

Knowledge, attitude and performance of the nurses working in neonatal wards about treatment of pain in neonates

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ABSTRACT

Since the knowledge, attitude and performance of nurses about pain can make a significant contribution to manage and reduce the pain of patients, this study aimed to determine the knowledge, attitude and practice of nurses about pain of children. In this cross sectional study (2014) of all nurses of pediatric, infant and neonatal intensive units in northern region of Khuzestan Province in Iran, with a six-part questionnaire related to pain in children (including demographic characteristics, knowledge, attitude and practice), were evaluated and results were analyzed using descriptive statistics and logistic regression by SPSS software. among the 76 collected questionnaires, average work experience was 9.93 Year and average general knowledge of nurses about pain was 71.71 %, past training has been an important factor in increasing the level of this knowledge ($p=0.04$). Nurses' attitude about painful procedures showed lumbar puncture causes the highest level of pain in children. Nurses also knew distraction as the best way to reduce pain feeling during blood sampling and defined observing the child's face as the best method for pain assessment and knew distraction and the massage as best non-pharmacologic method to reduce pain. Perceptions, attitudes and individual behavior exist in the context of the understanding, treatment and assessing of pain in children and babies which by totaling the results of these studies and then re- test reliability and validity, can be included in educational books.

Key words: attitudes, knowledge, opinions, nurses, children, pain.

1. INTRODUCTION

Pain is an unpleasant sensory and emotional experience which appears as a result of an actual or potential tissue damage and controlling it is an important component of care that Pain Association of America has publicized the term << the fifth vital sign >> to emphasize its importance and raise awareness of the health team prevalence of pain about control (Brunner, 2010). Everyone usually has experienced some degree of pain in their lives, so that the most common reason that people go to treatment centers is pain and 12 percent of drug prescription is for pain control, however, there is different cognition about the concept of pain (Potter, 2016, NCFH S, 1988). Improved understanding of the pathophysiology of pain in children has led to major changes in management strategies over the past years, especially in intensive care units. However, these improvements vary widely across institutions, countries and cultures. Though pain management strategies are mostly determined by the worker who caring for sick children, nurses play a vital supportive role. In most ward of hospital settings, nurses are the early medical worker approached by admitted patients requiring assistance. Also, many (unpleasant and painful) procedures in all of critical care units (like as NICU) are routinely performed by nursing staff. In developed countries, training programs have been shown to improve the response of nurses to pain in children (Özyazıcıoğlu and Arıkan, 2008). On the other hand, limited data from some developing countries suggests that nurses lack training in pain management (Rieman, 2007, Rampanjato, 2007, Queiroz, 2007, Bösenberg, 2007, Mathew, 2011) for a variety of reasons. In the absence of formal training in pain management, the knowledge, sensitivity and attitudes of individual nurses towards pediatric pain become even more important, as they can directly affect the management of critically sick children (Vincent, 2007, Rieman, 2007). At present, there is hardly any information available on this issue. Therefore, this study was carried out to determine the knowledge, attitude and practice of nursing personnel looking after critically ill children in Iran.

2. MATERIAL AND METHODS

This study after obtaining permission from the Council of Medical Research of Dezful Medical Science University and Ethics Committee license number DURs101, in cross- sectional from and based on questionnaire, in 2014, was conducted for the first time in Iran. The research population was all nurses in four educational hospitals associated with University of Medical Sciences of Khuzestan Province. In this study due to the small number of available samples, the questionnaire was designed in census form by 80 nurses in all 4 teaching hospitals affiliated with the University of Medical Sciences of Ahvaz and Dezful which had criteria required for inclusion in the research. (It should be noted that inclusion in this research required at least one year of work experience in nursing and 6 months of work experience in the neonatal unit). It should be noted that 76 nurses who were eligible for inclusion were willing to participate in this project, filled the questionnaire. To determine the validity the content validity index and superficial validity were used, in this way that after preparing questions, by 6 members of the academic staff and specialists, were investigated and corrective feedback was applied. Data by 6 -part questionnaire

were collected which based on the hospital's facilities and equipment in Iran and after assessing the study of Matthew 2011 and other research in this field and librarian studies, were compiled.

The first part of questionnaire included demographic information with 4 questions (age, experience, gender, and years of education). The second part was related to awareness that in order to assess the scope of awareness about pain perception in infants was designed and included 4 yes/no questions.

