioral approaches and contributing to other rehabilitation applications. Gomes TT, et al. (2019) found that the use of virtual devices for rehabilitation provides light to moderate activities for patients in the intensive care unit.

The definition of the child's feelings was requested immediately after using it, and this time could have had direct influence on this result. As a challenge and thinking about minimizing the negative effects of an ICU stay on children, we can develop a form of assessment with a longer period of time to understand whether this sensation lasts for a while longer, and for what period of time, indicating a greater impact on these points in relation to to the use of therapy.

The presence of the physiotherapist can have an important impact on the post-VR response due to the direct interaction with the child during therapy, the bond created, the way the approach was carried out, which may have been suggestive or neutral. It is possible to consider the possibility of the assessment being carried out by another professional, with the aim of preserving the response without risk of influence.

New studies must aim to validate a specific assessment, addressing the topic of feelings and emotions within the PICU, addressing the topic used to make physiotherapeutic care more humanized, as well as data that statistically prove the outcomes of the proposed procedures.

It was possible to observe that the conduct adopted by the physiotherapy team in the Pediatric Intensive Care Unit resulted in assistance classified as humanized, granting a positive impact of VR immediately after its use, providing an improvement in emotions in the majority of patients.

This study highlighted the importance and potential of using innovative technologies such as virtual reality to improve rehabilitation,

discomfort, pain and psychological changes in patients treated in the pediatric intensive care unit, however the use of VR is still little used in ICU. For this reason, it is essential to highlight that this research significantly contributes to encouraging rehabilitation and improving biopsychosocial performance through VR intervention in intensive care units.

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