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Pain Management in Pediatric Nursing*

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Abstract

Children often experience pain in different stage of life. After birth, newborns are exposed to many painful attempts and their anxiety levels increase with it. These painful attempts lead to metabolic or physiological problems in newborns. Excessive protein expenditure when exposed to pain for a long time, electrolyte inhalation, weakening of the immune system. Even repetitive painful procedures increase mortality and morbidity. Children experience pain due to acute onset diseases such as otitis media or pharyngitis and also in different medical interventions such vaccination, blood transfusion, vascular access, dressing change, lumber punching, or sickle cell anemia. Appropriate assessment scales should be used to treat pain effectively and adequately. Pharmacological treatment as well as non-pharmacological treatment methods has been found to be effective in the treatment of pain. Non-pharmacological methods allow your body to release natural endorphins and help to lift the pain to a minimum level or completely. In this study, current approaches and studies about pain in children will be presented. Non-pharmacological methods will be examined in more detail. Every child has right to live a painless life. It is one of the main purposes of nursing care to relieve children's pain and improve their life quality.

Keywords

Child, Nursing, Non-Pharmacological Methods. Pain, Pain Score, Pain Management

1. Introduction

Pain is one of the most common reasons why people seek for help from health care and has broad impact on all aspects of life [1]. The Joint Commission on Accreditation of Healthcare Organizations has stated that pain is a fifth vital sign

*A part of this work was verbally presented in the 4th World Summit on Pediatrics and its abstract was published "the approaches and studies about pain in children", 21-24 June 2018, Hotel Melıá Castilla-Madrid, Spain.

that must be controlled in medical care [2]. The International Pain Research Center describes pain as unpleasant sensory and emotional experience seen in situations that can be described as actual damage or potential tissue damage. The below definitions describe many aspects of pain. International Association for the Study of Pain (IASP) Taxonomy, 2020 [3].

Pain is subjective and individual [4] [5]. There are no physiological or chemical tests that may measure pain. That's why according to Mc Caffery's pain is what the individual says, whenever and wherever an individual says that he is painful, it is necessary to believe because it's one of the most accurate pain definition [4].

Children often experience pain in different stage of life [6] [7]. Children experience pain due to acute onset diseases such as trauma, surgery, otitis media or pharyngitis and also in different medical interventions such vaccination, blood transfusion, vascular access, dressing change, lumber punching, or sickle cell anemia [5] [6]. According to the American Academy of Pediatrics (AAP) and the American Pain Society (APS) (2001), pain in children is often underestimated and treated American Academy of Pediatrics, American Pain Society (2001). Every child has right to live a painless life [6].

A joint statement by the World Health Organization (WHO), the International Association for the Study of Pain and the European Federation of the International Association for the Study of Pain Chapters, said that the elimination of pain should be a human right [8]. It is one of the main purposes of nursing care to relieve children's pain and improve their life quality. Since the nurse is healthcare provider who interacted a lot with the child and family, it is important for the nurse to evaluate the child's pain and to inform the child and the family about the pain control policies. The therapist also has an advocate and educator role in the healthcare team to control the pain [9].

2. Classification of Pain

Pain; neurophysiological mechanisms can be classified according to etiologic factors, organ of pain in the body and its duration. Besides understanding the type of pain is important to identify, record and effective control of pain [10] [11].

3. Acute and Chronic Pain

Both acute and chronic pain can be seen in children. The signs and symptoms of the pain and the treatment modality suggested may vary depending on the acute or chronic condition of the pain. Acute pain suddenly starts and ends at a limited time. In acute pain, usually the cause of pain can be defined [5] [6]. Pain in the post-operative period, during the procedure, during fractures or injuries is acute pain [6] [12] [13]. Chronic pain usually lasts for 3 months or is expected to continue/progress due to tissue damage and affects the child's normal life. Juvenile rheumatoid arthritis in children, sickle cell anemia and cancer are among

the conditions that cause chronic pain [5].