The third part was the attitude of nurses about processes which cause pain in children. To explore this area, a general question about the attitude of nurses about the presence or absence of pain in clinical intervention that were performed on children was asked, to check this item, 17 items of the procedures were done in the Pediatrics unit, were questioned and the answer has to be yes or no, that if attitude of nurses reflected a painful procedure, pain intensity based on a numerical pain scale from 0 to 10 were recorded.

The fourth and fifth part of the questionnaire was related to nurses' performance considering personal experiences in order to reduce the pain perception in children and pain assessment in Pediatrics units and by two general questions was examined as in the fourth part of the questionnaire, a question with 6 items was related to their attitudes towards the best option empirical and subjective methods to reduce the perception of pain in children during the procedure and the fifth part of the questionnaire also included a 5-item questions about the best way to assess pain in children and infants, from the perspective of nurses. Finally, Part VI was also a –item question which investigated the best non-drug measures to reduce pain in children and infants, from the perspective of nurses.

To determine the outer stability and reliability of the questionnaire, the Retest test method (among 20 nurses) was used that the Pearson correlation coefficient between total scores on the questionnaire for the first and second times was 0.8 and then to evaluate the reliability and internal consistency of the questionnaire, Cronbach's alpha was applied that the reliability of knowledge questions was 88 % and the reliability of attitude questions was estimated 83 %. After assessing the reliability and validity of the questionnaire, mentioned tools by the researchers were divided between study subjects and as a face to face interviews were completed by researchers and nurses.

The data after collecting step, using SPSS software version 11 and by significant level of 0.05 in two ranges and using descriptive statistical methods, the central orientation and destitutions such as frequency, average, linear and logistic regression were analyzed.

3. RESULTS AND DISCUSSION

Based on the results, all 76 nurses participated in this study were female and were in the range of 23 to 48 years old, the average work experience of the subjects in nursing profession in the range of 1 to 28 years was obtained 7.5 ± 9.39 years, and the average work experience of nurses in the neonatal intensive care unit was 4.94 and SD was $5/1 \pm 47.37$ % of research samples trained in the field of intensive care units and 47.37 % of nurses were trained in the field of children nursing and intensive care the children.

In the area of the knowledge of pain and pain perception, the highest knowledge (82.5 %) was related to nurses in NICU and the lowest Knowledge (56.25 %) was related to neonatal unit nurses. Average overall knowledge of nurses in three sections was 71.71 % and the best knowledge (100) was in response to this question that whether children under a year old, understand the pain or no? The weakest response (36.84 %) also is related to the question that was asked: do infants forget pain sooner than adults? (Table 1). The results showed that previous training has been an important factor in increasing the level of knowledge ($p = 0.04$).

Table.1.Nurses' knowledge about the pain of infants, separated on the base of questions and sections

Question	Pediatric unit		Infant unit		neonatal intensive unit		total	
	frequency percentage		frequency percentage		frequency percentage		frequency percentage	
	Yes	No	Yes	No	Yes	No	Yes	No
Do you think infants (age<one year) perceive pain?	100%	0	100%	0	100%	0	100%	0
Do preterm infants perceive pain?	85%	15%	100%	0	100%	0	92%	8%
Is infant's perception of pain less than that of adults?	40%	60%	12.5%	87.5%	50%	50%	36.8%	63.2%
Do infants forget pain faster than adults?	65%	35%	12.5%	87.5%	80%	20%	57.9%	42.1%

In the study of attitude of nurses to pain in children, nurses knew the pain caused by lumbar puncture for spinal fluid as the most painful action (88.6 %) and the lowest frequency of pain (7.36 %) is also related to application of spirit swab (Table 2).

