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Website: www.jehp.net
DOI: 10.4103/jehp.jehp_139_15

Four components of pain management in Iranian neonatal Intensive Care Units: The nurses' and physicians' viewpoint

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Received: 10-01-2016
Accepted: 13-06-2017

Abstract:

BACKGROUND: As an important right and a treatment priority, pain management and alleviation can prevent harmful consequences and severe effects to the infant. The aim of this study was to determine the nurses and physicians' viewpoints about assessment, intervention, and evaluation of pain in the infants in the neonatal Intensive Care Units (NICUs).

METHODS: The cross-sectional study was performed in census method in the NICUs of educational hospitals with participation of 157 staff in 2015 in Iran. Data collection tool was a questionnaire that was designed to assess the four components of pain management namely assessment, pharmacological intervention, nonpharmacological intervention, and evaluation. The collected data were analyzed in a descriptive and inferential statistics by means of the SPSS software, version 16.

RESULTS: The findings of study indicated the total average scores of pain management from nurses and physicians' viewpoint 66.7 and 65.5, respectively that were at the moderate level. The average score of nonpharmacological interventions from nurses' viewpoint (69.4) was meaningfully higher than that of the physicians'. A significant relationship was noticed between the respondents' viewpoint on the nonpharmacological interventions and their NICU background ($r = 0.18$, $P = 0.03$). A meaningful relation was found between participation in continuing education and scores of pain management.

CONCLUSIONS: The results of this study showed that the nurses and physicians' viewpoint about pain management was at a moderate level. The effect of work experience and continuing education on pain management is proved in the study. Researchers suggest that both experienced staff employment and education continuation must be incorporated in pain management in NICUs.

Keywords:

Infant, Iran, neonatal Intensive Care Unit, pain management, viewpoint

Introduction

The infants are the vulnerable group who would be more sensitive when hospitalized in the neonatal Intensive Care Unit (NICU). Painful experiences will potentially result in the harmful effects and consequences. Therefore, pain prevention and treatment should be the ultimate goal of every health care member.^[1,2] Contrary to the old belief, today, it is indicated that

the nervous system is even more sensitive in premature infants who can feel the pain more than term infants or children.^[2-4]

Every infant is exposed to many daily care and treatment procedures that according to a study account up to 115 painful ones in a 16 days hospitalization.^[5] Another study showed the heel-stick as the most painful procedure that comprises 56% of the whole procedures.^[6] Physiologic responses to painful stimuli have been well

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How to cite this article: Mohamadmini Z, Namnabati M, Marofi M, Barekatein B. Four components of pain management in Iranian neonatal Intensive Care Units: The nurses' and physicians' viewpoint. *J Edu Health Promot* 2017;6:64.

documented among neonates of various gestational ages and are reflected in hormonal, metabolic, and cardio-respiratory changes similarly. Other responses are integrated emotional and behavioral responses to pain, and are retained in the memory long enough to modify subsequent behavioral patterns.^[7,8]

The infant pain management is very important due to ethical and medical considerations as well as the effects it can impose on the infant's health in future.^[9-12] Pain management depends on the nurse and physician's viewpoints and performances such as assessment, use of pharmacological and nonpharmacological interventions, and evaluation of the pain.^[13] Interaction with physician is one of the functions of the nurse during pain management. She/he may give opioid drug, provided it is prescribed in the medical file. Opioid drugs are used in pro re nata (PRN) order only in acute pain condition.^[14] The studies have shown that the main postoperation problem is that neither the physician deems to prescribe nor the nurse prefers to give such drugs. Prescription of opioid drugs is the physician's responsibility, whereas the nurse is responsible for assessment, evaluation, and administration of the pain.^[15-17]

The viewpoint of a health professional, the first in direct contact with a hospitalized infant, on pain management may highly affect the quality of the care in the NICU. Therefore, the aim of this study was to determine nurse and physician's viewpoint on the four components of pain management) assessment, pharmacological and nonpharmacological intervention, and evaluation) in NICUs of educational hospitals in Iran.

Methods

This is a cross sectional study with participation of 157 staff (126 nurses and 31 physicians) of the NICUs in three educational hospitals in Isfahan, Iran. To consider ethical aspects, the researcher started the study at hospitals when the permissions were received from the authorities and Ethical Committee of Isfahan University of Medical Sciences.

