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RESEARCH ARTICLE

Turkish Pediatric Nurses' Use of Non-Pharmacological Methods for Postoperative Pain Relief in 6 to 12 Year Old Children

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Abstract:

Objective:

This descriptive study was conducted for the purpose of describing the Turkish pediatric nurses' use of non-pharmacological methods for relieving 6 to 12-year-old children's postoperative pain.

Method:

This research was conducted with 92 pediatric nurses working at 17 university hospitals located in Turkey. Data were collected using a web based questionnaire and had to be completed electronically.

Results:

It was determined that the majority of the nurses give information about postoperative observation (79.3%), and postoperative pain (76.1%). In addition, it was determined that they have been encouraging children to ask about misconceptions (69.6%).

Conclusion:

Based on these results, the Turkish pediatric surgical nurses used versatile non-pharmacological methods in children's postoperative pain relief.

Keywords: Postoperative pain, Child, Pain management, Non-pharmacological methods, Nursing.

INTRODUCTION

There have been numerous pediatric postoperative pain management studies over the past 20 years, yet children continue to experience avoidable postoperative pain [1 - 3]. Recent studies suggest that postoperative pain in children is often poorly managed [4 - 7]. The reasons for this may include nurses' undermedicating for postoperative pain despite adequate prescription, nurses' inadequate pain assessment and monitoring, and inadequate use of other pain relief methods due to lack of time, knowledge, skills, and organizational support [8 - 11]. Some European investigators reported, that nurses frequently use these methods [12,13] and another study showed, that nurses rarely use these methods to relieve pain [14].

Research focused on nurses' use of non-pharmacological methods for pediatric postoperative pain relief has increased in the recent years. However, research evidence seems to be inconsistent. Non-pharmacological methods in children's pain management can be classified as sensory or physical, cognitive and cognitive-behavioural interventions.

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Sensory interventions are those, that alleviate pain by stimulating sites of the body or those peripheral techniques, that involve stimulation of the skin. Cognitive methods make the child focus on something other than the pain; therefore their use is limited to older children because they require skills in symbolic thinking and verbal communication. Thus, most of the cognitive interventions cannot be used before school age. Cognitive-behavioural interventions involving central pain control are a combination of cognitive and physical activities to alleviate pain. They work by increasing children's physical activity, decreasing anxiety and reducing maladaptive coping [15]. These methods can be used independently for the relief of mild pain or in conjunction with pain medication for the relief of moderate to severe pain [6]. Many of these methods have been used successfully for pain relief with school-aged children, who are able to cooperate and have adequate meta-cognitive maturity. School-aged children are at a concrete operational stage of thinking, they can begin to relate to psychological pain, and they desire to be in control of their situation.

Several studies examined the effectiveness of using one or a combination of two or more non-pharmacological methods for children's pain relief [16 - 18]. The use of cognitive or cognitive-behavioural methods in pediatric pain relief has been reported in detail in many previous studies, including especially distraction [19], imagery [20], and preparatory information [21], whereas the effectiveness of breathing techniques and relaxation [22] in pain relief have attracted less interest. Twycross *et al.* showed, that nurses' assessment and management of children's pain is not consistent with published guidelines [1]. Idvall *et al.* reported, that the non-pharmacological strategies used most frequently to manage children's pain after tonsillectomy were thermal regulation and distraction [23]. However, research shows an inconsistency between nurses' self-reported data and observations of nurses' behavior [24]. Twycross reported that nurses did not, for example, routinely assess a child's pain, or use non-drug methods of pain relief on a regular basis [7]. Wennström *et al.* explored, what it meant for 6- to 9-year-old children to be hospitalized for day surgery, and found, that the main concern for these children was, that they were put into an unknown, unpredictable and distressful situation, which had to be endured [25]. In Turkey, there are several studies related to the knowledge and beliefs of nurses on the nature, assessment and management of pain [26 - 31]. Despite the fact, that a variety of studies in non-pharmacological pediatric pain management have been conducted in many countries, even in Turkey, there is only little knowledge about, how pediatric surgical nurses in Turkey use non-pharmacological methods to relieve pain in 6 to 12 year old pediatric patients.