Table.2. The scores of nurses' attitudes to painful procedures leading to pain in children according to the procedures and sections

Procedures	Pediatric unit	Infant unit	Neonatal intensive unit	Total
	Total scores and frequency percentage	Total scores and frequency percentage	Total scores frequency percentage	Total scores and frequency percentage
Endotracheal intubation	334 (83.5%)	62 (38.7%)	134 (67%)	530 (69.73%)
Endotracheal suctioning	320 (80%)	96 (61.2%)	106 (53%)	524 (68.94%)
Application of sticking tapes	56 (14%)	38 (23.75%)	34 (17%)	128 (16.84%)
Removal of sticking tapes	218 (54.5%)	82 (51.2%)	128 (64%)	428 (56.31%)
Insertion/removal of infant feeding tube	222 (55.5%)	78 (48.7%)	122 (61%)	422 (55.52%)
Urinary bladder catheterization	290 (72.5%)	78 (48.7%)	100 (50%)	468 (61.57%)
Cystoscopy	244 (61%)	48 (30%)	82 (41%)	374 (49.21%)
Lumbar puncture	346 (86.5)	140 (87.5%)	188 (94%)	674 (88.68%)
Squeezing of muscles during blood sampling	224 (56%)	64 (40%)	112 (56%)	400 (52.63%)
Blood sampling	268 (67%)	118 (73.7%)	158 (79%)	544 (71.57%)
Chest physiotherapy	96 (24%)	22 (13.7%)	34 (17%)	152 (20%)
Foreign body nose/ear removal	204 (51%)	58 (36.2%)	98 (49%)	360 (47.36%)
Application of spirit swab	40 (10%)	4 (2.5%)	12 (6%)	56 (7.36%)
Insertion of chest tube	288 (72%)	98 (61.2%)	166 (83%)	552 (72.63%)
Convulsions	122 (30.5%)	14 (8.75%)	32 (16%)	168 (22.10%)
Pneumothorax	256 (64%)	80 (50%)	104 (52%)	440 (58.42%)
Perforation of intestine	316 (79%)	100 (62.5%)	118 (59%)	534 (70.26%)

In reviewing the performance of the three sections (comments and nurses performance about the best way to reduce pain during venipuncture IV or blood sampling, the best method for assessment of pain and the best Non – medicinal way to reduce pain), in the first part of the Nurses' views and performance about the best way to reduce the perception of pain during venipuncture IV in children and infants or blood sampling, among six cases, respectively distraction (39.47%) and restraint (such as closing the hand) (31/26%) from the perspective of the nurses, can lead to the best practice to reduce pain.

In the second part that was related to nurses' opinions and performance about the best method for assessment of pain, also two methods which the nurses knew better than the other methods, were observing the child's face (57/31%) and asking the child (42/18%), respectively. Also, the least applied way used by nurses was patient assessment method based on physiological measurements like heart rate or blood pressure (89/7%). In the pain assessment method there are some differences between the methods used by the nurses of 3 sections that is difference in the method of asking the patient was significantly higher ($p \leq 0.05$) which the use of this method is approximately 2 to 3 times greater than the neonatal and pediatric intensive units. In the third and final parts of performance in the comments and nurses' practices about the best non-medical way to reduce pain, distraction (57/31%) was selected as the best and most widely used approach by nurses (Table 3).

Discussion: Nurses play a vital role in the assessing and relieving pain of patients. They are the main regulators of patients suffering and in fact, a link between doctor and patient. In a considerable number of studies in different countries, one of the main obstacles to investigate and pain relief is the lack of knowledge or insufficient knowledge of nurses and even doctors about the assessment of pain and its relief in different ages as well as having a negative attitude in relation to the experience of pain expressed by the patients (Elcigil, 2011, Igier, 2007, McCaffery, 2000, Ware, 2011, Vincent, 2007).

This study was the first study in Iran about investing knowledge, attitude and practice of nurses about pain of children and infants and then evaluates and extends the assumptions of Mathew 2011 associated with pain perception and pain in children and infants. In this study, the results suggested that nurses' knowledge about pain perception in infants was in moderate to high levels and in this field was similar to the study of Mathew et al. in 2011 in India (Mathew, 2011). And against the result of research that Alavi et al. in Iran and Shahrekord in 2006 and Ozer et al. in 2006 in Turkey and Simons et al. in 2002 in London had done (Alavi, 2008, Simons and Roberson, 2002, Ozer, 2006). In this study, about half of the samples, formally passed particular infants and children courses that it can be concluded that the scientific development of nurses in the last decade have improved and among the

reasons are the establishment of neonatal intensive care nursing courses in MA level in Iran and using special infants nurses in related sectors.

