

## ORIGINAL ARTICLE

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**APPLICATION OF VIRTUAL REALITY DISTRACTION THERAPY TO PAIN LEVELS IN AH CHILDREN WITH TONSILLECTOMY POST SURGERY AT GRAHA HERMINE HOSPITAL BATAM CITY****Wulan Pramadhani<sup>1</sup>, L.D Riswan<sup>2</sup>**<sup>1,2</sup>Nursing Program, Faculty of Health Sciences, Universitas Awal Bros, Indonesia

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Email: [lwulanpramadhani98@gmail.com](mailto:lwulanpramadhani98@gmail.com),**Abstract**

**Introduction:** Post tonsillectomy surgery, patients usually experience significant throat pain, difficulty swallowing, and possibly a low-grade fever. The recovery period generally takes about 7 to 14 days. Pain is an unpleasant emotional as well as sensory experience associated with the possibility or presence of tissue injury. When providing services to children, the primary goal is to take steps to reduce the pain and stress that accompanies the medical treatment that children have to undergo. The main aim of the service is to provide children with atraumatic, or non- traumatic care. **Methods:** The purpose of this study was to describe nursing care related to providing a distraction intervention using virtual reality for pain management in postoperative tonsillectomy patients. This study was conducted in the Pediatric Ward, Graha Hermine Hospital, Batam City. **Results:** respondents diagnosed with tonsil hypertrophy post tonsillectomy surgery were given distraction therapy interventions using virtual reality for 3 days and in a day it was carried out 2 times, namely at noon and in the afternoon. Patients can choose the video they want to watch during the 15-20 minute therapy session. Deep breathing exercises and pharmaceutical therapy were also included. **Conclusions:** From the results of the study, it can be said that if the provision of distraction therapy nursing interventions using virtual reality has an effect on reducing pain intensity, along with the vital signs of postoperative tonsillectomy patients.

**Keywords:** Atraumatic care, pain, tonsillectomy, virtual reality**Introduction**

Tonsillectomy is a surgical procedure performed to remove the tonsils, which are two glands located at the back of the throat. Although the World health organization (WHO) does not disclose data on the number of tonsillitis cases worldwide, it is estimated that 287,000 children under the age of 15 underwent tonsil surgery and tonsillectomy, of which 248,000 children (86.4%) underwent tonsil surgery only and another 39,000 (13.6%) underwent tonsil surgery only (Sari Octarina Piko et al., 2024). In contrast, a study conducted in the UK by Kraft et al. (2014) found that the incidence of recurrent sore throat was 100 per 1000 people each year and was more common in children (Sari Octarina Piko et al., 2024).

Recent data on tonsillitis cases in Indonesia shows that the prevalence of tonsillitis, especially chronic tonsillitis, is quite high, especially in children. Based on ENT disease epidemiology data from the Central Bureau of Statistics, the prevalence of tonsillitis in Indonesia is around 3.8%, with children (5-14 years old) being the most commonly affected. Tonsillitis is included in upper respiratory tract infection (URI), which is one of the leading causes of morbidity in children in Indonesia (Statistics Indonesia, 2023).

In Batam, the types of surgeries frequently performed on children include tonsillectomy, adenoidectomy, appendectomy, as well as orthopedic procedures such as fracture repair. Data from major hospitals in Batam, such as RSUD Kota Batam and Awal Bros Hospital, show that tonsillectomy is one of the most commonly performed procedures, often to treat chronic tonsil infections or airway obstruction (Setiawan, I., Pratama, R., & Sari, 2022). Other minor and major surgeries are also frequently performed, reflecting the wide range of medical needs faced by children in the city. The results of the author's initial observation for 2 days at the Graha Hermine Hospital Pediatric Ward obtained data on pediatric patients who underwent surgery from June 01 - August 01, there were 18 children who underwent surgery with various indications, 6 of whom underwent tonsillectomy (Source: Graha Hermine Hospital Medical Records, 2024).

Post tonsillectomy surgery, patients usually experience significant throat pain, difficulty swallowing, and possibly a low-grade fever. The recovery period generally takes about 7 to 14 days. During this period, it is important to follow postoperative guidelines, including eating soft foods, drinking plenty of fluids, and using pain medications as directed by the doctor (Yarborough, R., & Williams, 2022). Monitoring for complications such as bleeding or infection is also important to ensure an optimal healing process.

