

Techniques of Audiovisual Distraction to Reduce Pain during Venous Blood Sampling: A Case Study

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ABSTRACT

Objective: The purpose of this study was to determine whether there is an effect of audiovisual distraction therapy on reducing pain levels in pediatric patients when taking venous blood in cases of Dengue Hemorrhagic Fever.

Method: The design used in this study is a descriptive study with a case study method with the provision of nursing care, namely from assessment, developing nursing diagnoses, interventions, implementation and evaluation. The focus of the study was the effect of audiovisual distraction techniques on reducing pain scales in children who received invasive venous blood sampling.

Result: The result is that after being given distraction therapy for 10 minutes for 3 days at the time of blood sampling, the respondent's pain level decreased from a scale of 8 on the first day to a scale of 2 on the third day. The audiovisual distraction therapy can be decrease pain level.

Conclusion: This case study underscores the importance of the active involvement of nurses during invasive procedures that cause pain, one of which is taking venous blood in pediatric patients, so that pediatric patients are more cooperative.

Keywords: audiovisual, distraction techniques, dengue hemorrhagic fever, pain

Introduction

Dengue hemorrhagic fever (DHF) is a disease that is often found in tropical and subtropical regions. Indonesia is one of the tropical countries in Asia with a high number of DHF cases. It was recorded that in 2020 the number of dengue cases in Indonesia was 15,819 cases with 121 deaths (Kemenkes RI, 2021). Dengue fever cases for Central Java province during 2021

were recorded at 2,170 cases with 56 deaths (Kemenkes RI, 2018). Banyumas District Health Office for DHF cases in 2020 there were 345 cases with 10 deaths. RSUD Ajibarang, which is a Type 2 hospital in Banyumas district, also handles cases of DHF which are referrals from the puskesmas and patients who come to the hospital themselves to check their condition. DHF cases were recorded in pediatric patients at the Ajibarang Hospital from November 2021 to January 2022, totaling 123 cases.

Dengue hemorrhagic fever is caused by the dengue virus which belongs to the Flavivirus family as its agent which is carried by *Aedes aegypti* and *Ae. albopictus* mosquitoes found in all corners of Indonesia which then enters through bites into the human body which is the natural host of this virus (Nurdin & Zakiyuddin, 2018). The incubation period of this dengue virus ranges from 3 to 14 days before symptoms appear, clinical symptoms usually appear on day 4 to day 7. This virus can infect humans at all age levels, including children. The supporting factor of the residential environment is a very influential factor in the number of cases of dengue fever. Children are individuals who are still experiencing the process of maturation and physical development, their immune condition and level of understanding about a clean environment is still very minimal which can be the cause of the many cases of Dengue Hemorrhagic Fever in children.

The clinical manifestations of Dengue Hemorrhagic Fever since the start of infection are the presence of continuous high fever for 2-7 days, bleeding diathesis such as a positive tourniquet test, thrombocytopenia and even plasma leakage due to increased blood vessel permeability (Frida, 2020). A decrease in the number of platelets (thrombocytopenia) is one of the hallmarks of Dengue Hemorrhagic Fever. Thrombocytopenia is one of the clinical diagnostic criteria in cases of Dengue Hemorrhagic Fever. The lower the platelet count, the more severe the clinical degree. A decrease in platelets that takes place continuously, its function in hemostasis will be disrupted. Coagulopathy will easily occur, and if it progresses continuously it will cause thorough intravascular coagulation which can result in heavy bleeding, especially in the gastrointestinal tract and shock (Khairunnisa, Adrizain, & Rinawan, 2020). Low platelets can cause bleeding which can be a danger sign for the patient. Monitoring of platelet results is carried out on patients to prevent bleeding shock due to a drastic decrease in platelets by taking blood through a vein. The frequency of checking platelets is adjusted to the clinical condition and initial results of the patient's platelets. Taking venous blood is one of the invasive measures that can cause a pain response due to the process of stabbing using a needle. Pain due to needle sticking will provide an unpleasant sensory response for pediatric patients (Wandini & Resandi, 2020). Pain is an unpleasant sensory and emotional experience as a result of subjective tissue damage, without effective pain management, acute pain can cause negative impacts, including changes in physiological symptoms such as increased respiratory rate and blood pressure (Ariyanti, Ode, & Rahman, 2020). In particular needle pain is one of the most stressful for children, neglecting needle pain prevention can lead to several psychological effects such as anxiety and phobias and increase the perception of pain in the future (Bergomi et al., 2018). Therefore, it is necessary for nurses to take action to reduce pain due to the effects of needle sticking, this action is called pain management.