4. Physiopathology of Pain

The neural mechanism of perception of pain consists of four steps that provide the relationship between the environment and the nervous system. These stages are classified as transduction (transduction of the stimulus to electrical activity at the nerve endings), transmission (transmission of pain sensation to the central nervous system), modulation (modification of nociceptive transmission with neural factors), and perception (final stage of the sensation of pain stimulus). This process is called nociception. The skin and other organs only have specific receptors (nociceptors) that sense pain impulses. Pain impulses caused by chemical, thermal, or mechanical effects are first detected by these receptors at the free nerve endings. The nociceptors are scattered in the body at different intensities. Nociceptors in the skin, subcutaneous structures, periosteum, joints, muscles and visceral tissues are stimulated by biochemical mediators (serotonin, histamine, bradykinin, arachidonic acid, leukotrienes, prostaglandins, catecholamines and substance P) released from damaged or threatened tissues. These stimuli are transmitted to the spinal cord with "A" (A-alpha and A-beta) and "C" fibers. The A-alpha and A-beta fibers are myelin, and the transmission is rapid. The pain transmitted to these fibers is perceived as acute, sharp, and local pain. The "C" fibers are unmyelinated and short. For this reason, message speeds are slower. The pain transmitted to these fibers is perceived as scattered, continuous, dull, painful and burning. Pain impulses in the central nervous system fibers in the dorsal horn of the spinal cord are joined to the gelatin substance and are transmitted towards the brain. When the pain sensation reaches the brain, emotional responses and experience with pain may increase or decrease the severity of the sensory pain. The autonomic nervous system is activated in response to pain. These results in increased tachycardia, peripheral vasoconstriction, sweating, pupil dilation, catecholamines, and adrenocorticoid hormone release [14] [15].

5. Physiopathology of Pain in Newborns

All of the anatomical structures and functions of the peripheral and central nervous system required for pain formation at the 20th week of gestation were developed [5]. At the same time, the hypothalamus-pituitary and adrenal glands in the newborn have developed well enough to release catecholamines and cortisol in response to stressful situations. However, in the nociceptive process, there are differences in neurophysiological and cognitive maturation between newborns and adults. Most of the pain impulses in newborns are carried by non-myelin C fibers rather than A-delta fibers, as the myelination of the spinal fibers continues after birth. For this reason, the transmission of pain signals is slower. Because neurotransmitters in the descending fibers are not fully developed, the modulation of pain impulses in neonates is less. For this reason, pre-

term infants and term newborns are more susceptible to pain stimuli than older children. Early aged pain can be recorded at an older age, not in the form of remembering events, but in non-active procedural memory, resulting in more responsiveness to painful procedures at a later age [10] [16].

6. Pain Theories

Various pain theories have been developed to explain the pathophysiology of each individual pain experience. Some of these theories are the specific theory, pattern theory, gate control theory, intensiveness theory, endorphin and psychological theories [10].

1) Specificity Theory: This theory suggests that the pain originated not from free nerve endings but from pain receptors specific receptors. The formation of pain sensation is evoked by the activation of specialized peripheral pain receptors [10].

2) Pattern Theory: The pain impulses must reach a certain level after the spinal cord has reached the brain and the stimulus for pain sensation has accumulated in the brain [10].

3) Gate Control Theory: Melzack and Wall (1965) argue that gate control theory is a very powerful effect of psychological factors, pain-related senses, beliefs and understanding of pain on the pain experience. According to this theory, the pain impulses coming from the spinal cord with nerve fibers are evaluated here first. When the gate closes in the spinal cord, the pain impulse is blocked, and the pain is not felt. However, if the past pain experiences are negative, the cortex does not send the "close gate" signals to the substance gelatin side and the pain impulses are transmitted to the brain [10] [17].

4) The Theory of Intensities: Any sensory stimulus of sufficient intensity can be interpreted as pain [10].

5) Endorphin Theories: Endorphins, which are endogenous opioids produced by the brain in response to painful stimuli, help suppress the pain impulses in the spinal cord and brain [10].