The researcher informed the qualified nurses and physicians that the information they render would be kept confidential, and that they are free to quit the study anytime they wish. The respondents were the personnel of the unit with a minimum 6 months work experience. The nurses were graduated with bachelor or masters' degrees, and the physicians were pediatric residents, fellows, and specialists.

The researchers designed a multiple choices questioner in two parts to collect the required data. The first

part was about the respondents' demographic data such as age, gender, number of kids, graduation, NICU work experience, whether ever participated in pain management workshops; and if his/her own child had ever pain. The second part included 36 questions distributed over the four components of pain management. The questions were rated from at least 1 point to maximum 5 points. For completely agreed 1 point, for agreed 2 points, for no idea 3 points, for disagreed 4 points, and for completely disagreed 5 points were considered. The total score was considered 100 and rated as poor (0–33 points), moderate (34–67 points), and good (68–100 points).

The questioner was developed based on scientific sources. Its validity was approved by ten university professors or the personnel of Isfahan University of Medical Sciences. Reliability of the questioner was approved with a Cronbach alpha coefficient 0.855.

Results

Pain management was analyzed in this study over the four components of the pain management from the respondents' viewpoints. The findings indicated that the total average score of both nurses and physicians' viewpoints (65.5 and 66.7 respectively) was at a moderate level with this outstanding point that the maximum average score was in pain evaluation component (nurses – 78.1 and physicians – 76.6). The minimum average score of pharmacological interventions (nurses 54.5 and physicians 54.4) was more outstanding. Table 1 indicates the demographic data of the respondents. Analysis on the respondents' point of view revealed that nurses' average score on nonpharmacological intervention (69.4) was meaningfully more than that of the physicians' (64.1) [Table 2].

Pain management components were compared with some demographic variables and a significant relationship was noticed between respondents' work experience and their points of view ($P = 0.03$, $r = 0.18$), but, interestingly, there was no significant relationship between work experience and other components. Moreover, a meaningful relation was found between participation in the pain management course and the score of pain management and its all components excluding pharmacological interventions from respondents' points of view. Taking the respondents' children pain background into the picture, we indicated by the independent *t*-test that pain average score was meaningfully higher in nonpharmacological intervention component among those whose children had a pain background ($P = 0.01$), but no meaningful relationship was noticed in other components among all respondents.

Table 1: Statistical indicators demographic characteristics of nurses and physicians

Variable	Frequency (%)	
	Nurses	Physicians
Service location		
The neonatal surgery	8.9	3.2
NICU	84.7	96.8
Both	6.5	0
Sex		
Female	100	70.9
Male	0	29.1
Educational status		
Expert	93.7	-
Master degree	6.3	-
Resident	-	67.7
Fellow	-	25.5
Specialists	-	6.5
Participating in continuing education (pain management)		
Yes	32.2	19.4
No	67.8	80.6

NICU = Neonatal Intensive Care Unit

Table 2: The average score of components in pain management by nurse and physician

Components	Staff, mean (SD)		t-test	
	Nurse	Physicians	P	t
Assessment	70.8 (10.8)	71.6 (10.3)	0.23	0.37
Pharmacological intervention	54.5 (8.9)	54.4 (6.9)	0.95	0.06
Nonpharmacological intervention	69.4 (12.6)	64.1 (8.5)	0.03	2.26
Evaluation	78.1 (12.7)	76.6 (9.4)	0.52	0.64
Total scores	66.7 (7.8)	65.5 (5.4)	0.41	0.83

SD = Standard deviation

Discussion

The study was carried out to analyze the four components of pain management from viewpoints of the NICU nurses and physicians in Isfahan-Iran. The findings indicated that the average total score of pain management is at a moderate level. Similarly, Alavi *et al.* indicated that nurses' performance on the infant pain management was at moderate level.^[18] Noghabi *et al.*, on the other hand, assessed NICU nurses in Bandar Abbas and indicated that the average score of their viewpoints was at an acceptable level.^[19]

