ORIGINAL ARTICLE

Non-pharmacological strategies used to reduce procedural pain in infants by nurses at family health centres

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Abstract

Objective: To determine the methods used by nurses working in family health centres to decrease pain during medical procedures in infants.

Methods: This descriptive, cross-sectional study was conducted at family health centres in the county town of Bandirma, and city centres of Karaman and Gaziantep, Turkey, in September and October 2015, and comprised nurses. Data was collected through face-to-face interviews using a questionnaire. SPSS 15 was used for data analysis.

Results: Of the 144 participants, 71(49.3%) were aged 31-40 years, 74(51.4%) had a bachelor's degree, and 76(52.8%) had worked in a family health centre for 1-5 years. It was observed that 91(63.3%) nurses used contact/massage for decreasing the pain during vaccinations and 72(50.3%) used skin-to-skin contact during heel lance. A statistically significant difference was found between the level of education and use of non-pharmacological methods ($p<0.05$).

Conclusion: Nurses used different non-pharmacologic methods during invasive procedures.

Keywords: Operational pain, Pharmacologic methods, Non-pharmacologic methods, Procedural pain. (JPMA 67: 889; 2017)

Introduction

A complex and unpleasant feeling, pain is a universal experience and is as ancient as human history. According to the International Association for the Study of Pain (IASP), pain can be described as an unpleasant sensual or emotional state or behaviour that can arise in any part of the body subject to current or potential tissue damage, and its character is influenced by personal past experiences.[1]

Pain caused by any trauma, chronic disease or hospitalisation in the post-natal period is one of the most frequent undesired experiences; it is felt by sick and healthy children who are subjected to various medical interventions.[2] Pain affects infants who are too young to express their feelings, and causes a physiologic imbalance and behavioural stress, which develops as a result of pain; this results in an adverse impact on the harmonisation of newborns to the external world, its development and growth, and interaction between family and baby. Moreover, in the following years pain causes children to be frightened of needles and this leads to unwillingness to medical procedures, and even neglected or delayed treatment and care.[3-5]

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Although pain is a significant incident in children's lives, medical procedures that require needles in childhood constitute an essential part of their pain experience.[3,4] Heel lance, venous blood, vaccination, and intra-muscular injection procedures in childhood make up a significant portion of the overall pain experiences.[3,4,6] These experiences are considered in the literature as learned experiences that are recalled in later years.[5,6] Therefore, minimising pain during invasive operations in children is important in terms of their reaction against potential painful interventions in the future, and of accepting health care. Thus, it is necessary to manage medical interventions effectively, which can be a significant source of pain among children.[6]

For that purpose, the American Academy of Paediatrics (AAP) and American Pain Society (APS) suggest minimising and relieving stress and pain during minor operations, such as vascular access.[7] Pharmacologic and non-pharmacologic methods are therefore used during medical procedures to relieve pain.[2,5] However, it is commonly accepted that pharmacologic methods, such as local anaesthetics, in these procedures are costly.[2] In recent years, non-pharmacologic methods have become the preferred methods because they do not require invasion, they are cost-efficient, reliable, have no adverse effects, and are independent tasks that nurses can perform.[8] It has been reported that various non-pharmacologic methods used for children were

significantly effective in managing acute pain in medical procedures.[5] It is widely accepted by health professionals that neonates and children feel pain during medical interventions. In the current literature, it is reported that nurses know of non-pharmacologic methods to minimise pain, especially in children, during medical procedures; however, they are not able to use these methods in routine pain management processes effectively.[9-12] Studies on pain control are usually limited to clinical observations, acute pain diagnosis and treatment. The two-year period following birth in which preventive and remedial health services are intensively provided is vitally important and children are exposed to medical interventions more frequently. If the short- and long-term impacts of experienced and repeated pain after the neonate period are taken into consideration, paediatric nurses and family health service nurses who work at public health centres are required to be efficient in pain management.

The present study was planned to determine methods used by nurses who worked at public health centres and who had a significant role in the minimisation of pain felt by infants aged 0-2 years during medical procedures.