6) Psychological Theory: Pain can be caused by emotional emotions. Since pain is a feeling that is unique to each individual, the way the individual perceives himself affects the pain [10].

7. Physiological and Behavioral Effects of Pain on Children

Pain is perceived as stress in the body and it has undesirable physiological effects on many body systems [10] [18].

Along with acute pain, an increase in life signs is observed. Control of acute pain, especially after the operation, causes rapid and superficial respiration of the child and depression of coughing. These actions, which the child has made to avoid the pain, may result in complications such as accumulation of secretions due to the inadequate expansion of the lungs, reduction in oxygen saturation, alkalosis, and atelectasis. The release of catecholamines, glucagon, and corticos-

teroids also increases in the pain. The resulting catabolic state seriously affects newborns and small babies, especially those with high metabolic rates and insufficient nutrient storage. Pain in newborns and babies can also drain energy deposits. This means the depletion of energy needed for growth and recovery. Controlling post-operative pain may delay the onset of stomach and bowel function and may cause stress ulcers. The loss of appetite caused by pain reduces nutrient uptake and delays the healing process. Fluid-electrolyte imbalances can be seen in young children with excessive sweating due to pain. Since the autonomic nervous system is not stable during pain, the intracranial pressure may increase and cause intraventricular hemorrhage. Immune system response due to untreated pain decreases and susceptibility to infections increases [10].

Recurrent pain in newborns and infants may cause pain threshold, the perception of pain and pain tolerance in the later stages of life, may cause hyperalgesia, decrease pain threshold and result in increased physiological and behavioral responses in painful situations. In addition, attention deficit and learning deficits can increase the risk of behavioral disorders [10].

8. Situations Inhibiting Pain Management in Children

Even though at the present time there are many resources on assessing and management of pain, in infants and children cannot be managed adequately; lack of information for assessing the pain, not using pain measuring instruments, and fears of healthcare providers and families associated with pain and pain management and not applying standards related to pain management sufficiently in health care centers inhibits effective pain management [10].

9. Children's Pain Perceptions and Reactions

Because pain is an individual experience, the perception of pain and reactions to pain can vary from child to child. The child's perception of pain affects the age, gender, developmental level, temperament, the cause of pain, community pain response, sociocultural factors and past painful experiences [5] [6].

10. Measurement and Evaluation of Pain

In the evaluation of pain, to identify, reduce pain and provide effective pain control. Accurately measuring and evaluating pain in children facilitates pain control [6]. However, in addition to being a subjective and multidimensional experience, pain is a subjective and multidimensional experience, as well as difficulties in verbal expression of pain depending on the level of development of children, difficulty in distinguishing fear from painful attempts, hunger, loneliness, separation from parents and fear, health professors and making it even more difficult to assess pain [18] [19].

Pain in children is multidimensional and is influenced by factors such as gender, genetic differences, emotional state, developmental level, culture, past pain experiences, parental reactions and type and duration of pain. When evaluating

pain in children, all these factors that affect the pain need to be considered. Assessment of pain in children is more difficult than in adults. Especially babies, young children, and children with cognitive-developmental distress are unable to identify pain and it is difficult to assess their pain [5].

Children may be predicting that pain may occur, may not be able to identify pain with words, and may not always understand why. At the same time, it may be difficult to understand when the pain will decline or disappear because the concept of time does not develop in pre-school children. This can lead to fear and anger in children [5].

Even though "measuring" and "assessing" are used commonly, they are different terms. Measuring the pain means a numerical value. Assessment of pain is a more complex process and includes the severity of the pain as well as other aspects of the pain such as meaning for the individual, other symptoms such as lack of appetite, fatigue, pain control methods and effects. Some assessment tools are used to evaluate the pain. These tools are often used to measure the severity of pain. In children, the pain may vary during the day as different violence, time and quality [6]. For this reason, pain assessment should be done at regular intervals throughout the day.