Regarding assessment and evaluation components, the noticeable point was the maximum average score of respondents' viewpoint. The majority of respondents were positive about assessment and evaluation of pain in infant. The American Society for Pain has recently considered the pain assessment as the fifth vital sign. The assessment and evaluation of pain are main stages of nursing and should be documented into the vital sign chart so that suitable intervention can be taken when necessary.^[20-22] Similarly, Enskär *et al.* indicated that the

majority of Swedish nurses are positive about infant pain assessment. In contrast, the results of a research in Turkey and India labeled majority of nurses and physicians as negative about this component.^[23-26] Akuma and Jordan have shown in their study that less than half of the infants were assessed for pain, and raised some issues such as the lack of knowledge, negative attitude against change in routines, and lack of confidence in the use of evaluation tool as barriers to the infant pain management.^[27] Similarly, Ozawa and Yokoo discussed, in a separate study, that 65% of the head nurses and 61% of infant specialists have mentioned that not any pain assessment tools were used and not any pain evaluation criterion were reported to their infant units.^[28]

For nonpharmacological intervention component, the average scores of nurses' point of view was meaningfully higher than that of the physicians' in the present study. Nonpharmacological pain alleviation method is a nursing function that makes the nurse positive about pain management. Coherent with this study, a study in an infant hospital in Tabriz (2013) indicated nurses' knowledge, attitude, and performance in nonpharmacological pain management at an acceptable level.^[29] Other studies indicate that either physicians or nurses believe that nonpharmacological agents should be performed more, and in comparison with physicians, nurses are more positive about execution of nonpharmacological interventions and they do so also. The majority of nurses believe that nonpharmacological methods should always be used for all procedures, but half of the physicians prefer these methods to be used with some specific procedures such as suction and lumbar puncture.^[25-27] In contrast, the result of another study proved that the majority of nurses did not use nonpharmacological methods in the infant pain management due to the lack of knowledge.

For pharmacological intervention component, the average score of the physicians' point of view was the same as that of the nurses in the present study. In other studies, it is mentioned that the staff are reluctant to use opioids for infants because they may experience apnea after administration. Although physicians ordered medications as needed or PRN, nurses are reluctant to administer because of the misconceptions.^[4,27] The right timing of administering analgesics depends on the type of the pain. For the acute and continuous pain such as postoperative pain, a scheduled around-the-clock basis is effective. For the pain management, if analgesics are administered as PRN order only when the pain returns, the relief may take several hours and require higher doses of the medication.^[22]

The results of the present study indicated that the score of those who participated in pain management courses

was meaningfully higher in all pain management components than that of the others'. Similarly, a study, performed to assess the effect of continuing education courses on nurses and physicians' knowledge and performance, indicated a meaningful difference in their knowledge, attitude, and performance before and after the trainings and participation in the courses in Tehran, Iran.^[30] The results of other studies proved a meaningful relation between the number of training sessions and infant pain management.^[31,32] In addition, another study showed that the majority of nurses did not use nonpharmacological methods, whereas 82% of them stated the lack of continuing education as a reason.^[33] Therefore, we suggest infant pain management courses to be held and continued for nurses and physicians.

The results of the present study indicated a significant relation between the work experience and nurses and physicians' viewpoints on the nonpharmacological interventions. Karimi *et al.* showed in an assessment of nurses' viewpoints about postoperation use of nonpharmacological methods that there is a meaningful relation between work experience and nurses' knowledge and viewpoints.^[34] Therefore, experienced personnel can have significant effect on pain management.

Respondents' fatigue can be the result of a high workload in the NICU which was a limitation to this study. Therefore, the researcher had the questionnaires filled preferably at the beginning of each working shift by the respondents or any time they could. Moreover, the study could yield a better result with more respondents including mothers as health team members.

Conclusions

The results of the study indicated that the total average score of pain management from nurses and physicians' point of view was in the moderate level. The average score of nurses' viewpoints in nonpharmacological component was meaningfully higher than that of the physicians'. Interestingly, it was noted that a meaningful relation exists between participation in continuing education and the score of pain management from nurses and physicians' viewpoints. Concerning the obtained average results, the role of training in improving attitudes toward the pain management is significant, and better attitudes, knowledge, and performance of health team can be expected with periodical and regular trainings.

Acknowledgment

All honorable personnel of educational hospitals of Isfahan University of Medical Sciences who frankly helped us to gather required information are highly appreciated.

The research project has been financially supported by research bureau of Isfahan University of Medical Sciences. This study is part of a master's thesis that has been approved by the numbers 394154.

Financial support and sponsorship

The research project has been financially supported by research bureau of Isfahan University of Medical Sciences.

Conflicts of interest

There is no conflict of interest.

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