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Original Article

Experience of Registered Nurses of Postoperative Pain Assessment Using Objective Measures among Children at Effia Nkwanta Regional Hospital in Ghana

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Abstract

Introduction: People undergoing surgical operations experience some level of pain. Assessing pain intensity is one of the duties of the nurse and it involves subjective measures (self-report), and objective measures (behavioural and physiological). It has been observed by the researcher that nurses in clinical practice do not assess pain before management more so among children. Also, there is limited research in the area of pain assessment in children who cannot communicate. This study aimed to describe the experiences of registered nurses in assessing postoperative pain among children (0-3 years) using objective measures.

Methods: Descriptive phenomenology was the chosen design. Maximum variation sampling was used to recruit nine registered nurses with experience in nursing children after surgery at Effia Nkwanta Regional Hospital (ENRH) in Ghana. The researchers conducted audio-recorded in-depth interviews, transcribed verbatim and qualitatively analyzed following Colaizzi's approach to descriptive phenomenology analysis.

Results: The study revealed that the nurses have more experience with using behavioural measures with limited experience with the use of physiological measures. The behavioural measures mostly reported from their experience were changes in facial expression and unusual crying of the child. In general, the nurses do not formally use consistent approaches to assess pain among children.

Conclusion: Given these results, opportunities should be made available for nurses to enhance their skills and utilize evidence-based approaches to formally assess pain among post-operative children.

Introduction

Surgical operations are inevitable in alleviating certain disease conditions, however, surgical procedures are associated with pain. Pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage".[1] Postoperative pain refers to the pain experienced after surgery.[2] Studies show that children feel pain just like the adult population.[3-5] Every individual is entitled to pain management. Pain assessment must first be performed before treatment commences.[6-9]

Pain assessment involves the use of subjective and objective measures and the subjective measures involve the use of self-reports where patients verbalize or describe their pain. Objective measures comprising behavioural and physiological measures are commonly used to assess children's pain. Behavioural measures involve observing how a child behaves in response to pain such as facial expressions, crying, body postures and movements.[10] Physiological measures include assessment of heart rate, blood pressure, respiration, oxygen saturation, palmer sweating and temperature.[11] For pain, assessment to be practical, and consistent pain assessment tools and guidelines are used. Some of the common pain assessment tools used among children include Faces Pain Scale-Revised (FPS-R), the Wong-Baker Faces Scale and the Oucher Scale, the Face, Legs, Activity, Cry and Consolability (FLACC), the Children's Hospital of Eastern Ontario Pain Scale (CHEOPS), the Toddler-Preschooler Postoperative Pain Scale (TPPPS), and the Parents' Postoperative Pain Rating Scale (PPPRS).

It has been established that inadequate assessment of post-operative pain leads to inadequate management which can lead to severe complications such as delayed wound healing, deep vein thrombosis, atelectasis, pneumonia and even death.[12-15] Despite the knowledge

and importance of pain assessment and availability of guidelines and assessment tools,[16-18] there are reports in many countries that nurses do not assess pain before administering pain medication after surgery.[19]

There is an extensive body of literature globally on children's pain assessment. However, the majority of the studies focus on children four years and older with limited studies among children three years and younger. A number of these studies are on procedural pain such as pain from intravenous insertions and venipuncture and have mainly been conducted in emergency units [20,21] and neonatal intensive care units.[22-24] Most of these research studies are quantitative,[25-27] and parents have mainly been the target population.[28-30]

It is apparent that many gaps exist in the current literature regarding postoperative pain among children 0-3 years. In addition to limited research on these population, limited studies exist among nurses in surgical units. As nurses play a critical role in pain management, it is important to understand the experiences of nurses regarding pain assessment among these population to serve as a platform for more research to inform evidence-based pain management services for these population. This concept needs to be investigated further by qualitative methods. Children 0- 3 years usually are not considered when it comes to assessing pain and also most of the studies conducted are quantitative. It is in this view that the researchers attempt to fill the gaps in the literature. Therefore, the purpose of this study was to explore the lived experiences of registered nurses in assessing postoperative pain among children (0-3 years) using objective measures at the surgical unit at the ENRH in Ghana.

