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THE NURSE' ROLE IN PAIN ASSESSMENT AND MANAGEMENT OF PEDIATRIC PATIENT: A LITERATURE REVIEW

Sisilia Leny Cahyani[*△], **Faldi Yaputra**[**] **and I Putu Eka Widyadharma**[**,1]

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ABSTRACT Pain management is one of the global burdens nowadays. Especially pain management in children that need a total concern. Regarding its difficulty to approach children with pain, adequate pain assessment also takes place as the first goal in pain control. As we have known, pain is one of the most common reasons why people seek medical treatment. Pain management takes place in a hospital and out-of-hospital environment, especially for chronic pain. Pediatric patients with pain need a total evaluation as they are sometimes difficult to deliver information regarding their symptoms. For that reason, we need someone that can stand by besides the patients to observe their changes in habit. At this point, nurses act to ensure all treatment has been delivered and to advocate patients/ patient's families that the pain has been managed appropriately.

KEYWORDS Nurse' role in pediatric pain management, pediatric pain management, pediatric pain assessment, pediatric nursing.

Introduction

Pain is a global challenge that has complexity and a multidimensional phenomenon [1]. According to International Association for the Study of Pain (IASP), the newest definition of pain is a distressing experience associated with actual or potential tissue damage with sensory, emotional, cognitive and social components [2]. The most common reason people seek medical attention because of pain symptom. Its impact as a global burden has affected all aspect of life such as social, psychological, and economic aspects, and even the quality of life. As pain becomes so important, Joint Commission on Accreditation of Health Care Organizations (JCAHO) has approved pain as the fifth vital sign to be monitored routinely [3]. In the 1970s, pain tends to be undertreated; this may occur due to lack of education and knowledge of pain among healthcare professionals. Based on this evidence, in the last several decades, numerous attempts have been started to re-educate healthcare professionals [4]. Teamwork is needed in pain management, doctors, nurses, physiotherapists, and psychologists. The concept of pain assessment and management has to be fully addressed to get patient/family satisfaction as the primary concern of pain control.

Among all subjects who experienced pain, children are the most difficult to manage. Pediatric pain has recognised as a global challenge and burden by World Health Organization (WHO) and IASP [5]. In 1977, a study revealed that there was a mismanagement of pain on children in America, especially for them after surgery [6]. This evidence has made pediatric pain getting a full concern that it is a complex phenomenon that requires knowledge and understanding of its nature [5].

Nurses' Knowledge of Pain

In Indonesia, effective pediatric pain management is an elusive target. Children remain undertreated for some reasons, such as lacking physicians' prescription and nurses' knowledge in pain assessment and management [7]. Sometimes patient did not receive sufficient treatment for their pain, even after medication for pain relief, they still experience moderate pain. Some studies demonstrated that nurses received inadequate education and

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knowledge about pain assessment and management in children, although some of them showed a positive attitude toward pain control [5,8]. Educational strategies have been implemented to increase the knowledge among healthcare professionals, but some other barriers stay in lines, such as nonfacilitative attitude, lack of interprofessional skills, poor teamwork, inadequate leadership, and lack of resources [9].

A study showed that there is a serious deficit of qualified nurses, with only 50 nurses per 100.000 patients. Five percent of them are educated to Bachelor' degree, 60% only reach diploma and 35% remaining only have a high school education. These are the reasons why effective pain assessment and management still out of our reach, as nurses play a cornerstone in this healthcare program [7].

Several studies have evaluated nurses' knowledge of pain assessment. Nurses were asked how they assess pain. They reported by observing the children's behaviour such as uncontrollable cry, gesture, and facial expression. Others assessed pain by asking directly to the children who can speak or ask their guardian. Some nurses know the patient is in pain from their diagnosis or surgical procedure. None of them answered objectively by using a vital sign or physiological measures to assess pain. This study found that nurses have knowledge of pain assessment, but they do not know how to use pain scale or another method in pain assessment [8].

Transmission of pain

According to the concept of nociception, pain is perceived in the peripheral by nociceptors, including four stages of transmission [10–12]:

- Transduction: the stage of conversion of noxious stimuli into electrical energy on peripheral nociceptors.
- Transmission: the converted electrical energy is sent from the peripheral to the spinal cord.
- Perception: the stimulus reached the higher brain area and converted into pain experiences.
- Modulation: the inhibitory input from the brain to any transmitted stimuli in the spinal cord.