Subjects and Methods

This cross-sectional, descriptive study was conducted in September and October 2015 and comprised nurses at the local family health centres (FHCs) in three different regions of Turkey; namely Bandirma, Karaman and Gaziantep Sehitkamil counties.

Ethical approval for the study was obtained from the Zirve University, Gaziantep. The subjects were informed about the questionnaire and the purpose of the study. Verbal and written consent of all participants was received before the initiation of the study.

Nurses who volunteered for the study, worked at the central county FHCs and agreed to participate in the study were included.

Study data was collected by means of a survey form filled in during face-to-face interviews and developed by researchers according to the available literature.[9,12] The questionnaire consisted of 18 questions regarding the socio-demographic characteristics of the nurses, their experience, previous training status concerning pain control, pain level evaluation knowledge, frequent techniques used by nurses in pain control, and most frequently used non-pharmacologic methods during medical interventions (vaccination, heel lance, intravenous [IV] and intramuscular [IM] applications). In order to evaluate the validity of the questionnaire, a pilot study was conducted on 5 nurses who worked in FHCs. Each survey form required 10 to 15 minutes to complete.

SPSS 15 was used for data analysis. Chi-square test was used to determine statistically significant observations. P<0.05 was considered significant.

Results

Of the 210 nurses, 144(68.6%) were selected for the study.

Table-1: Nurses' use of non-pharmacologic methods during vaccination to relieve pain and influent factors on this decision.

	Use		Do not Use		Total		p; x^2
	n	%	n	%	n	%	
City							
Karaman	43	44.8	14	29.2	57	39.6	0.128
Gaziantep	26	27.1	20	41.7	46	31.9	4.116
Bandirma	27	28.1	14	29.2	41	28.5	
Age (years)							
20-30	22	22.9	13	27.1	35	24.3	0.026
31-40	42	43.8	29	60.4	71	49.3	7.295
41-↑	32	33.3	6	12.5	38	26.4	
Education status							
High School	11	11.5	4	8.3	15	10.4	0.053
Associate	30	31.3	25	52.1	55	38.2	5.889
Bachelor and above	55	57.3	19	39.6	74	51.4	
FHC Work Experience							
Less than 1 year	10	10.4	6	12.5	16	11.1	
1-5 years	41	42.7	35	72.9	76	52.8	0.002
6-10 years	28	29.2	3	6.3	31	21.5	15.393
10 years and more	17	17.7	4	8.3	21	14.6	

$p < 0.05$.
FHC: Family health centre.

Table-2: Nurses' use of non-pharmacologic methods during heel lance procedures to relieve pain and influence factors on this decision.

	Use		Do not Use		Total		p; x^2
	n	%	n	%	n	%	
City							
Karaman	36	42.4	21	35.6	57	39.6	0.716
Gaziantep	26	30.6	20	33.9	46	31.9	0.667
Bandirma	23	27.1	18	30.5	41	28.5	
Age (years)							
20-30	14	16.5	21	35.6	35	24.3	0.013
31-40	43	50.6	28	47.5	71	49.3	8.684
41-↑	28	32.9	10	16.9	38	26.4	
Education Status							
High school	8	9.4	7	11.9	15	10.4	0.016
Associate	25	29.4	30	50.8	55	38.2	8.258
Bachelor and above	52	61.2	22	37.3	74	51.4	
FHC Work Experience							
Less than 1 year	6	7.1	10	16.9	16	11.1	
1-5 years	43	50.6	33	55.9	76	52.8	0.099
6-10 years	23	27.1	8	13.6	31	21.5	6.274
10 years and more	13	15.3	8	13.6	21	14.6	

$p < 0.05$.
FHC: Family health centre.

Table-3: Nurses' use of non-pharmacologic methods during invasive applications to relieve pain and influence factors on this decision.