Materials and Methods

Descriptive phenomenology was adopted since it is beneficial in uncovering a phenomenon that has been incompletely conceptualized by prior research.[31]

The study was conducted in ENRH which is the biggest hospital in the Western Region of Ghana. It is a general hospital that takes care of all age groups. Nurses in this facility run a three shift system making nurses always available to care for patients. The participants consisted of registered nurses who had experience with nursing children after surgery. All potential participants that were approached agreed to participate in the study. Nine participants were recruited using maximum variation purposive sampling.

Face to face in-depth interview was used to collect the data with the help of an interview guide. The questions asked were: 1-Can you share with me from your experience some of the behaviours of the child after surgery that helps you to know the child is in pain? 2-Can you share with me some of the physiologic parameters that help you to know a child is in pain after surgery?

The participants were interviewed at their own time of convenience in the English language. The interviews lasted for approximately 45 minutes per person. Data were audiotaped and the participants were made aware of the audio recording. Field notes were also taken in addition to the audiotaping. The data saturation was observed after the seventh interview when there was data redundancy but we interview two more participants to confirm the saturation. Repeat interviews were conducted for two participants to data clarification. All the interviews were conducted by the principal investigator (SOOD). The strategies used to enhance the quality of the study followed recommended principles for enhancing trustworthiness in phenomenology.[32] The trustworthiness of qualitative research is an indication of methodological soundness, and it includes credibility, dependability, transferability, confirmability and bracketing. Credibility was ensured by the researcher returning to the participants to ensure that the themes generated from the interviews are the nurses' authentic experience of postoperative pain assessment in children consistent with step seven of the Colaizzi's analysis framework used for this study. Dependability and confirmability were ensured in the data collection and analysis by the development of an audit trail. The researcher achieved transferability by providing a full description of the study. Bracketing requires researchers to set aside personal theories, research presuppositions, inherent knowledge, and assumptions as separate from what the researcher observed in the process.[33,34] A diary was kept to ensure bracketing. In the diary, the researcher wrote her presumptions and personal value systems. This was necessary as the researcher was a nurse and had experience with postoperative pain assessment among children.

After each day's interview, the data recording was transcribed verbatim by the researchers in a Microsoft word document and analyzed following the Colaizzi's methodological approach to a phenomenological inquiry which consists of the following seven steps[35]:

Step 1: Each transcript was read several times in order to obtain a sense of the full content. During this stage, any thoughts, feelings and ideas that came from the researcher due to her previous work with postoperative children were added to the bracketing diary.

Step 2: During this stage, significant statements and phrases that reflect the methods and processes of objective measures that the nurses reported to have used to assess postoperative pain were extracted from each transcript. Initial coding was conducted by SOOD and confirmed by AAD, and EA. Disagreements were resolved through a consensus.

Step 3: After the completion of step two, there was the framing of the formulated meanings from each of the significant statements. The researchers arranged each significant statement in the left-hand column of a table in the word document with a column on the right for recording the formulated meaning.

Step 4: In this stage of the analysis, Colaizzi recommends the sorting formulated meanings into categories (sub-cluster themes), clusters of themes and themes. After describing all formulated meanings, there was organisation and grouping of the formulated meanings into thematic categories. Each category title reflected the cluster of themes that emerged from the formulated meanings under each category. Each formulated meaning could belong to only one category.

Step 5: In this stage of the analysis, Colaizzi advocates writing summaries for each of the clustered themes. The study presents these summaries in the next chapter. In order to continually link back to the importance of the participants' descriptions of their experiences, quotations from their narratives were used during the exhaustive description in order to expand upon the themes with 'real-world examples.

Step 6: This final stage involves formulating an exhaustive description of the investigated phenomenon as a statement of its fundamental structure. The results and discussion represent this type of exhaustive description and facilitate an in-depth understanding of the fundamental structure of the phenomenon being explored in this study.