In another study conducted by Young and colleagues in 2008 in Jamaica, only 27% of the medical team believed that premature babies can understand pain (Young, 2008) and it is interesting that in Iran in 2005 results were close to these results but in this study 100 % of nurses believed that premature infants are able to perceive pain. This difference in the level of awareness in the current research can be caused by paying more attention in this field in recent years. In a study by Mathew et al. a list of interventions based on the attitude and behavior of nurses about pain and pain perception in infants and children was prepared that had many similarities with the results of the present study as in both studies, the least painful procedure creating pain, in the perspective of children's nurses, was the procedure of application of spirit swab.

The three parts of performance also the questions about the best way to venipuncture IV or blood sampling, assessment of pain and the best non-medical way to reduce pain, the ways that were often chosen by nurses were consistent with the results of other studies, in the section of the best method for assessment of pain, nurses in addition, methods such as observation of the patient's face and asking the child that significantly used by nurses, they used the methods of asking parents as well which was similar to Wong's idea and opinion who states parents are the primary source of information about pain and have a fundamental role in the study of children pain (Hockenberry and Wilson, 2014).

In the last part that was related to interventions for reducing pain, in the research of Parvizi and colleagues in Saveh City in Iran conducted, nurses selected distraction method as best non-pharmacologic method to reduce pain that in this aspect, was similar to nonmedical act to reduce pain in this research (Parvizi, 2008). Moreover, in the present study and research of Mathew et al. three procedures of massage, touch and reassurance and providing company in the aspect of applying non-pharmacologic method to reduce pain in children were among procedures who are more used by nurses.

Table.3. Performance of nurses for pain relief in children according to the questions and sections

Question	Pediatric unit	Infant unit	Neonatal intensive unit	Total
	Frequency and frequency percentage			
For iv cannulation /blood sampling in a child which of the following methods do you practice? Kindly give the order of preference				
restraint	12 (30%)	2 (12.5%)	6 (30%)	20 (26.31%)
distraction	16 (40%)	8 (50%)	6 (30%)	30 (39.47%)
quick in quick out	6 (15%)	4 (25%)	4 (20%)	14 (18.42%)
IMLA application	2 (5%)	2 (12.5%)	0	4 (5.26%)
local anesthetic infiltration	4 (10%)	0	0	4 (5.26%)
sedation	0	0	4 (20%)	4 (5.26%)
total	40 (100%)	16 (100%)	20 (100%)	76 (100%)
What method/methods do you use to assess if the child feels pain?				
asking the parents	10 (25%)	4 (25%)	0	14 (18.42%)
asking the child	12 (30%)	2 (12.5%)	4 (20%)	18 (23.68%)
observing the child's face	8 (20%)	6 (37.5%)	10 (50%)	24 (31.57%)
observing the child's posture and body movements	6 (15%)	4 (25%)	4 (20%)	14 (18.42%)
based on physiological measurements like heart rate or blood pressure	4 (10%)	0	2 (10%)	6 (7.89%)
total	40 (100%)	16 (100%)	20 (100%)	76 (100%)
Which of the following non-pharmacological measures do you practice to reduce pain in children?				
massage	10 (25%)	10 (62.5%)	2 (10%)	22 (28.94%)
heat and cold applications	0	0	2 (10%)	2 (2.63%)
positioning	2 (5%)	0	2 (10%)	4 (5.26%)
rubbing over the painful area	0	0	0	0
hypnosis	2 (5%)	0	0	2 (2.63%)
distraction	20 (50%)	2 (12.5%)	2 (10%)	24 (31.57%)
relaxation and breathing technique	0	0	0	0
touch and reassurance	2 (5%)	4 (25%)	8 (40%)	14 (18.42%)
preparatory information	0	0	0	0
providing company	4 (10%)	0	4 (20%)	8 (10.52%)
Total	40 (100%)	10 (62.5%)	20 (100%)	76 (100%)

4. CONCLUSION

Although by the results of this study, the reliability and validity of previous studies seem to be more verifiable, but in general it can be said the nurses' awareness of infants, children and neonatal intensive units in Iran, in relation to control or reduce the pain has been progressive in recent years and although there are still small shortcomings such that it can be noted that 50% of nurses who have not passed formal courses of neonatal intensive care yet and their decisions can be personal and unscientific.