Pain management is an action that aims to reduce pain. In the management of pain management there are several interventions that can reduce the pain felt in children. Interventions that can be used are pharmacological and non-pharmacological interventions. Non-pharmacological techniques are divided into several methods, one of which is the

distraction technique. Distraction is a method of non-pharmacological intervention that provides a stimulus to children so that children's attention is focused on things other than pain (Aydin & zyazicioğlu, 2019 in Ariyanti et al., 2020).

One of the non-pharmacological actions that can be done on children in pain management is audio-visual play therapy, this action serves as a technique for treating pain traction so that the pain felt by pediatric patients is expected to be reduced. When children are more focused on watching audiovisual shows, it makes pain impulses due to injury or needle sticking not flowing through the spine and pain messages do not reach the brain so that children do not feel pain (Mertajaya, 2018). The results of observations in the pediatric care room, Kepodang Atas Room, Ajibarang Hospital for non-pharmacological actions in dealing with pain when taking blood samples have not been maximally implemented. The nurse just holds the patient's hand and instructs the patient to close his eyes during the procedure. From the description above, the authors are interested in conducting research on the effect of audiovisual distraction techniques on reducing pain in children when taking venous blood in cases of Dengue Hemorrhagic Fever.

Objective

The purpose of this study was to determine whether there is an effect of audiovisual distraction therapy on reducing pain levels in pediatric patients when taking venous blood in cases of Dengue Hemorrhagic Fever.

Method

The design used in this study is a descriptive study with a case study method with the provision of nursing care, namely from assessment, developing nursing diagnoses, interventions, implementation and evaluation. The focus of this study in this research is the way researchers explore nursing care in pediatric patients with nursing diagnoses of acute pain in pediatric patients with DHF cases including assessment, diagnosis, intervention, implementation and evaluation. The participant used by the researcher was An.K with a medical diagnosis of Dengue Hemorrhagic Fever in the Kepodang Atas Room, RSUD Ajibarang Hospital. The focus of the study was the effect of audiovisual distraction techniques on reducing pain scale in children who received invasive venous blood sampling in DHF cases. The pain scale used is the facial pain scale (Wong-Baker FACES Pain Rating Scale). Before taking venous blood, the patient's pain scale will be calculated, then the audiovisual distraction technique is carried out during the venous blood sampling procedure, the pain scale is recalculated after this distraction technique is implemented.

Results

Assessment

From the results of a study conducted on January 24, 2022, it was found that An.K's data said he was sick, An.K's mother said her child was scared, cried and screamed when blood was being taken, the child looked tense, had a fast breathing pattern, increased pulse, focused on himself. himself, pain scale 8. Past medical history, namely An.K has never experienced the same illness, has never been hospitalized. The patient's mother said that this was An.K's first experience in hospitalization, so An.K often cried when taking blood. The results of observation and examination of the pain scale (wong baker's pain scale) when taking venous blood samples An.K seemed to scream crying while holding his mother. In the PQRST pain assessment, it was

found that Provoking Incident data was that An.K cried in pain due to a needle puncture at the time of taking venous blood, Quality was pain with sharp objects, Region was pain at the needle insertion site, Severity was when the pain scale was measured on An.K. by using the facial pain scale (Wong-Baker FACES Pain Rating Scale) the results obtained a pain scale of 8, namely the severe pain scale, Time, which is pain when stabbed by a needle. Laboratory results are Platelet 78×10^3 mg/dL. Reactive Dengue Fever.

Data analysis

Data analysis was carried out on January 24, 2022 at 16.00 WIB. Subjective data, namely An.K said he was sick, An.K's mother said her child was scared, cried and screamed when blood was being taken, An.K had never experienced the same illness, and had never been hospitalized. The patient's mother said that this was An.K's first experience in hospitalization, so An.K often cried when taking blood. The objective data obtained are the child looks tense, the breathing pattern is fast, the pulse increases, focuses on oneself, the pain scale is 8, the results of observations and examinations of the pain scale (wong baker pain scale) when taking venous blood samples An.K looks screaming and crying while holding his mother. Laboratory results are Platelet 78×10^3 mg/dL.