Step 7: Colaizzi suggested a final validating step that could be achieved by returning to each participant in an interview setting to ask their opinion of the findings. The researcher returned to the participants after getting advanced approval during the in-depth interview to validate the findings. All participants confirmed that the results were a true reflection of their experiences of postoperative pain assessment among children.

Results

Table 1 presents the demographic characteristics of the nurse participants involved in the study. All the participants were registered nurses who had experience of nursing children with postoperative pain and were all females as there were no male nurses in the surgical ward where the participants were recruited. All the participants were assigned ID codes to ensure anonymity. The ages of the majority of the participants ranged between 30 to 40 years, with the average age being 32 years. The highest educational level of six participants was a diploma, five had a first degree, and one had a master's degree. A majority had worked between two to sixteen years with the average years being 9 years as registered nurses. Concerning experience with children after surgery, the number of years of experience ranged from 8 months to 7 years and averagely, 3 years 8 months.

Nurses Experience in Using Objective Measures in Assessing Postoperative Pain among Children

Regarding the use of objective measures in assessing pediatric postoperative pain, the nurses described their experiences with the use of varieties of behavioural and physiological measures.

Behavioural Measures

The findings of the study showed that all the nurses had experienced the use of one form of behaviour or another to assess pain in children. Five sub-cluster themes emerged, and they included unusual facial expression, unusual and prolonged crying, and use of gestures, irritable behaviour and changes in mood.

Unusual Facial Expression

Majority of the participants said they have had the experience of using the facial expression of the child to detect pain. They shared that the children in pain squeeze their face and others make funny faces. A participant expressed that:

> *"The facial expression is very helpful. You get the children squeezing their faces just like adults, but for them, if you are not observant, I mean the nurse, you will not be able to see because children have some funny faces that they do."*(A008)

Unusual and Prolonged Crying

Most of the participants also mentioned that they have had the experience of using the cry of the child to detect pain. According to the nurses, such cries are louder and do not respond to parent's consolation and comfort measures. A participant remarked:

> *"Although children normally cry, you realise that the crying is very excessive and also all attempts to calm them down fail, then I know they are in pain. When*

Table 1. Demographic characteristics of participants

ID code	Gender	Age (yRS)	Educational level	Experience with children	Experience in nursing	Certification
A001	Female	39	Masters	8months	16years	Registered nurse
A002	Female	31	Bachelor's degree	6 years	10years	Registered nurse
A003	Female	32	Diploma	3years	5 years	Registered nurse
A004	Female	31	Diploma	6 years	11years	Registered nurse
A005	Female	33	Bachelor's degree	4 years	11 years	Registered nurse
A006	Female	32	Diploma	7 years	10 years	Registered nurse
A007	Female	30	Diploma	5 years	13 years	Registered nurse
A008	Female	33	Diploma	1 year	5 years	Registered nurse
A009	Female	28	Diploma	2 years	2 years	Registered nurse

*they start crying, no matter what you do, they will still continue to cry, whether you give them food, whether you change their diapers, they will continue to cry. You also find them shouting, and the mothers usually tell us that this crying is not usual of the child." (*A007)

Another participant with similar experience also said that:

"If the crying is as a result of pain you know because mostly the crying is excessive and they will be shouting as well. With this crying, they do not respond to anything even if you console them or give them something they like; still, they will cry. This helps you to know that the crying is abnormal, and I become an indication that the crying is as a result of pain. This is very helpful, especially in the early days of the surgery." (A008)

Use of Gestures

Three of the participants stated that when the child points at the site of surgery, they know that that child is feeling pain based on their experience. Some also added that the children touch the spot or place paining them.

"*For some of the children, they cannot talk, they use their hand to show that there is a pain, so where they point their hands, that is where you locate the pain, then you assess" (*A004)

Another experience the nurses shared in identifying children's pain using gestures was that they explore the painful areas by randomly palpating the body parts when the child cries profusely. The nurses indicated that they determine a painful area when the child shakes the body in response to touch.