On the other hand, the lack of clear and written sources about pain levels for each procedure in scientific literature; or the lack of recognition of the most painful procedures and best practices to improve them in textbook, can be used to minimize the weaknesses by applying applications and solutions, such as investigating validity and reliability of check lists obtained from the comments and attitudes of nurses about the pain in this study and other similar studies, conducting professional training courses or retraining courses about infants and children nursing and also applying the results of these studies in educational references, not only it is possible to improve the ability of nurses to the assessment and control of pain in children and infants, but also be a great help in relieving pain and suffering.

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REFERENCES

- Alavi A, Namnabati M, Abdeyzadeh Z, Parvin N, Akbari N, Samipoor V and et al, Pediatric pain management by nurses in educational hospitals of Shahrekord, J Shahrekord Univ Med Sci, 10 (2), 2006, 59-65.
- Bosenberg AT, Pediatric anesthesia in developing countries. *Current Opin Anaesthesiol*, 20, 2007, 204-10.
- Elcigil A, Maltepe H, Mutafoglu K, Nurses' perceived barriers to assessment and management of pain in a university hospital, *J Pediatr Hematol Oncol*, 33, 2011, 33-38.
- Hockenberry M, WILSON D, Wong's nursing care of infants and children, Elsevier Health Sciences 2014.
- Igier V, Mullet E, Sorum PC, How nursing personnel judge patients' pain, *Eur J Pain*, 11, 2007, 542-550.
- Mathew P J, Mathew J L, Singhi S. Knowledge, attitude and practice of pediatric critical care nurses towards pain: Survey in a developing country setting, *J Postgrad Med*, 57, 2011, 196-200.
- McCaffery M, Rolling Ferrell B, Pasero C, Nurses' personal opinions about patients' pain and their effect on Recorded assessments and titration of opioid doses, *Pain Manag Nurs*, 1, 2000, 79-87.
- NCFH S, National Ambulatory Medical Case survey, In: Washington, DC, Dept of Health and Human services, 1988.
- Ozer S, Akyurek B, Basbakkal Z, Investigation of nurses' pain related knowledge, attitude and clinical decision, *Agri*, 18(4), 2006, 36-43.
- Ozyazicioglu N, Arikan D, The effect of nurse training on the improvement of intravenous applications. *Nurse Educ Today*, 28, 2008, 179-85.
- Parvisi F, Alhani F, Agebati N, The nurses' problems in applying non pharmacological pain management for children, *Iranian Journal of Nursing Research*, 3(9), 2008, 85- 92.
- Potter PA, Perry P, Fundamentals of Nursing, 9 ed, Elsevier Science Health Science Division, 2013.
- Queiroz FC, Nascimento LC, Leite AM, Floria-Santos M, de Lima RA, Scochi CG, Managing postoperative pain in pediatric nursing: Searching for subsidies to improve nursing care, *Rev Bras Enferm*, 60, 2007, 87-91.
- Rampanjato RM, Florence M, Patrick NC, Finucane BT, Factor's influencing pain management by nurses in emergency departments in Central Africa, *Emerg Med J*, 24, 2007, 475-6.
- Reiman MT, Gordon M, Marvin JM, Pediatric nurses' knowledge and attitudes regarding pain: A competency tool modification, *Pediatr Nurs*, 33, 2007, 303-6.

Simons J, Roberson E, Poor communication and knowledge deficits: obstacles to effective management of pain, *J Adv Nurs*, 40(1), 2002, 78-86.

Smelzer SC, Bar BG, Hinkle JL, Cheever KH. Brunner and suddarth,s Textbook of Medical Surgical Nursing. 12th ed. Philadelphia. Lippincott Williams Press, 2010, 259.

Van Hulle Vincent C, Nurses' perceptions of childrens' pain: A pilot study of cognitive representations. *J Pain Symptom Manage*, 33, 2007, 290-301.

Van Niekerk LM, Martin F, The impact of the nurse-physician relationship on barriers encountered by nurses during pain management, *Pain Manag Nurs*, 4(3), 2003, 10.

Ware LJ, Bruckenthal P, Davis GC, O'conner-Von SK, Factors that influence patient advocacy by pain management nurses: results of the American society for pain management nursing survey, *Pain Manag Nurs*, 12, 2011, 25-32.

Young J, Barton M, Richards-Dawson MA, Trotman H, Knowledge, perception and practices of healthcare professionals at tertiary level, *West Indian Med J*, 57(1), 2008, 28-32.