Untreated pain has a negative impact on the patient's quality of life, resulting in increased frequency of outpatient visits, increased hospitalization rates, longer hospital stays, and increased levels of stress and worry for patients and their families (Ervin Septian Dewi, 2023).

The physical impact of pain includes increased heart rate or pulse, increased systole and diastole blood pressure, and increased respiratory frequency. The behavioral impact of children is usually grimacing facial expressions and typical body movements or vocal patient responses saying pain. Patients often frown, bite their lips, look anxious, tense their muscles, and avoid social contact (S. A. Nugroho & Taqiyatun, 2021).

The American Nurses Association (ANA) states that pediatric nurses have an important role in pain management. This position encompasses all aspects of nursing care, including pain

assessment, planning, implementing, and evaluating pharmacologic and nonpharmacologic pain management strategies (Ervin Septian Dewi, 2023).

A young child who is ill and advised to be hospitalized will not be completely immune to the disadvantages of hospitalization. Therefore, to provide nursing care to children and their families, nurses try to apply the concept of Atraumatic care. Atraumatic care can minimize children's anxiety and pain during the hospitalization process (Usman, 2020). Research has shown that the application of atraumatic care can reduce the level of anxiety and pain of preschool children due to hospitalization. Collaboration between parents and professionals is very important in implementing atraumatic care. The Family Centered Care philosophy allows nurses to include parents in every action or implementation carried out for the child's recovery (Usman, 2020). Virtual Reality (RV) is a promising interactive technology in nursing care that can assist in non-pharmacological pain management, enhance rehabilitation, motivate, optimize functional outcomes, and increase clinical benefits after tonsillectomy surgery (Suharyono et al., 2021).

## Methods

This research design uses the case study method. A case study is an in-depth qualitative approach to one individual or small group that aims to understand complex phenomena in a real-life context (Creswell & Poth, 2018). This method is suitable for exploring nursing interventions provided to one patient with special characteristics or certain health conditions thoroughly and in depth. The study was conducted in the Pediatric Nursing Room, Graha Hermine Hospital, Batam City. Virtual reality therapy was performed by providing a 3D aquarium video to the child 15 minutes after the tonsillectomy operation. This procedure was performed 2 hours before pain medication was administered for 3 days of observation.

## Results

**Table 1.** Result of pain assessment using the FLACC scale (Face, Legs, Activity, Cry, and Consolability)

Day, date	Pain Scale	
	Before	After
Monday, 5 Agust 2024	6	4
Tuesday, 6 Agust 2024	4	3
Wednesday, 7 Agust 2024	3	2

Based on Table 1, there are differences in pain scales before and after the intervention of virtual reality visual method distraction therapy on pain levels, the results of pain assessment using the FLACC scale on August 5, 2024 showed a decrease from 6/10 to 4/10 after being

given therapy with virtual reality for 15 minutes. The results of pain assessment using the FLACC scale on August 6, 2024 showed a decrease from 4/10 to 3/10 after being given therapy with virtual reality for 15 minutes.

## Discussion

Analgesic drugs can reduce the pain felt by patients but have unexpected side effects such as sedation, nausea, and constipation (Gutgsell et al., 2020). In addition, sometimes the administration of analgesics does not eliminate the pain felt by patients, NSAIDs (Nonsteroidal Anti-Inflammatory Drugs) will be given to patients with mild to moderate pain scales but this type of drug cannot be given for a long time and the dose of administration will be gradually reduced (Moore et al., 2021). Therefore, patients will be taught non-pharmacological pain management which will be a combination of pharmacological and non-pharmacological pain management in pediatric patients post tonsillectomy surgery is expected to maintain and improve their quality of life.

Postoperative patients will be taught non-pharmacological therapy or what can be called complementary therapy. Complementary therapy is a holistic approach to treating disease or its side effects that supports traditional medical treatments and has the power to affect a person as a whole by integrating mind and spirit in functional or biological, psychological, and spiritual unity (Rufaída et al., 2022).

In the context of pain management, complementary therapies aim to reduce pain perception through psychological and physiological mechanisms, including sensory interference, relaxation, and cognitive changes related to pain perception (Deer et al., 2020). According to several recent journals, complementary therapies are increasingly being used in a variety of clinical contexts due to their ability to improve patients' experience of treatment and, in some cases, reduce reliance on pharmacological interventions (Li et al., 2022).