In relation to this a participant shared her experiences as follows:

"So *if he/ she cannot talk, what you do is to touch the place and around. So where the child will shout or shake the body, then you know that that place, the pain is severe over there". (*A004)

Irritable Behaviour

Another behavioral means the nurses said they had used to identify children in pain was the observation of irritable behaviors among children. According to the nurses, children in pain will become restless and difficult to console. Such children become calm after the pain has been managed.

"*They become restless when they are in pain, and anything that you try to do for them prove futile, but they become calm when the pain is managed. This helps us to know that it was pain that was making the child restless*." (A006)

Changes in Mood

The nurses further mentioned that pain changes the mood of the children and cause them to be unfriendly, refuse to answer questions, smile and reject food. The nurses said they recognize a child is in pain when such mood changes are exhibited by a child who did not use to exhibit similar mood before surgery. A participant described her experience as follows:

"*The child before the surgery was friendly so when she came from the theatre after surgery, her mood changed, and then you ask her a question, she will not even mind you, she will turn her face, refuse food, so all was pointing to the fact that there was pain."(*A001)

Another participant described her experience in connection with mood changes related to children's refusal to eat as follows: *"If the child is supposed to eat and the child is refusing to eat, then you know there is a cause, then we probe in then you realise it is pain." (*A001)

Physiological Measures

Physiologic measures of pain assessment involve the use of some of the body's functioning to detect pain. The sub-cluster themes that emerged from the study were abnormal vital signs, included increases in temperature, pulse rate, respiration rate, blood pressure and changes in the wound colour.

Increase Temperature

Some of the participants stated that they use the child's temperature to detect pain. They indicated that from their experience, children in pain will have an increase in the average body temperature. Two of the participants shared the following: "*When they are overwhelmed with the pain, they don't cry, but the temperature will rise*" (A005).

"For me like this, I use the temperature a lot. Whenever there is pain, you see the children spiking temperature." (A007)

Increase Pulse Rate

Regarding the use of pulse rate to detect children's pain, one of the participants said: "N*ormally when they [children] are in pain, the pulse goes up above normal. For a child, a pulse of 120 going then you know there is a problem*". (A001)

Increase Respiration Rate

A participant also mentioned that pain would cause the child's respiration rate to increase.

"The respiration will increase all, showing that the child is in pain." (A003)

Blood Pressure

Most of the participants described their awareness of blood pressure as a means of assessing pain. However, most of these nurses recounted the challenges with checking blood pressure among the pediatric populations. A participant explained: *"For the physiologic parameters, it is not easy. I know that for adults when they are in pain, their blood pressure goes up. So definitely the blood pressure of the child will also go up when he/ she is in pain, but unfortunately, for this ward, we do not check the children's blood pressure. This is because, for children, we do not check their blood pressure. The other reason is also that the cuff of*

the blood pressure apparatus that we have is for only adults so we cannot use it for children." (A008)

Changes in the Wound Color

Among postoperative children, some participants said they use the appearance of the wound to detect pain. According to one of the nurses: "*On observation, you [the nurse] see the wound is reddish, tenderness around the wound could prove that this person has pain.*"(A006)

Significant statements and phrases that reflect the methods and processes of objective measures that the nurses reported to have used to assess postoperative pain were extracted from each transcript (Table 2). Colaizzi recommends the sorting formulated meanings into categories (sub-cluster themes), clusters of themes and themes. After describing all formulated meanings, there was organisation and grouping of the formulated meanings into thematic categories. Each category title reflected the cluster of themes that emerged from the formulated meanings under each category. Each formulated meaning could belong to only one category (Table 3). In Tables 2 and 3, there were demonstrated some of steps of analysis and results as statement, formulated meanings, theme clusters and emergent thems.

Discussion

The study revealed that with the objective measures, the participants reported having more experience in utilizing behavioural measures with limited use of physiological measures which is contrary to a previous study conducted by LaFond et al, who found that nurses used more physiological measures in the pediatric postoperative assessment.[36] This revelation could be because the nurses in this study did not have adequate knowledge of the various physiological measures that could be used to assess pain. This finding indicates a need to address this gap.