MATERIAL AND METHOD

Study Aim

The aim of this study is to describe Turkish pediatric surgical nurses' use of non-pharmacological methods for relieving postoperative pain in 6 to 12 year-old children.

Research Design, Setting and Time

To achieve the study aim, a descriptive design was chosen. This research was conducted from seventeen hospitals and samples have been randomly drawn from all hospitals in Turkey between June and September, 2012.

Sample

The research sample was comprised of pediatric nurses, who were working in pediatric surgical wards. All nurses in seventeen surgical wards, that had carried out operations for 6-12 year-old children were selected as participants. The questionnaires were distributed to 200 nurses and 92 were returned.

Data Collection Method

Data were collected using a questionnaire. The questionnaire was web based and had to be filled up electronically. All data from questionnaires were collected by the study investigator via email.

Ethical Issues

All pediatric nurses were informed about the purpose of the study. A cover letter, which described the study briefly, guaranteed anonymity, indicated voluntary participation, and gave the researcher's contact information, was attached to the questionnaires. All data were kept confidential.

The Survey Questionnaire

The survey questionnaire was prepared after a review of the current literature and three expert nurses, who work in the pediatric unit. [9,12,32]. The questionnaire consisted of four close-ended questions about the pediatric surgical nurses' socio-demographic characteristics (*e.g.* age, education) and 14 close-ended questions about nurses' use of non-pharmacological methods in children's pain relief and two open-ended questions about limiting factors in nurses' use of non-pharmacological methods and pediatric nurses' ways of giving information.

Nurses' use of non-pharmacological methods in children's pain and nurses' preparatory information questionnaire were given on a three-point Likert-type scale ranging from "never/very seldom" and "sometimes" and "nearly always/always". The content validity of the questionnaire was verified by three expert nurses in pain management and pediatric nursing, and three expert nurses who work in the pediatric unit. Cronbach's alpha test was used to assess the reliability of the questionnaire. The alpha value for preparatory information (21 sub-items) and the rest of the non-pharmacological methods (14 items) were 0.72 and 0.83, respectively. A pilot study was conducted with 15 pediatric surgical nurses.

Statistical Analyses

Data collected in the research were analyzed on a computer using SPSS for Windows 20.0 packet program and the descriptive statistical methods were used. Cronbach's alpha test was used to assess the reliability of the questionnaire.

RESULTS

Sample Characteristics

In this study, 48.9% of the pediatric nurses were between the ages of 20-31 years, they had bachelor degree 64.1% and a nursing experience between 10 to 20 years (33.7%); (Table 1).

Table 1. Respondent demographics.

Demographic Data	n	%
Age (years)	45	48.9
20-31	44	47.8
32-43	3	3.3
>44		
Education	24	26.1
Associate degree	59	64.1
Bachelor degree	9	9.8
Vocational health high school		
Experience of pediatric surgical nursing (years)	12	13.3
<2	20	21.7
2-5	21	22.8
5-10	31	33.7
10-20	8	8.7
>20		

n: number

Pediatric Surgical Nurses' Use of Non-Pharmacological Methods in Children's Pain Relief

In this study, 73.9% of the pediatric surgical nurses always used positive reinforcement (especially emotional reinforcement). Whereas, 40.2% sometimes used breathing technique and 44.6% seldom used relaxation. The majority of nurses 70.7% claimed "always" to use positioning as a pain-relieving method, whereas 87.0% seldom used TENS. The majority of nurses 73.9% always used comforting/reassurance, presence 72.8% and touch 70.7%. Almost half of the nurses 48.9% reported always using the method of helping with daily activities. In this study, nurses reported "always" using creating a comfortable environment 62.0% (Table 2).