	Use		Do not Use		Total		p; x^2
	n	%	n	%	n	%	
City							
Karaman	10	18.5	47	52.2	57	39.6	0
Gaziantep	27	50	19	21.1	46	31.9	18.778
Bandirma	17	31.5	24	26.7	41	28.5	
Age (years)							
20-30	20	37	15	16.7	35	24.3	0.02
31-40	21	38.9	50	55.6	71	49.3	7.839
41-↑	13	24.1	25	27.8	38	26.4	
Education Status							
High school	8	14.8	7	7.8	15	10.4	0.398
Associate	19	35.2	36	40	55	38.2	1.842
Bachelor and more	27	50	47	52.2	74	51.4	
FHC Work Experience							
Less than 1 year	11	20.4	5	5.6	16	11.1	0.007
1-5 years	30	55.6	46	51.1	76	52.8	11.985
6-10 years	10	18.5	21	23.3	31	21.5	
10 years and more	3	5.6	18	20	21	14.6	

$p < 0.05$.
FHC: Family health centre.

Of them, 71(49.3%) nurses were aged between 31-40 years, 74(51.4%) had bachelor degrees and 76(52.8%) had 1-5 years of work experience at FHCs.

Besides, 127(88.4%) nurses had not received any training in pain management for procedures that cause certain pain to children. It was determined that 129(89.8%) nurses were knowledgeable about pain control in relieving anxiety, 122(85%) were knowledgeable about lowering fear level among children, 67(46.3%) were knowledgeable about minimising future pain perceptions and reactions against them in connection with the past

pain experiences, 114(78.9%) nurses knew how to avoid making children cry during procedures, and 92(63.9%) knew about reduction of physiologic complications (peak heart rate (PHR), respiration, etc.). Additionally, it was revealed that 127(88.4%) nurses were not aware of and did not use scales for the assessment of pain in children.

It was also determined that 94(65.3%) nurses used non-pharmacologic methods during vaccinations, 91(63.3%) used physical contact/massage techniques, 38(26.5%) used cold compress, and 40(27.9%) used breastfeeding. A statistically significant correlation was determined between use of non-pharmacologic methods and nurses' ages and work experience. The largest difference regarding age variables was determined in nurses aged 31-40 years (Table-1).

With respect to heel lance procedures, 83(57.8%) nurses employed non-pharmacologic methods, 72(50.3%) were knowledgeable about skin contact, 56(38.8%) were aware of massage/vibration, and 55(38.1%) were knowledgeable about positioning, and they actually used them in practice. Moreover, as education levels of nurses increased, their tendency to use non-pharmacologic methods during painful procedures increased accordingly; a significant correlation was determined. A statistically significant correlation was determined between the ages of nurses and their inclination to use non-pharmacologic methods; however, this difference was more remarkable among nurses aged 31-40 years (Table-2).

Furthermore, 53(36.7%) nurses used non-pharmacologic methods during painful invasive procedures. Also, 48(33.3%) nurses used positioning methods during invasive procedures, whereas 45(31.3%) used no particular method (Table-3).

Discussion

Everyone deserves to survive a painless life. Relieving children's pain and developing their life quality are among the essential purposes of nursing care. Therefore, it is important for nurses to control and accurately assess pain symptoms that could affect a child's life quality. Thus, nurses' skills and knowledge levels on relieving pain experienced during medical procedures of children are essential. In the study of Artan,[13] which investigated knowledge levels of nurses who worked at paediatric clinics regarding pain control among children, it was reported that knowledge levels of nurses about pain control was medium level, but was not sufficient; that there were various environmental difficulties with pain control and use non-pharmacologic pain control methods, the independent function of nurses was rather low. Moreover, it was determined that 81.3% of nurses had not received training on pain control for children and 85.8% did not use personal pain assessment scales. Ekim and Ocakci[10] reported that nurses from paediatric clinics were not sufficiently knowledgeable about pain control. There are a limited number of relevant studies in literature regarding pain with clinical observations, description of acute pain, and studies on necessary treatment; nurses have training deficiencies in terms of occurrence of pain among children, assessment and management of pain.[9,10,13] In the present study, it was determined that 88.4% of nurses who worked at FHCs had not been trained on pain control during painful procedures in children; 88.4% of nurses were not aware of pain scales for the assessment of pain levels among children and, accordingly, they did not use these scales. Our findings were in conformity with those in literature.