For behavioural measures, most of the participants in this study mentioned that they have experience in using the facial expression of the child to assess pain as reported previously.[37,38] However, the participating nurses failed to name the specific facial movements associated with pain that has been reported in the literature including brow bulge, eye squeeze, nasolabial furrow and open mouth as explained in earlier works.[39] Instead, they gave some of the descriptions of facial expression to be the child "squeezing the face", "making funny faces" and also "making their faces

Table 2. Extract of formulated meanings from the significant statements

Significant statement	Formulated meaning
Since they are not able to actually verbalize the exact feelings we use their facial expression_(Transcript A001, page 1, lines 21-22)	Nurses use the facial expression of the child to assess pain.
Specifically, I look for their facial expression because that one can tell me the child is in pain. (Transcript A001, page 5, lines 104)	
I do sometimes use the facial expression, especially when it comes to pain. You realise that even when the child is not crying, the child squeezes the face to show that he or she is in pain. (Transcript A002, page 7, lines 163-168)	The nurse uses the child squeezing the face to indicate pain.
The facial expression is also able to indicate whether the child is in pain or its hunger. You know just like how adults squeezes their face when there is pain, children too do same. (Transcript A003, page 13, lines 313-314)	
The facial expression is very helpful. You get the children squeezing their faces just like adults but for them if you are not observant, I mean the nurse, you will not be able to see because children have some funny faces that they do. (Transcript A008, page 33, lines 719-722)	The nurse uses squeezing the face, which is different from the child making a funny face.
Some too how the person will make the face will tell you that the person is in severe pain. Sometimes like they will, some will squeeze their face, some will also make their face as if they want to cry but they will not cry. (Transcript A009, page 36, lines 802-804)	Nurses use the child squeezing the face as if he/ she wants to cry but does not cry to indicate pain.

Table 3. Development of formulated meanings and associated cluster and emergent themes

Formulated meanings	Theme clusters	Emergent theme
Nurses use the facial expression of the child to assess pain.	Unusual facial expression	Use of objective measures Behavioral measures.
The nurse uses the child squeezing the face to indicate pain.		
The nurse uses squeezing the face which is different from the child making a funny face.		
Nurses use the child squeezing the face as if he/ she wants to cry but do not cry to indicate pain.		
The nurse uses excessive crying in a child who previously before surgery was not crying.	Unusual and prolonged crying	
The child cries excessively and shouts and is difficult to console.		
The child cries a lot at night.		

as if they want to cry". Using the exact facial movements as documented in literature helps in providing evidence-based care and also useful in distinguishing the facial expression in pain and those made in other conditions such as hunger. The findings indicate the need to teach the nurses on specific words to use for facial recognition of pain. Crying was used by the participants in this study to assess children's pain, as reported in an earlier study conducted in Brazil by Silva et al.[40] The cry of the child in pain was different from the usual cry of the child [38] since children specifically infants communicate through crying. The study revealed that children who experience pain cry profusely and do not respond to comfort measures such as feeding, swaddling and holding. Similar findings were described by James et al.[41] Preverbal children in pain also pointed to the site for nurses to know which part of their body was in pain. The nurses in this study also said they had experience in using irritability and restlessness among children to detect pain. As reported in earlier literature, children in pain become irritable[11] and restless.[38]

With the physiological measures, the temperature was widely used to assess pain. The nurses also stated that elevated body temperature in a child after surgery was an indication of the presence of pain which were stated in earlier litteature.[42,43] However, there is limited research on the use of body temperature as an indicator of pain. Just one participant each mentioned the use of pulse and respiration to detect pain, but none of them mentioned the use of oxygen saturation. A study stated that an increased pulse and respiration and decreased oxygen saturation as physiological measures used in pediatric pain assessment.[44] Though the participating nurses were aware that blood pressure could be used to detect pain, none of them reported having used it due to logistic challenges. Interestingly, one of the participants reported using the reddish appearance of the surgical wound to detect pain. This finding has not been reported in existing literature and calls for further research.