Pain can be originated from any body part, visceral pain (originated from the internal organ), and somatic pain (originated from skin muscles, bone, or a joint that usually experienced as a sharp pain) [10]. Pain pathway can be classified as ascending pathway that consists of three neurons. First order neuron: from nociceptors in the periphery to the dorsal horn of the spinal cord. Second-order neuron: from dorsal horn of the spinal cord to thalamic nuclei. Third-order neuron: from thalamus to cerebral cortex. The other one is the descending pathway: start from the limbic system, parabrachial area (PBA), periaqueductal grey (PAG) nucleus raphe Magnus, and rostral ventromedial medulla [11].

Discussion

Pain Assessment

Pain assessment can be very confusing, for adults, pain can be detected easily by self-reporting. On the other hand, children or neonates who cannot speak yet usually describe pain in so many ways, including crying, screaming, silence, avoidance behaviour, or wriggling. In some cases, we can totally sure that the patient will suffer in pain, such as post-operative patients. Evidence has shown that pediatric surgical patient with pain has more pain intensity than medical, pediatric patient with pain [13]. In assessing pain, nurses face several barriers in pain assessment including healthcare system, bias from healthcare providers, and time in assessing pain, and sometimes, healthcare professionals tend to disbelieve patient' statement when they confess pain [10]. In their report, Nimbalkar et al. showed the nurses lack in knowledge and attitudes that make pain assessment even difficult to be applied [14]. In developing countries, just a few validated and translated pain assessment tools for nurses; this also became an obstacle in nurses practices [5]. Most of the nurses agreed that pain assessment plays an important role in nursing and pain management. However, some of the nurses believed that they could assess pain without pain assessment tools [15]. Several studies have evaluated nurses' knowledge of pain assessment. Nurses were asked how they assess pain. They reported by observing the children behaviour such as uncontrollable cry, gesture and facial expression. Others assessed pain by asking the children who can speak or asking their guardian. Some nurses know the patient is in pain by their diagnosis or surgical procedure. None of them answered objectively using a vital sign or physiological measures to assess pain. Kholowa et al. found that nurses have knowledge of pain assessment, but they do not know how to use pain scale or other methods in pain assessment [8].

There are so many pain assessment tools for children according to their age (see figure 1). Nurses are competent to assess pain using this tools. The most common tools to assess pain in US emergency department for infants and young children are revised FLAAC (Face, Legs, Activity, Cry, and Consolability), Neonatal Infant Pain Scale (NIPS), and Children's Hospital of Eastern Ontario Pain Scale (CHEOPS) [16]. The FLACC score showed the highest clinical utility score compared to other assessment tools [16]. The FLACC score is used for infants, nonverbal young children, and children with cognitive impairment [17,18]. It provided an assessment in 5 categories, scored from 0-2, a total score between 0-10. The NIPS (National Infant Pain Scale) is used for infants from birth to 1 year. The NIPS evaluates six indicators in preterm newborns (gestational age <37 weeks) and full-term newborns (gestational age >37 weeks). The NIPS assessments including facial expression, cry, breathing patterns, motor activity (arms and legs), and state of arousal [18,19]. Each category score range from 0-1, except cry category range from 0-2. The total score range from 0-7 [19]. This tools can be used by nurses, and allow nurses to intervene accordingly. A study compared the N-PASS (Neonatal Pain, Agitation, Sedation Scale) to NIPS according to their reliability, it showed that NIPS is more clinically useful compare to N-PASS. The N-PASS concern to assess pain in the infant as well as sedation level especially in NICU [20]. A study reported that the sensitivity and specificity of both FLACC and NIPS are equal. The FLACC sensitivity and specificity were 89,94% and 87,82% respectively. The NIPS sensitivity and specificity were 85,94% and 92,61% respectively. Both tools are excellent to assess pain in infant [21]. In post-operative neonatal nursing, a pain assessment tool was developed, it is called CRIES (C-Crying; R-Requires increase of oxygen administration; I-Increased vital sign; E-Expression; S-Sleeplessness) [22]. Krechel and Bildner showed that CRIES was a valid, reliable, and most importantly it was accepted in neonatal nursing. For children who can self-report but have a limitation in understanding numeric pain assessment, we can use VAS (Visual Analog Scale) instead. VAS is used for children older than three years

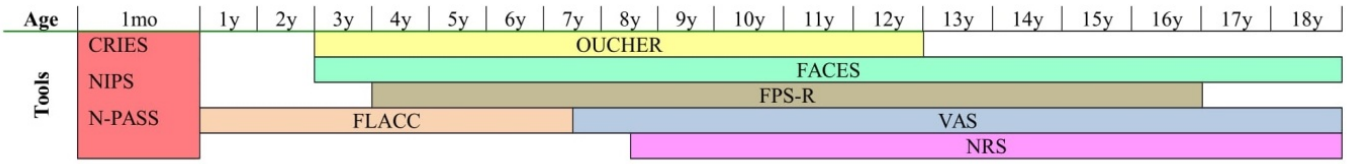

Figure 1 This diagram describes each pain assessment tools according to patient's age. Modified from: Oakes LL. Compact clinical guide to infant and child pain management: an evidence-based approach for nurses. Springer Publishing Company; 2011.