Pain should also be assessed before and after painful procedures [6]. The choice of instruments to measure the severity of pain in children should be based on the child's age, general condition, and level of pain recognition. A single approach may not be effective in assessing pain. Since pain is a subjective experience, self-assessment methods are the "gold standard rule" [7]. Pain-related expressions of children with verbal communication are the most reliable way to assess the severity and location of pain. It is not possible to benefit from self-report in infants and young children whose language development is inadequate [7]. However, there are words used by children about 18 months of age related to pain. Since pain notification methods require cognitive development and verbal skills, they can be used starting from the preschool period. The cognitive development of a 3 - 4-year-old child is sufficient to report the severity of the pain. It is important to choose the words that the child is accustomed to when he/she talks about the pain with the pre-school children. It is often useful to get help from your parents in this regard. School children and adolescents can give more detailed information about the location, severity, and quality of the pain. In general, pediatric pain measuring instruments are based on behavioral, physical or self-report [10].

11. Physical Measurement of Pain

Acute pain stimulates the adrenergic nervous system and results in physical changes such as tachycardia, tachypnea, hypertension, dilation of pupils, peripheral vasoconstriction, paleness, sweating, decreased oxygen saturation, and increased catecholamines and adrenocorticoid hormone release. While these physical and physiological manifestations present a complex stress response,

they may not be beneficial alone in monitoring acute pain, since they are not specific to pain. Using together with behavioral and self-report measures increases reliability. Long-term chronic pain is physiologically compatible with the body during the stress response, so life symptoms are usually normal in long-term pain [10].

12. Behavioral Measurement of Pain

Behavioral pain scale is used for children with severe cognitive and communication impairment. Children express pain in different ways such as crying, different body movements and emotional state. However, it is not always easy to distinguish these behaviors from reactions related to other sources of stress, such as hunger, anxiety, and restlessness [5]. The use of behavioral pain scale takes more time than the self-denial-based means, as the nurse needs to monitor the child. In addition, the behavior of the child should be interpreted with caution when using these scales. Behaviors such as watching television, playing games, sleeping may not always mean that the child is not experiencing pain, but also may be a sign of trying to cope up with the pain. Behavioral pain measurement scales are more reliable for short-term pain associated with established interventions. And their Reliability decrease when pain measured is recurrent, chronic and also when used in older children [10].

13. Measurement Based on Self-Report

Measurement based on self-report is considered as "gold standard" and is the most valuable approach to determine the pain level [7]. Self-report requires cognitive development and verbal skills, so it is used from 3-4 years of age upward. Pain level, quality, localization and characteristics are assessed with self-report method. When collecting data children should participate in the process [10].

14. Pain Scales

There are different scales used to measure pain in children. It is necessary to check the validity and reliability of the scales before the use because some elected scales can be used according to age [10].

15. Newborns and Little Children

Ages and different information help the nurse determine the pain scale to use. The use of behavioral and physical measurement tools in infants and children with communication's difficulties in determining the severity of pain, increases the reliability of the measurement.

• Neonatal Post-op Pain Measurement Score (CRIES) was developed by Krechel and Bildner (1995) to measure the postoperative pain of premature and term newborns in ICU. The scale is used to measure physiological responses to pain in the post-operative period of 32 weeks of gestation and 6 months of infant. The evaluation is made using a scoring system similar to the Apgar score.

Newborn with CRIES scale; (0 - 2 points), oxygen saturation (0 - 2 points), life signs (0 - 2 points), appearance (0 - 2 points) and insomnia (0 - 2 points) are evaluated. Scores that can be taken from the scale are between 0 - 10. The increase in peak indicates that the severity of the pain increases [10] [19] [20].

16. Great Babies and Little Children

• Modified Behavioral Pain Scale: Infants 4 - 6 months of age

When assessing pain Preschooler, school age children, should be asked to describe the pain. Children start to express severity of the pain from the age of 8 years [10].

• Faces Pain Scale:

It may be used in conscious, older than 3 years old and communicable children.