Pediatric Surgical Nurses' Preparatory Information Given to Children

A description of the nurses' preparation information is provided in Table 3. The majority of the pediatric surgical nurses always give information about postoperative observation 79.3%, and postoperative limitations 67.4%, postoperative pain medication 76.1% and postoperative placement 65.2%. The majority of the pediatric nurses reported, that they give information according to the child's age and development 76.1% and, that school-aged children receive

more information 73.9%. Additionally, nurses reported, that they encourage the child to ask about misconceptions 69.6% and to talk openly about the child's sensations.

Table 2. Nurses' use of non-pharmacological methods in children's pain relief.

Non-pharmacological methods	Seldom n (%)	Sometimes n (%)	Always n (%)
Cognitive-behavioural methods	7 7.6	28 30.4	57 62.0
Preparatory information*	10 10.9	33 35.9	49 53.3
Distraction	30 32.6	37 40.2	25 27.2
Breathing technique	41 44.6	30 32.6	21 22.8
Relaxation	8 8.7	16 17.4	68 73.9
Positive reinforcement			
Physical methods	5 5.4	22 23.9	65 70.7
Positioning	12 13.0	19 20.7	61 66.3
Thermal regulation	42 45.7	39 42.4	11 12.0
Massage	80 87.0	6 6.5	6 6.5
TENS*			
Emotional support	5 5.4	19 20.7	68 73.9
Comforting/reassurance	6 6.5	21 22.8	65 70.7
Touch	10 10.9	15 16.3	67 72.8
Presence			
Helping with daily activities	12 13.0	35 38.0	45 48.9
Creating a comfortable environment	3 3.3	32 34.8	57 62.0

*Including cognitive and sensory information.

* Transcutaneous electrical nerve stimulation.

n: number

Table 3. Preparatory information given to children.

Preparatory information	Seldom n (%)	Sometimes n (%)	Always n (%)	Unanswered n (%)
<i>Cognitive and sensory information</i>				
<i>Cognitive information</i>				
Type of procedure	15 16.3	34 37.0	43 46.7	
Place of procedure	13 14.1	28 30.4	51 55.4	
Person who carries out procedure	13 14.1	27 29.3	52 56.5	
Purpose of procedure	11 12.0	26 28.3	54 58.7	1 1.1
Duration of procedure	16 17.4	31 33.7	41 44.6	4 4.3
Preoperative procedures	12 13.0	27 29.3	51 55.4	2 2.2
Type of anaesthesia	31 33.7	38 41.3	19 20.7	4 4.3
Postoperative placement	9 9.8	21 22.8	60 65.2	2 2.2
Postoperative observation	6 6.5	11 12.0	73 79.3	2 2.2
Postoperative limitations (e.g. limitations of food and activities)	6 6.5	22 23.9	62 67.4	2 2.2
Postoperative pain medication	5 5.4	13 14.1	70 76.1	4 4.3
Non-pharmacological pain-relieving methods	12 13.0	34 37.0	43 46.7	3 3.3
<i>Sensory information</i>				
Preoperational sensations	20 21.7	32 34.8	38 41.3	2 2.2
Sensations during the procedure	24 26.1	38 41.3	30 32.6	
Postoperational sensations	21 22.8	30 32.6	41 44.6	
<i>Ways of giving information</i>				
Encouraging the child to ask about misconceptions	5 5.4	23 25.0	64 69.6	
Talking openly about the child's sensations	10 10.9	25 27.2	57 62.0	

(Table 5) *contd....*

Preparatory information	Seldom n (%)	Sometimes n (%)	Always n (%)	Unanswered n (%)
Giving information honestly and openly	6 6.5	36 39.1	50 54.3	
Making sure that the information has been understood	2 13.0	29 31.5	51 55.4	
Taking into account the child's age and development	6 6.5	16 17.4	70 76.1	
Giving more information to a school-aged child	11 12.0	13 14.1	68 73.9	

n: number

Factors Limiting Nurses' Use of Non-Pharmacological Methods

As shown in Table 4, the most important limiting factor in pediatric nurses' use of non-pharmacological methods was shortage of nurses and heavy workload 33.7%.