It was somewhat surprising to find that the nurses did not report the use of pain assessment tools despite the availability of pain assessment tools.[19,45] These findings indicate the need to train nurses to use such evidenced-based tools.

The subjectivity of data gathered poses limitations with phenomenology. The researcher overcame subjectivity by returning to the participants for them to validate the findings to ensure that it was a true reflection of their experiences of postoperative pain assessment among children.

Conclusion

The findings of the study have established that although the nurses have some experiences in children's postoperative pain assessment, they do not formally use consistent approaches to assess pain among children. Opportunities should be made available for nurses to enhance their skills and utilize evidence-based approaches to formally assess postoperative pain among children.

Research Highlights

What is the current knowledge?

Inadequate assessment of post-operative pain leads to inadequate management leading to delayed wound healing and complications. Despite the existence of a large body of literature on children's pain assessment, limited published studies are focusing on children 0 to 3 years especially in developing countries including Ghana.

What is new here?

The study has highlighted how nurses use various innovative means to assess postoperative pain among children 0- 3 years as well as the challenges associated with pain assessment among these population. The findings provide a platform to engage in more research about these population with the ultimate aim of providing better pain management care for children in countries with a similar health system as the study site.

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Ethical Issues

The study received ethical clearance from the Institutional Review Board of the University of Cape Coast with ethical clearance ID (UCCIRB/CHAS/2018/25), after which the researchers sought approval from the Effia Nkwanta Regional Hospital. The study adhered to all ethical research principles for human subjects.

Conflict of Interest

The authors declare no conflict of interest in this study.

Authors' Contributions

Conception of the study and design, data collection, analysis and discussion. Drafted manuscript and critically revised the article: SOOD; Conception of the study and design, supervision of data collection, analysis and discussion. Also drafted and critically revised the article: AAD; Supervision of data collection, analysis and discussion. Also drafted the article: EAA.

Reference

1. Bonica JJ. The need of a taxonomy. Pain. 1979; 6(3): 247-8. doi: 10.1016/0304-3959(79)90046-0
2. Strassels SA, McNicol E, Suleman R. Postoperative pain management: a practical review, part 2. Am J Health Syst Pharm. 2005; 62(19): 2019-25. doi: 10.2146/ajhp040490.p2
3. University of Oxford. Babies Feel Pain ''Like Adults". Most babies not given pain meds for surgery[Internet]. [2015 Cited 25 Feb 2018]; England:University of Oxford. Available from: http://www.ox.ac.uk/news/2015-04-21-babies-feel-pain-adults.
4. Ip HY, Abrishami A, Peng PW, Wong J, Chung F. Predictors of postoperative pain and analgesic consumption: a qualitative systematic review. Anesthesiology. 2009; 111(3): 657-77. doi: 10.1097/ALN.0b013e3181aae87a
5. Roofthooft DW, Simons SH, Anand KJ, Tibboel D, van Dijk M. Eight years later, are we still hurting newborn infants? Neonatology. 2014; 105(3): 218-26. doi: 10.1159/000357207