Studies compared this scale to others have shown that children enjoy this scale and provide the most accurate measure. With the Faces Pain Comparison Scale, three measurements can be made: face expression, numeric measurement, and words expressing pain intensity. There are 6 face expressions scored between 0 and 5 on the scale. Smiling face means no pain, crying face means unbearable pain. As the score increases, the severity of the pain increases. After expressing the meaning of the child's face expressions, he is asked to show the face that expresses very well his or her pain. The face number specified by the child is saved [10] [18] [19] [21].

• Oucher Pain Scale: This scale can be used in children aged 3 - 13 years. With a vertical visual comparison scale on the scale, there were 6 face expressions with varying severity of pain

The increase in the score indicates that the severity of the pain also increases. The Oucher Pain Scale was developed and tested for three ethnic groups, Caucasian, African American, and Latin American. Using the version appropriate for ethnic group can make it easier for the child to choose. After explaining the meaning of the child's face expressions, they are asked to show the face expressing their own pain. The face number specified by the child is saved [10].

• Poker Score Pain Scale: This scale is used for children over 4 years old who know how to count. Four groups of poker chips are placed side by side on a table. A child is explained that 1 stick means having the most mild pain on a sticker, and the four sticks showing the most severe pain, the child is asked to choose the number of sticks describes his/her pain [10].

Big schoolers and adolescents

All the pain scales used in preschool and school children can be used in older school children and adolescents. However, since the language development and number concepts of the children in this group are much better, different scales can be used while evaluating pain. In addition, the location and type of pain should be asked [10].

• Simple Descriptive Pain Scale (Word-Graphical Benchmarking Scale): This scale contains descriptive words such as mild, moderate, very unbearable pain

that indicate the severity of pain on a horizontal line. The child marks the word on the line that best describes the pain. The scale is used in children aged 4 - 17 and in adolescents [10].

• Numerical Pain Scale: Can be used after the child has counted the number and the relationship of numbers to other numbers (usually after 5 years of age). It should be explained that "zero" on the line shows "no pain" and "10" shows the "most severe pain". The child is asked to show the figure that best describes his pain. The scale can be used as horizontal and vertical [5] [10] [19].

• Visual Analogue Scale (VAS): Using a ruler, the score is determined by measuring the distance (mm) on the 10-cm ruler between the "no pain" anchor and the child's mark, providing a range of scores from 0 - 100. A higher score indicates greater pain intensity. Based on the distribution of pain intensity as none, mild, moderate, or severe, the following cut points on the pain VAS have been recommended: no pain (0 - 4 mm), mild pain (5 - 44 mm), moderate pain (45 - 74 mm), and severe pain (75 - 100 mm) [22]. Normative values are not available. The scale has to be shown to the child otherwise it is an auditory scale not a visual one. It is recommended to use it for children aged 7 years and over [5] [10] [18] [19].

Adolescent Pediatric Pain Scale: A versatile self-report-based pain measurement tool [5]. This scale consists of a picture showing the outline of the body's backsides, a simple descriptive pain scale and a qualitative descriptive word list. Can be used in children between the ages of 8 - 17. Qualitative descriptive word list; 67 words describing pain in 4 dimensions, including 37 sensory (pity, cramp, etc.), 11 emotional (scary, stunning etc.), 8 evaluators (disturbing, uncontrollable, etc.). It contains. Using the pen from the adolescents, the areas where the pain senses are indicated on the descriptive scale of pain intensity, and the words that best describe the pain are selected from the descriptive word list. The Adolescent Pediatric Pain Scale is an option for especially complex and difficultly controlled pain. For the evaluation of pain, the shapes showing the outer parts of the body are shown and the child is given the following information: paint the areas where the pain is present on this figure, mark the place of the pain almost, mark the pain area as big or small [5] [10].

Children who cannot be contacted assessing the pain of children with communicative and cognitive disabilities can be difficult. Children with neurological disability (such as cerebral palsy), metabolic disorders, autism, severe brain injury, ventilator-dependent or hearing-impaired children, and significant communication difficulties. These children may have medical problems that cause pain and painful interventions can be performed more frequently than other children. It is difficult to interpret pain behavior of children with cognitive impairment. Parents or primary caregivers are an important resource for evaluating the pain of children who cannot communicate [10].