According to the International Association For The Study Of Pain (IASP), pain is a painful emotional and sensory experience that serves as a marker of tissue injury (Jamal et al., 2022). Acute pain is a nursing diagnosis described as a sensory or emotional event associated with functional or actual tissue injury, with mild to severe severity lasting <3 months, and appearing suddenly or delayed (PPNI Working Group Team, 2018).

Children who experience pain have a serious negative impact on their quality of life, including sleep disturbance, decreased appetite, physical discomfort, as well as adverse effects on their psychological health. Therefore, to provide the best care for children, it is important to understand their discomfort well (Fajarwati et al., 2023).

Research conducted by Jones showed that VR distraction therapy was significant in reducing pain intensity in pediatric patients undergoing tonsillectomy procedures. The study found a 40% reduction in pain scale compared to the control group who only used conventional

distraction techniques such as watching television. Hoffman et al. (2020) also supported these findings, reporting that children who used VR headsets during the postoperative phase experienced reduced levels of anxiety and pain compared to those who only received standard analgesics (Hoffman et al., 2020).

Virtual reality works by distracting the brain from the pain stimulus through an immersive sensory experience. According to Schneider's research, VR involves activation of various brain areas related to visual, motor, and cognitive. By reducing the activation of areas related to pain perception, VR can reduce the intensity of pain felt by patients (Schneider et al., 2021).

In the context of post-tonsillectomy, pain is one of the major complications faced by children. The application of VR as a complementary therapy is able to reduce dependence on analgesic drugs such as opioids. The results of this study also showed that patients who used VR had a shorter recovery period and decreased pre and postoperative anxiety levels. (Chen et al., 2022).

Non-pharmacological therapy is one of the options that can be given in pain management for pediatric patients after tonsillectomy surgery. The main intervention to reduce the pain felt by patients is to provide distraction therapy using virtual reality. This therapy can be done independently by the patient both when the patient is undergoing the treatment process in the hospital and when the patient is at home.

The purpose of distraction therapy intervention using virtual reality is effective to reduce and control pain. The selection of videos and low sound levels can affect the pituitary of the brain to release endorphins that react to specific receptors in the brain in changing mood, emotions, and physiology that can affect the perception and response to pain as a result the body becomes more tolerant of pain. In addition, distraction therapy using virtual reality is very easy and efficient to do anywhere and anytime the patient wants.

## **Conclusion**

Typical symptoms of patients with tonsil hypertrophy post tonsillectomy surgery are complaints of pain and swallowing disorders. The results of the anamnesis obtained in AH children aged 5 years and 8 months, the risk factors for patients developing chronic tonsillitis are factors of clean and healthy living behavior, patients rarely wash their hands before eating, and do not know how to wash their hands properly using soap. Some nursing problems that arise due to tonsillitis include hyperthermia, acute pain, risk of infection, and anxiety. In this writing, the main nursing diagnosis is acute pain associated with physical injury agents

(tonsillectomy surgical procedures). Distraction therapy nursing interventions using visual reality are proven to be able to reduce the pain scale in patients with tonsil hypertrophy after tonsillectomy surgery characterized by resting time that begins to be fulfilled, vital signs within the normal range, the patient looks more relaxed. Distraction therapy interventions using visual reality also affect the patient's ability to control the body due to pain response.

The results of the presentation and analysis of this case study provide an overview and information in the preparation of nursing care in pediatric patients with postoperative tonsillectomy who experience pain so as to improve the quality of service and quality of life of patients. The main nursing intervention in this case in the form of distraction therapy using virtual reality can be an independent nursing intervention in an effort to control pain caused by tonsillectomy postoperative wounds and improve the patient's quality of life where this nursing intervention is carried out regularly and scheduled, namely twice a day in nursing care. This case study can be information as additional literature and teaching materials in nursing practice that are useful for increasing knowledge, especially non-pharmacological methods in reducing pain levels in children with postoperative tonsillectomy. It is hoped that it can be a useful guide and source of information for nurses in the implementation of nursing care.

### Author Contributions

The author is responsible for the design and development of the research concept. This author also led the process of data collection, primary data analysis, and preparation of the initial draft of the manuscript. The author contributed to the preparation of research methodology, data processing, and review of relevant literature. The authors were involved in the overall supervision of the study, including the determination of the final objectives, validation of the results, and final editing of the manuscript. The author also focuses on data visualization and graphical presentation in the manuscript and is responsible for technical and format checks by journal guidelines. The author provides additional contributions in the form of constructive suggestions regarding the context and implications of research findings. These authors also perform a final review before submission of the manuscript to the journal.

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