Nursing diagnoses

Objective and subjective data obtained in the assessment are then analyzed, after which nursing diagnoses are generated. Nursing diagnosis in An.k is acute pain related to physical injury agents. Major and minor symptoms are complaining of pain, grimacing, complaining of pain, being protective, avoiding pain, increasing pulse rate, changing breathing patterns, focusing on yourself (SDKI, 2017).

Nursing Intervention

Nursing actions planned for An.K on nursing diagnoses of acute pain related to physical injury agents are carried out for 3x24 hours, and the purpose of the intervention after nursing actions for 3x24 hours is the level of pain felt by An.K decreases. The criteria for the expected outcomes of nursing interventions are (PPNI, 2016b):

Table 1. Outcome Criteria Indicators on SLKI

Indicator	Pre	Post
Ability to complete activities	2	5
Complaints of pain	2	5
Grimace	2	5
Focus on yourself	2	5
Muscle tension	2	5
Breathing pattern	2	5

Nursing interventions performed on An.K to overcome acute pain problems are adjusted to the Indonesian Nursing Intervention Standards (SIKI), namely by performing pain management (I.08238) (PPNI, 2016a). The actions taken include observation, identification of non-verbal pain

responses, identification of pain scales, for therapeutic actions, namely providing non-pharmacological techniques, and for educational actions, namely teaching and recommending the use of non-pharmacologic techniques to the patient's family.

Nursing Implementation

The nursing implementation carried out on An.K with a nursing diagnosis of acute pain related to physical injury agents was carried out for 3 days, from January 25, 2022 to January 27, 2022. The nursing implementation carried out was to identify pain characteristics, identify non-verbal pain responses, identify scales pain, provide non-pharmacological therapy audiovisual distraction therapy. Non-pharmacological distraction therapy uses a tool that displays films that are liked by children, namely animated cartoons.

Nursing Evaluation

The first day the initial scale was 8 and the final scale after the implementation of audiovisual therapy was 6. The children seemed to be still crying while watching the animated cartoons that were shown. The action of taking blood samples can be done with 4 punctures. The outcome criteria indicators are the ability to complete activities on a scale of 3, pain complaints on a scale of 2, grimacing on a scale of 2, focusing on oneself on a scale of 2, muscle tension on a scale of 2, a breathing pattern of a scale of 2.

On the second day, the initial scale was 7 and the final scale after the implementation of audiovisual therapy was 4. An.K seemed to be starting to focus on showing films. The act of taking blood samples can be done with 1 puncture. The outcome criteria indicators are the ability to complete activities on a scale of 4, pain complaints on a scale of 3, a grimace on a scale of 3, focusing on oneself on a scale of 4, muscle tension on a scale of 4, a breathing pattern of a scale of 4

On the third day the initial scale was 5 and the final scale after the implementation of audiovisual therapy was 2. An.K seemed to focus on showing films. The act of taking blood samples can be done with 1 puncture. The outcome criteria indicators are the ability to complete activities on a scale of 5, pain complaints on a scale of 5, grimacing on a scale of 5, focusing on oneself on a scale of 5, muscle tension on a scale of 5, a breathing pattern of a scale of 5. said his son was not crying but still grimaced a little. The objective data are reduced muscle tension, decreased breathing pattern, pulse 101x/minute, initial scale of 5 and final scale after the implementation of audiovisual therapy to 2. An.K seemed to focus on the film. The act of taking blood samples can be done with 1 puncture. The outcome criteria indicators are the ability to complete activities on a scale of 5, pain complaints on a scale of 4, grimacing on a scale of 4, focusing on oneself on a scale of 5, muscle tension on a scale of 5, a breathing pattern on a scale of 4. The problem of acute pain nursing related to physical injury agents has been resolved.