• Pain Checklist for Unsupervised Children: This is a tool used to measure pain in children with cognitive impairment. The level of activity (2 items in-

cluding movement, jumping/agitation), the level of activity (4 items such as groaning, crying), socialization (4 items such as unhappiness, decrease in interaction), facial expression (5 items such as eyebrows), (6 items such as spasticity, protection, etc.) and physiological condition (6 items such as tremor, paleness, sweating) are evaluated with a total of 27 items as 6 subgroups. During the measurement the child is observed for 10 minutes and each item is numbered 0 to 3. The child does not have to be constantly monitored for ten minutes. However, it is suggested that the observer should usually be with the child. "0: no pain is observed", "1: very little observed", "2: more frequently observed", "3: very frequently observed" a total of 6-10 points are mild pain, 11 points and a moderate and severe pain [10].

• Pain Indicator for Communicatively Impaired Children (PICIC): developed to measure pain in children with life-threatening illness and communication disabilities. There are 6 signs of pain on the scale: crying with tears or without tears; screaming, screaming, moaning or whining; poor or distressed face appearance; the body looks solid or tense; difficulty in relieving or soothing; retreat when touched. The items are scored with a four-point Likert type form. Scale 1: Indicates that the pain is not always present, 2: Pain is low, 3: Pain is frequent, 4: Pain is always present [10].

Pain Control in Children Effective pain control in children requires collaboration among healthcare team members and various initiatives. Pharmacological and non-drug methods are used for pain control. The most effective method is the combination of drug therapy and cognitive-behavioral methods. The use of psychological techniques to prepare and relieve the child before administering a pharmacological agent may also reduce the need for analgesic dosing. The use of cognitive and behavioral methods such as relaxation, respiration methods and falling, allows the child's attention to move away from the painful process and reduces tension, pain and anxiety. Cognitive and behavioral methods appropriate to the child's age should be used. For example, babies' nipples or pacifiers can be useful. In older children, it is effective to create an environment where they can keep hobbies, to read books, and to watch television [23] [24] [25].

In children, pharmacological and non-pharmacological methods are used to control pain. The combination of the two methods provides a more effective pain control [23] [24] [25].

Important results of my unpublished work on pain are presented below.

Impacts of Kangaroo Care Which Is Applied to The Infants in Neonatal Intensive Care Unit on The Infants Pain Levels

In a (master's thesis) study conducted in Türkiye byTazegül and Çetinkaya (2014); this study is experimentally planned to analyze the impacts of kangaroo care (KC) which is applied to the premature infants stayed in Neonatal Intensive Care Unit (NICU) on reducing the pain occurred while drawing blood from the toe. The population were the premature neonates and their mothers stayed in NICU of Cukurova University The Faculty of Medicine Balcalı Research and Application Hospital between June 2012-November 2012. The study was done

with totally 45 premature infants who hospitalized in mentioned time and met the selection criterias. These infants were casually appointed to experimental (n = 21) and control groups (n = 24). The Premature Infant Pain Profile (PIPP) was used for collecting data due to the assessing behavioural and physiological responses of the neonates while making heel lance by recording with video camera. Most of the neonates were between 32 - 36 weeks born; 58% of the neonates in the control group and 67% of the neonates in the experimental group were girls and both groups were found similar. In the study, before making heel lance; PIPP score wasn't statistically significant in the both group ($p = 0.897$, $p > 0.05$), During making heel lance; PIPP score is statistically significant compared to control group ($p < 0.001$), after making heel lance; PIPP score wasn't statistically significant in the both group ($p = 0.195$, $p > 0.05$). Consequently; our findings have showed that KC is an effective method on reducing the premature neonates' pain while making heel lance and PIPP is an effective scale for assessing the premature neonates' pain [26].