6. Carlson CL. Use of three evidence-based postoperative pain assessment practices by registered nurses. Pain Manag Nurs. 2009; 10(4): 174-87. doi: 10.1016/j.pmn.2008.07.001
7. Cunningham C, McClean W, Kelly F. The assessment and management of pain in people with dementia in care homes. Nurs Older People. 2010; 22(7): 29-35. doi: 10.7748/nop2010.09.22.7.29.c7947
8. Morton NS. The pain-free ward: myth or reality. Paediatr Anaesth. 2012; 22(6): 527-9. doi: 10.1111/j.1460-9592.2012.03881.x
9. Pasero C. Challenges in pain assessment. J Perianesth Nurs. 2009; 24(1): 50-4. doi: 10.1016/j.jopan.2008.10.002
10. Srouji R, Ratnapalan S, Schneeweiss S. Pain in children: assessment and nonpharmacological management. Int J Pediatr. 2010; 2010. doi: 10.1155/2010/474838
11. Ball JW, Bindler RC, Cowen KJ. Child health nursing. 3th ed. New Jersey: Pearson Prentice Hall; 2013.
12. Brunner LS, Smeltzer SC, Bare BG, Hinkle JL, Cheever KH. Textbook of medical-surgical nursing. 12th ed. New York: Lippincott Williams & Wilkins; 2009.
13. Francis L, Fitzpatrick JJ. Postoperative pain: nurses' knowledge and patients' experiences. Pain Manag Nurs. 2013; 14(4): 351-7. doi: 10.1016/j.pmn.2012.05.002
14. Marmo L, Fowler S. Pain assessment tool in the critically ill post-open heart surgery patient population. Pain Manag Nurs. 2010; 11(3): 134-40. doi: 10.1016/j.pmn.2009.05.007
15. Wood S. Postoperative pain 1: understanding the factors affecting patients' experiences of pain. Nurs Times. 2010; 106(45): 10-3.
16. Chou R, Gordon DB, de Leon-Casasola OA, Rosenberg JM, Bickler S, Brennan T, et al. Management of postoperative pain: a clinical practice guideline from the American pain society, the American society of regional anesthesia and pain medicine, and the American society of anesthesiologists' committee on regional anesthesia, executive committee, and administrative council. J Pain. 2016; 17(2): 131-57. doi: 10.1016/j.jpain.2015.12.008
17. Royal College of Nursing. Clinical practice guidelines: the recognition and assessment of acute pain in children. London: Royal College of Nursing; 2009.
18. Stapelkamp C, Carter B, Gordon J, Watts C. Assessment of acute pain in children: development of evidence-based guidelines. Int J Evid Based Healthc. 2011; 9(1): 39-50. doi: 10.1111/j.1744-1609.2010.00199.x
19. Nimbalkar AS, Dongara AR, Phatak AG, Nimbalkar SM. Knowledge and attitudes regarding neonatal pain among nursing staff of pediatric department: an Indian experience. Pain Manag Nurs. 2014; 15(1): 69-75. doi: 10.1016/j.pmn.2012.06.005
20. Lawson SL, Hogg MM, Moore CG, Anderson WE, Osipoff PS, Runyon MS, et al. Pediatric pain assessment in the emergency department: patient and caregiver agreement using the Wong-Baker FACES and the faces pain scale-revised. Pediatr Emerg Care. 2019. doi: 10.1097/pec.0000000000001837
21. Pancekauskaitė G, Jankauskaitė L. Paediatric pain medicine: pain differences, recognition and coping acute procedural pain in paediatric emergency room. Medicina (Kaunas). 2018; 54(6). doi: 10.3390/medicina54060094
22. Avila-Alvarez A, Carbajal R, Courtois E, Pertega-Diaz S, Anand KJ, Muñiz-Garcia J. Clinical assessment of pain in Spanish neonatal intensive care units. An Pediatr (Barc). 2016; 85(4): 181-8. doi: 10.1016/j.anpedi.2015.09.019
23. Abdel Razeq NM, Akuma AO, Jordan S. Status of neonatal pain assessment and management in Jordan. Pain Manag Nurs. 2016; 17(4): 239-48. doi: 10.1016/j.pmn.2016.02.050
24. Boyle EM, Bradshaw J, Blake KI. Persistent pain in neonates: challenges in assessment without the aid of a clinical tool. Acta Paediatr. 2018; 107(1): 63-7. doi: 10.1111/apa.14081
25. Aziza A. Evaluating nursing pain assessment documentation with the pediatric client [thesis]. Minneapolis, Minnesota: Walden University; 2018.
26. Cahyani SL, Yaputra F, Widyadharma IPE. The nurse' role in pain assessment and management of pediatric patient: a literature review. Int J Med Rev Case Rep. 2019; 3(3): 104-8. doi: 10.5455/IJMRCR.role-nurse-pain-pediatric
27. Lifland BE, Mangione-Smith R, Palermo TM, Rabbitts JA. Agreement between parent proxy report and child self-report of pain intensity and health-related quality of life after surgery. Acad Pediatr. 2018; 18(4): 376-83. doi: 10.1016/j.acap.2017.12.001
28. Jensen B. Post-operative pain and pain management in children after dental extractions under general anaesthesia. Eur Arch Paediatr Dent. 2012; 13(3): 119-25. doi: 10.1007/bf03262857
29. Kankkunen P, Vehviläinen-Julkunen K, Pietilä A, Korhonen A, Nyyssönen S, Lehikoinen NM, et al. Promoting parents' use of non-pharmacological methods and assessment of children's postoperative pain at home. Int J Caring Sci. 2009; 2(1): 11-21.
30. Rony RY, Fortier MA, Chorney JM, Perret D, Kain ZN. Parental postoperative pain management: attitudes, assessment, and management. Pediatrics. 2010; 125(6): e1372-8. doi: 10.1542/peds.2009-2632
31. Polit DF, Beck CT. Essentials of nursing research: appraising evidence for nursing practice. 7th ed. Philadelphia: Lippincott Williams & Wilkins; 2017.
32. Morse JM, Field PA. Nursing research: the application of qualitative approaches. 2nd ed. London: Chapman Hall; 1998.
33. Chan ZCY, Fung Y, Chien W. Bracketing in phenomenology: only undertaken in the data collection and analysis process. Qual Rep. 2013; 18(30): 1-9.
34. Creswell JW. Research design: qualitative, quantitative and mixed methods approaches. 4th ed. Los Angelos: Sage Publications; 2009.
35. Colaizzi PF. Psychological research as the phenomenologists views it. In: Valle RS, King M, May R, eds. Existential-phenomenological alternatives for psychology. New York: Oxford University Press; 1978.
36. LaFond CM, Van Hulle Vincent C, Corte C, Hershberger PE, Johnson A, Park CG, et al. PICU nurses' pain assessments and intervention choices for virtual human and written vignettes. J Pediatr Nurs. 2015; 30(4): 580-90. doi: 10.1016/j.pedn.2015.01.022
37. Kliegman RM, Stanton BF, Schor NF, St Geme JW, Behrman RE. Nelson textbook of pediatrics. 19th ed. Philadelphia: Elsevier Saunders; 2011.
38. McKinney E, James S, Murray SS, Nelson K, Ashwill J. Maternal-child nursing. 5th ed. St Louis: Saunders; 2017.
39. McNair C, Ballantyne M, Dionne K, Stephens D, Stevens B. Postoperative pain assessment in the neonatal intensive