Discussion

Assessment

Potter & Perry, (2010) explained that pain is something that hurts the body subjectively expressed by individuals who experience it. This pain is a warning of potential tissue damage that

requires a body reaction that is governed by the brain and is a sympathetic nervous response. Acute pain is of short duration (approximately 6 months) and will disappear without treatment once the damaged area has healed (Rahmani & Pahriyani, 2021). (Rahmani & Pahriyani, 2021). The scale of pain that arises in An.K due to the action of taking blood is a scale of 8 (severe anxiety) this is because this action causes discomfort and a history of the first hospitalization so that An.K has never had previous experience of pain due to taking blood. vein. As explained by (Wandini & Resandi, 2020). in their research that an increase in the pain scale in respondents due to blood sampling arises because pain is manifested as suffering caused by real, spontaneous perceptions, threats and fantasies of injury.

The clinical manifestations of Dengue Hemorrhagic Fever since the start of infection are the presence of continuous high fever for 2-7 days, bleeding diathesis such as a positive tourniquet test, thrombocytopenia and even plasma leakage due to increased blood vessel permeability (Frida, 2020). A decrease in the number of platelets (thrombocytopenia) is one of the hallmarks of DHF. Low platelets can cause bleeding which can be a danger sign for the patient. Monitoring of platelet results is carried out on patients to prevent bleeding shock due to a drastic decrease in platelets by taking blood through a vein. The frequency of checking platelets is adjusted to the clinical condition and initial results of the patient's platelets.

Nursing Intervention

Bahrudin, (2018) explains that pain management is divided into two, namely pharmacological management and non-pharmacological management. Non-pharmacological management is therapy that is used without the use of drugs, but by providing various techniques that can at least slightly reduce pain. One of the non-pharmacological techniques is distraction. Non-pharmacological methods are nurses' independent actions to relieve pain by using pain management, for example with biofeedback techniques, self-hypnosis, reducing pain perception, cutaneous stimulation, massage, transcutaneous nerve stimulation, distraction and guided imagery (Yusuf, Lisbet, & Budi, 2018).

Nursing Implementation

This action is carried out during the blood collection process. The duration of time used is 10 minutes. The stages of administering audiovisual distraction therapy are before taking blood, the audiovisual device is turned on, then after 5 minutes of taking blood. The duration of administration of audio-visual distraction therapy was a total of 10 minutes. This action is in accordance with research conducted by Fatmawati et al., (2019), namely the intervention of watching cartoons is given for a minimum of 10 minutes, while the injection procedure is for watching cartoons.

Nursing Evaluation

The provision of audiovisual distraction therapy is in accordance with the Gate Control Theory which explains that the existence of an endogenous ability to reduce and increase the degree of feeling of pain through modulation of impulses that enter the dorsal horn through the "gate". Based on the signal from the ascending and descending system, the input will be weighed. The integration of all inputs from sensory neurons, i.e. at the appropriate spinal cord level, and the determination of whether the gate will close or open, will increase or decrease the intensity of ascending pain. This Gate Control Theory accommodates psychological variables in pain

perception, including motivation to be free from pain, and the role of thoughts, emotions, and stress reactions in increasing or decreasing pain sensations. Through this model, it is understood that pain can be controlled by pharmacological manipulation and psychological intervention (painedu.org, 2008 in Bahrudin, 2018).

The influence of audio-visual distraction with cartoons that children like can reduce this pain based on the Gate Control theory, that pain impulses can be regulated or inhibited by defense mechanisms along the central nervous system. This theory states that pain impulses are transmitted when a barrier is opened and impulses are inhibited when a barrier is closed. One way to close this defense mechanism is to stimulate the secretion of endorphins which will inhibit the release of substance P. Visual distraction itself can also stimulate an increase in endorphins which are substances similar to morphine supplied by the body, endorphins will block the release of substance P from sensory neurons, resulting in sensation pain is reduced (Potter & Perry, 2010 in Yusuf et al., 2018). This is in accordance with the research described by Fatmawati et al., (2019) that audio-visual distraction in its implementation process provides a diversion of the patient's attention to something that makes him uncomfortable, anxious or afraid by displaying favorite shows in the form of moving pictures and sounds or animations. with the hope that the patient is engrossed in the spectacle so as to ignore the discomfort and show a good acceptance response.

Conclusion

This case study underscores the importance of the active involvement of nurses during invasive procedures that cause pain, one of which is taking venous blood in pediatric patients, so that pediatric patients are more cooperative.

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