Medical procedures that expose children to pain, such as vaccination, heel lance, and injections, are among the most prominent fears of children. The relevant research reports that children experience both pain and anxiety during medical procedures.[2,4,5,14] Children frequently face medical procedures in their first two years of life. Therefore, the use of non-pharmacologic methods to reduce pain felt by children during medical procedures has gained importance recently. In the present study, only 24.5% of the nurses used pharmacologic and non-pharmacologic methods combined when children experienced pain.

A significant portion of preventive health services includes vaccination practices. On the basis of suggestions of the Centres for Disease Control and Prevention (CDC), healthy babies are exposed to vaccination operations about 18-24 times in their first two-year period.[15] When one considers that the first pain experience of healthy babies is their vaccinations, the importance of pain control during vaccinations should be recognised, and the use of non-pharmacologic methods are more appropriate.[14] In literature, with regard to relieving pain that occurs during necessary vaccinations designated for children, non-pharmacologic methods such as contact/massage, mother's bosom, breastfeeding, providing sucrose, listening to music,[15,16] pacifier, kangaroo care positioning,[14] distraction techniques are used. In our study, we found that 63.3% and 27.9% of nurses were mostly knowledgeable about physical contact/massage and breastfeeding methods to reduce pain levels during vaccination, and actually use these methods although these were not among regular procedures. There was a statistically significant correlation between the tendency to use non-pharmacologic

methods and ages and work experience of nurses who worked at the FHCs. The difference regarding age was predominantly determined in nurses aged 31-40 years.

Neonates learn pain first through their initial experience. Healthy neonates encounter medical interventions such as heel lance, which causes pain, from the very first moments of their lives.[17-19] Among the frequently used non-pharmacologic methods used during heel lance procedures, the following methods can be enumerated: minimisation of environmental stimulants, individualised developmental care, music therapy, breastfeeding, pacifier, providing sucrose and sweet solutions,[20] massage and physical contact, positioning, nesting, kangaroo care, and providing foetus position and safe-swathe.[5,19,21-23] Efe et al.[9] reported that the most frequently used non-pharmacologic method by nurses who worked at a paediatric service for neonates in the event of pain was taking the neonates on their lap (14.6%). It was determined in our study that 57.8% of nurses used non-pharmacologic methods during heel lance procedures; some 50.3% and 38.8% of nurses were knowledgeable about the importance of skin contact and massage/vibration methods in pain control during heel lance, respectively, and they actually used these methods. Another important finding of the present study was that as education levels of nurses increased, their tendency to use non-pharmacologic methods during procedures increased proportionally; a statistically significant correlation was determined between these two variables. Although there is no specific method of pain relief during heel lance conducted on neonates in Turkey, there are various studies in the relevant literature in which non-pharmacologic methods were tried. When findings of the present study were considered together with the current literature, it was considered that nurses were not sufficiently knowledgeable about non-pharmacologic methods available for use during heel lance procedures in neonates.

In literature, non-pharmacologic methods such as oral sucrose, breastfeeding, taking on lap, positioning, cold compress, swathe and cartoon shows were effective in reducing pain felt by children during invasive interventions.[24,25] Efe et al.[9] found that 62.3% of nurses used non-pharmacologic methods in their study in which they investigated nurses' levels of knowledge about pain control at a paediatric clinic. In our study, we found that nurses did not use pain-relieving non-pharmacologic methods on a regular basis during invasive procedures; only 33.3% of nurses were knowledgeable about positioning methods and actually used these methods.

There are various studies on knowledge and practices of paediatric nurses about non-pharmacologic methods during invasive procedures. However, no study has evaluated non-pharmacologic practices used by nurses who work in preventive health services. Therefore, it is essential to raise awareness of nurses who work in various areas of paediatrics.

Conclusion

The knowledge level of nurses who worked in FHCs regarding pain-relief methods used during medical procedures in infants aged 0-2 years was insufficient. Nurses should be aware of the harmful effects invasive procedures during vaccination, heel lance, etc. And nurses need to be informed about different non-pharmacologic methods that may reduce the impact of procedural pain. In particular, in-service training on these subjects must be supported throughout their professional nursing career.

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