Table 4. Limiting factors in nurses' use of non-pharmacological methods.

Limiting factors	n	%
Shortage of nurses/heavy workload	31	33.7
Shortage of nurses/heavy workload/lack of knowledge concerning pain management	26	28.4
Shortage of nurses/heavy workload/traditional culture	8	8.7
Shortage of nurses/heavy workload/lack of knowledge concerning pain management/traditional culture/use of non-pharmacological methods not a part of conventional postoperative practice	25	29.2

n: number

DISCUSSION

Many studies in different countries have been conducted to investigate the nurses' non-pharmacological methods to reduce pediatric postoperative pain [9 - 12,33]. The aim of this study was to describe the Turkish pediatric surgical nurse's use of non-pharmacological methods for relieving 6 to 12-year-old children's postoperative pain.

The study gives an informative and detailed picture of Turkish pediatric surgical nurses' use of non-pharmacological methods on the pediatric surgical wards in the country's seventeen university hospitals. The sample of nurses did not exactly represent the whole population, because the response rate was too low. A low response rate may be attributed to many factors as lack of time, poor research instruments and demotivated respondents. He *et al.* reported, that a high response rate 98% indicates a study as important and interesting [9]. This finding is not similar to our results.

In this study, emotional support methods were reported to be the most frequently used. Whereas, He *et al.* [9, 34] and Çelebioğlu *et al.* [35] reported, that cognitive-behavioural methods are most commonly used. This statement is not consistent with our findings. It can be considered, that pediatric surgical nurses working in Turkey feel more adequate in providing emotional support to children. Different cultural and social properties may also play a role, which non-pharmacological pain reducing methods will be preferably chosen by nursing staff. In this research, it was determined, that pediatric surgical nurses used methods reducing pain in children, when giving preoperative information, comforting (reassurance), creating comfortable environment, using distraction and positioning, giving emotional support and helping with daily activities.

Some other studies were consistent with our findings [9 - 12, 34 - 37]. However, our results were contradictory to those of some other studies. For example, a study in Canada [10] showed, that comforting children was not a major activity for nurses and, Coffman *et al.* [38] showed, that very few nurses mentioned using a quiet environment as a pain management method. This may be due to the fact that pediatric nurses in Turkey are more susceptible to reducing pain in children. In addition, there may be pain management in in-service training programs for nurses working at hospital.

Preparatory information (including cognitive and sensory information, and different ways of giving information) was the most commonly reported cognitive behavioural strategy used by Chinese nurses [9] and Finnish nurses [12] studies. In this research study positive reinforcement was the most commonly used cognitive behavioural method. The reason for this fact may be, that the in-service training programs emphasize the importance of supporting patients in medical treatment and care.

In our study, very few nurses 6.5% mentioned using TENS. He *et al.* [9] demonstrated, that no nurse used TENS for relieving pain. Pölkki *et al.* [12] showed, that nurses do not use TENS in pediatric postoperative care nursing. The reasons possibly were being lack of knowledge and no TENS equipment instrument available in the study wards. In addition, breathing technique, relaxation and massage were used less often than other non-pharmacological methods in this study. These findings are consistent with the study from Rheiner *et al.* [36], who also reported, that nurses use less massage and relaxation. Because of shortage of nursing staff in Turkish clinics and intensive patient care, nurses do not apply time-consuming methods such as massage, relaxation and breathing techniques.

The findings of this research study show, that more than the half of nurses gave information to children about postoperative observation, postoperative limitations, postoperative placement and postoperative pain medication. Moreover, our results show, that encouraging children to ask about their misconceptions as well as making sure, that they understand the information, are also warrant for more attention to postoperative pain control. In this study, the half of nurses reported to give routinely preparatory information and the same finding has been revealed in the study from He *et al.* [34].