old [3], it consists of 10 mm length line anchoring "no pain" at the left endpoint, and "very severe pain" at the right endpoint. In daily practices, it is the most recommended tool for assessing pain, only takes minutes [23]. The patient is asked to draw a vertical line in some point along the line. The distance between the left endpoint to the child's vertical line indicates the pain intensity [3]. However, there is a limitation in VAS application; it needs a paper or electronic device. Instead, the Numeric Rating Scale (NRS) can be administered without any instrument. The patient is asked the pain intensity they feel, range from 0 (no pain) to 10 (the worst pain possible). It can enhance clinical assessment. However, to date, just a few pieces of evidence of NRS validation in pediatric patients [24]. The other tool to assess pain is using Face Pain Scale-Revised (FPS-R) which consist of 6 faces, that numbered as 0,2,4,6,8, and 10 [3]. For interpretation, 0-2, no pain; 4, mild pain; 6, moderate pain; 8 and ten severe pain [25].

Figure 1, showed the range of age related to the appropriate use of tools in assessing pain in infant and children. The easiest applicable tool in a clinical setting is NRS, however, it only suitable for children starting from 8 years old. In choosing the best tools to assess pain, healthcare providers should choose tools according to patient' age, and whether the patient can self-report his/her symptoms or not.

Pain Management

The role of nurses in pain management is still not realized by many nurses. They are the key to assess pain, they can determine what the pain effects are on one person, they have the ability to advocate patients and educate the patient and family about the medication's side effects [26], encourage the patient to take their pills and ensure the patient get the pain medication they need. [10]. In contrast, even it has been studied for 20 years, pain management is still not adequate, some of the attributed factors in nurses' practice, for example, nurses believe it is not their responsibility as prescribing pain medication is doctor' job [1], in fact it is our responsibility as healthcare professionals, nurses' also lacking in knowledge of pain management [27]. As a critical role in pain management, nurses should improve their education in understanding pain and provide themselves with the latest technique in pain management [10]. Nurses training has been proved to increase their knowledge in pain management [28]. This becoming a controversy, a study once reported that nurses education has no impact on pain management. Even after following a pain education, nurses' behaviours and knowledge remain the same [1].

Reassessing the pain after administration of pain interventions is important, in reassessment, nurses not only ask the pain intensity but also evaluate the adverse effect of each intervention [29]. It is recommended that pain is reassessed 1 hour after parenteral medication and 30 minutes after intravenous medication [10,30]. Nurses should learn the best way in a clinical setting to reassess pain, as each has a different medical condition [30]. Nurses are expected to master the WHO analgesic ladder especially for pain management in the adult [31,32]. Whereas pain management in an infant or pediatric patient is quite complex, nurses are needed to assess pain when they suspect the infants or the children are in pain and report to the attending physician immediately. The most common treatment for pain is pain medication; it should be used wisely regardless of its common side effects. Data showed that hospitalized children usually undertreated and undermedicated compared to adults [7,13,33]. They usually experienced more severe pain postoperatively as they received less pain medication after surgery, some of them received none [33]. We should note that children do need analgesics as much as adults [13]. In another study, healthcare providers tend to give pain medication on a regular basis even when they are prescribed pro re nata [34]. A study has evaluated the impact of nurse-led care especially in acute and chronic pain; they demonstrated that nurse-led team could reduce acute and chronic pain, and more cost-effective [35]. Although nurses can lead the pain management team, another data showed most of the nurses are not using pain assessment scale to detect pain [36].

Conclusion

Pain is something that can not be treated solely; it needs a holistic approach and management to have an optimum result. Not only medical doctors but also all healthcare professionals such as nurses, physiotherapist, psychologist, etc, have to contribute to gain a significant impact on managing pain, especially in children. Besides medical doctor, nurse practitioners have an essential role in managing pain, as they are the healthcare professionals who are exposed to patients more frequently. Furthermore, pain in children remains defiance as they usually undertreated. Regularly assessed and reassessed pediatric pain symptoms can achieve the best outcome in pain management. Therefore nurses are expected to realise they play an essential role in pain assessment and management, and keep motivated and educated about the update in pain assessment techniques and management.

Recommendations

All healthcare professionals should appreciate the nurse's role in pain assessment and management. Nurses are needed to improve their knowledge about pain and should be kept motivated and respect their job as an integral part in healthcare systems.

Competing interests

The authors declare that they have no competing interests.

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