care unit. Arch Dis Child Fetal Neonatal Ed. 2004; 89(6): F537-41. doi: 10.1136/adc.2003.032961
40. Silva MS, Pinto MA, Xavier Gomes LM, de Andrade Barbosa TL. Pain in hospitalized children: nursing team perception. Rev Dor. 2011; 12(4): 314-20. doi: 10.1590/s1806-00132011000400006
41. James S, Nelson K, Ashwill J. Nursing care of children: principles and practice. 4th ed. St Louis: Elsevier; 2013.
42. Usman DS, Obajemihin JO, Adebite CO, Bray MF, Wilson KJW, Ross JS. Ross and Wilson foundations of nursing and first aid. 6th ed. Edinburgh: Pearson Education Limited; 2003.
43. Subramaniam SD, Doss B, Chanderasekar LD, Madhavan A, Rosary AM. Scope of physiological and behavioural pain assessment techniques in children - a review. Healthc Technol Lett. 2018; 5(4): 124-9. doi: 10.1049/htl.2017.0108
44. Kontkanen I, Kariniemi T. Postoperative pain assessment in pediatric patients. Finland: Helsinki Metropolia University of Applied Sciences; 2008.
45. Mediani HS, Nurhidayah I, Mardhiyah A, Hendrawati S. Nurses journey of postoperative pediatric pain care: a qualitative study using participation observation in Indonesia. Glob J Health Sci. 2019; 11 (4): 93-103. doi: 10.5539/gjhs.v11n4p93