These techniques are time-consuming and we need further clinical trials to investigate these techniques as pain relieving methods for pediatric patients. According to these results, it is considered, that nurses in the study from He *et al.* [34] pay more attention to inform patients postoperatively about these techniques. It can be concluded, that more attention should be paid to inform patients about other possible pain relieving techniques in these areas to optimize postoperative pain control. On this view, every patient should be given the chance to experience several non-pharmacological pain relieving methods and finally, the patient can decide, which are the best pain relieving methods in his situation.

The way of giving information, our results show, that most of the nurses are always taking the child's age and development into account and are encouraging the child to ask about misconceptions. Concerning the way of giving information, He *et al.* showed, that only 58% of nurses nearly always discussed observed fear or anxiety openly with the child [34]. According to our research results, we could demonstrate, that nurses provide information to patients using a more appropriate method (encouraging the child to ask about misconceptions, talking openly about the child's sensations, giving information honestly and openly, making sure that the information has been understood) and finally pediatric postoperative pain could be reduced more effectively compared to the study from He *et al.* [34]. In addition, some institutional factors limited nurses' practical use of non-pharmacological methods in Turkey, the most common factors were shortage of nurses and heavy workload, which is consistent with previous findings [9,10,32]. The present ratio of beds to one nurse is 1:2 in state hospital and 1:2.6 in university hospital in Turkey [39]. However, in the study wards the ratio of beds to one nurse was only 1:8, which is higher than the ratio in USA (1:2) and other developed countries [40]. This means, that an increase is needed in the number of nurses in Turkish hospitals to provide an optimal postoperative patient care.

Reasons for nurses' lack of knowledge might be, that a specific educational course on pain management is not offered at all levels for nurse education, and pain management is not one of the areas of interest in continuing education for nurses. If nurses would use a task-oriented approach to their work, adding pain management as a part of their routine work, which might be a helpful way to encourage them to implement for pain relief measures [41]. Moreover traditionally, surgical pain is considered inevitable by both nurses and patients themselves, and children should not be encouraged to tolerate pain, which might limit nurses' motivation to use pain-relieving methods [41].

LIMITATIONS

The present study has a limitation. The sample size was relatively small and may not represent all pediatric surgical nurses in Turkey. This small size may be nurses' lack of time, poor research instruments and demotivated respondents. Despite this limitation, the findings of this study support, that non-pharmacological pain management issues should be further considered and, that nursing education (textbooks, curricula) should include a task-oriented approach to use non-pharmacological measures for pain relief.

CONCLUSION

This study provides new information about Turkish pediatric surgical nurses' use of non-pharmacological methods with paediatric patients. Turkish nurses used many non-pharmacological methods in relieving school-aged children's postoperative pain in hospital. Preparatory information, distraction, positive reinforcement, positioning, thermal regulation, comforting/reassurance, touch, presence and helping with daily activities were reported to be used routinely.

Whereas relaxation, massage, TENS and breathing methods were less often used, but more attention should be paid to such strategies in the pediatric surgical wards, because this techniques also help reduce pediatric postoperative pain and should be investigated in further studies. A detailed education about pain management for nursing staff and informations about possibilities of pain management for children and parents (booklets, audiovisual aids) should be integrated in all hospitals.

All non-pharmacological methods to alleviate children's postoperative pain can also be established in pediatric day surgery. This study serves as an alert for nurses and other health professionals when they provide information and guidance to parents in pain management. With further testing, the instrument developed for this study serves as a model and may be applicable in other study or working settings as well. More studies are needed to investigate the use of both non-pharmacological and pharmacological methods of pain relief in other provinces in Turkey and in other groups of children, in order to obtain an overall view at the country level.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No Animals/Humans were used for studies that are base of this research.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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Declared none.

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