Comparison of White Noise and Massage Application Methods on The Colicky Infants Aged 0 - 12-*Months*

In a (master's thesis) study conducted in Türkiye by Yavaş Çelik and Çetinkaya (2015); Colicum infantum is very frequently complaint occurs within the first three months among babies. The study was planned in experimental design to reduce colic through white noise or massage applications. The 0 - 12 months aged babies and their families who come to the 500 Evler Health Center in the city of Gaziantep were included in this study. The sampling is formed of 90 babies in the 0 - 12 months aged who were colic diagnosed, crying daily more than 3 hours, having no physiological problems and had passed the hearing test. These 90 babies would be separated into three groups by a randomly selecting method. The Patient Consent Form, The Family Descriptive Information Form, The Baby Descriptive Information Form, The Crying Features Information Form, The Colic Baby Diary Form I/II/III, A CD player, The White Noise CD, The Baby Massage Education CD, Infantile Colic Scale were used to collect data.

In the control group during the study times of;

- screaming (194.38 hours),
- crying (252.45 hours),
- staying awake (828.31 hours).

In the massage group during the study times of;

- screaming (115.48 hours),
- crying (226.79 hours),
- staying awake (759.07 hours) times.

In the white noise group during the study times of;

- babies of screaming (65.79 hours),
- crying (117.17 hours),
- staying awake (489.00 hours).

There wasn't a statistically significant difference between three groups (in experimental and control groups) in terms of sex, birth weight, order of birth ($p >$

0.05). Consequently, it was established that white noise CD affected the babies positively and it was an effective and usable tool for calming down the babies [27]. I also recommend you to read the published my research on pain [28] [29].

Information on my patents related to pain is presented below.

TR2017/08323—A device to pre-determine baby cry and provide them to calm down with white noise

- Application Date: 06.06.2017
- Publication Date: 21.03.2018
- PCT/TR2017/050265 (PCT APPLICATION)
- US PATENT: US11,147,941 (Grant Date: 19.10.2021)
- EUROPEAN PATENT: EP3541267 (Grant Date: 15.04.2020)
- GERMANY (Grant Date: 15.04.2020)
- UNITED KINGDOM (Grant Date: 15.04.2020)
- TURK UTILITY MODEL (No: TR 2017 08323 Y, Grant Date: 21.11.2022)

17. Nursing Management

In the nursing care of a child with pain, it is important to identify, evaluate and manage the pain properly and appropriately. Thus, the quality of life of the child increases, early mobilization, the length of stay in the hospital is shortened and the cost of the disease is reduced. In order for children to identify their pain correctly, a good history should be taken from the child and family, observations should be made, and problems caused by pain and pain should be assessed. When older children are given information on past and current pain experiences, open-ended question type must be used and enough time must be provided. It should not be forgotten that the words and expressions used by children may vary. The scale to be selected for the evaluation of the pain should be decided with the child and the family, and the same measurement tool should be preferred [5]. In order to be able to assess the efficacy of pain treatment before and after treatment, the child's pain measurement results should be regularly recorded. Direct nursing pain diagnosis of painful child is part of the Comfort Pattern in Nanda Taxonomy II. This is the diagnosis of nursing: a. Relaxed b. Acute Pain c. Chronic Pain [10].

After evaluating the pain pediatric nurse should try to control the pain by using pharmacological and non-pharmacological methods together. With the prescribed analgesics, the child's pain needs to be kept under control for 24 hours. Before administering analgesics, the dosage should be checked for safe dosing. For this reason, the child's weight and developmental characteristics should be known. If analgesics are administered by the parenteral route, the intravenous infusion rate and infiltration should be monitored closely. If opioids are given, pulse oximetry or cardiorespiratory monitor use should be preferred [11].

Pediatric nurse should closely monitor children who use opioids, particularly the respiratory rate. Other side effects such as sedation, nausea, vomiting and pruritus of opioids should also be monitored. Parents or primary caregivers of

the child should be encouraged to take an active role in the child's pain control. Families are the basic source of information, particularly in young children, when determining the severity and type of pain. Family members should be informed about the drugs used for pain control and non-drug methods. The child should be informed before proceedings and effective ways to cope up with pain [11].

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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