

Original Article

Assessment of Postoperative Pain by the Parent, Nurse and an Independent Observer Among 1-7 Year Old Children

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Abstract

Aim: This study was carried out to detect the differences in the assessment of the pain that may occur following operation between 1 and 7 years old children, by parent, nurse and an independent observer.

Methods: This cross-sectional and descriptive study was conducted on 236 pediatric patients between 1 and 7 years old who were operated in Pediatric Surgery Clinic between April 1-October 1, 2016 in Ankara, Turkey. Data were collected by parent, nurse and independent observer information forms, "Numeric Pain Rating Scale" and "Wong-Baker Faces Pain Rating Scale."

Results: Based on Numeric Pain Rating Scale in the study; at first admission of the operated child to the service following the operation, pain rating scores of the parent, nurse and independent observer were found to be incompatible with intraclass correlation coefficient of 0.676 ($p < 0.05$). At two hours after the admission of the pediatric child to the service following the operation, pain rating scores between parent, nurse and independent observer were found to be compatible with an intraclass correlation coefficient of 0.702 at a significant level ($p < 0.05$). Based on Wong-Baker Faces Pain Rating Scale in the study, pain rating scores at first admission to the service (an intraclass correlation coefficient of 0.696) and at two hours after the admission to the service (an intraclass correlation coefficient of 0.684) were found to be incompatible ($p < 0.05$).

Conclusion: Postoperative pain levels of operated children were evaluated by the parent, nurse and independent observer in a different way.

Key Words: pain assessment, postoperative pain, pediatric patient, parent, nurse

Introduction

Surgical treatments that are performed to make the individual better are used as effective treatment methods in the maintenance and regeneration of health, extending life span and elimination of pain. While surgical treatments try to control pain on one hand, they may cause pain on the other hand. Postoperative pain is a type of acute pain that begins with surgical trauma, steadily decreases and ends with tissue healing, that is relatively short-term and that is associated with the type and length of the incision as well as the grade of surgical trauma. Postoperative pain experienced by the patients has been perceived as a natural process that they had to endure in the past; but today, it is considered as a problem that is needed to be solved by the demonstration of its

negative effects on every areas of the patient life (Buyukyilmaz & Astı, 2009; Francis & Fitzpatrick, 2013; Gurarslan et al., 2016; Hla-Khin et al., 2014; Kutluyurdu et al., 2015)

Postoperative pain, that is affected by physical, psychological, social, cultural and environmental factors, may be extremely stressful for pediatric patients and more traumatic compared to the adults. At the same time, pain may be more severe among children since pain expression skills are not developed completely and they do not have previous experiences associated with pain unlike adults. This situation may affect treatment method of the nurse for the pain among children (Ay & Ecevit Alpar, 2010; Gol & Onarici, 2015; Mesko et al., 2011). For an effective treatment of pain, it should primarily be

diagnosed appropriately by the nurse (Andersen et al., 2015; Curry et al., 2010). For an accurate diagnosis of pain, nurses should keep the age, overall condition, pain recognition level of the child and the type of pain experienced by the child in mind (Hla-Khin et al., 2014; He et al., 2011; Srouji et al., 2010; Verghese & Hannallah, 2010). Pain treatment is teamwork that is implemented by an individual-centred, holistic and multidisciplinary approach on today. The nurse has a crucial role in pain treatment since they are healthcare team members that spend longer times with the patient, guide the patient in coping with pain and monitor the outcomes of the practices (Curry et al., 2010; Conlon, 2009; Yildirim et al., 2015). However, since the patient experiencing pain is a child, the importance of including the parents in this team is undeniable. The severity of the pain experienced by the children may be increased by their hospitalization where they also perceive as a foreign environment besides the operation, so having the parents next to them during the painful procedures would be effective in decreasing the level of pain they felt. Therefore; nurses should cooperate with the parents during painful procedures in order to increase pain tolerance (Babl et al., 2012; Olshansky et al., 2015; Shrestha-Ranjit & Manias, 2010).

When previous studies were examined, postoperative pain management was adversely affected by workload and time limitations of the nurses, their lack of knowledge regarding pain diagnosis and pain treatment methods and lack of information flow between other team members in clinical decision making process.

In fact, it is very important for the quality of pain management for the nurses to make accurate diagnosis of pain and implement effective pain elimination methods by improved care interventions and to include parents in care by a holistic approach (Ameringer, 2010; Heinrich et al., 2015; Po et al., 2012; Richards & Hubbert, 2007; Subhashini et al., 2009; Yobas-Klainin et al., 2015).

Method

Design and setting: This study was performed to detect differences in the evaluation of postoperative pain between 1 and 7 years old children by the parent, nurse and an independent observer. It was carried out in the Pediatric Surgery Clinic of a Training and Research Hospital in Ankara city, Turkey.

Sample: The universe of the study was composed of 495 operated pediatric patients between 1-7 years old. According to the known sampling method of the universe, sample of the study was calculated as 217 pediatric patients; and it was conducted on 236 pediatric patients and their parents. All nurses working in Pediatric Clinic (n=10) were enrolled in the study. Pediatric patients between 1-7 years old and underwent surgical treatment, parents of 18 years old and above and willing to participate in the study, nurses working in Pediatric Surgery Clinic, and parents and nurses who were literate, who did not have any diagnosed visual, auditory, sensual and sensory disease and had a cognitive competence to answer questions were included in the study. In the study, independent observer was the researcher herself; and was a neonatal nurse who has been working in Neonatal Intensive Care Unit of Training and Research Hospital for four years.

Instruments

Data were collected by “Pediatric Information Form”, “Parent Information Form”, “Nurse Information Form”, “Numeric Pain Rating Scale” and “Wong-Baker Faces Pain Rating Scale”.

Pediatric Information Form: In this form; there were a total of seven questions including an open-ended and six closed-ended evaluating age and sex of the operated pediatric patient of 1-7 years old, the type of the operation, way of undergoing operation and type of anaesthesia given, state of giving analgesics following surgery and the type of analgesics if given any (Hla-Khin et al., 2014; Heinrich et al., 2015; Twycross & Finley, 2013; Twycross & Finley, 2014).

Parent Information Form: In this form, there were a total of 10 questions as two open-ended and eight closed-ended including information regarding age, sex, marital status, education level and employment status of the parents, number of their children, age of the other children if they had any and whether their children had any previous pain experiences or not (Twycross & Finley, 2013).

Nurse Information Form: This form was composed of a total of 14 questions as four open-ended and 10 closed-ended including information such as age, sex, marital status, education level, number of children, duration of work and type of work of the nurse, number of her patients at one

shift, her knowledge experience about pain, source of knowledge if she had any, type of the operation of her pediatric patient, way of undergoing operation and type of anaesthesia given to the child (He et al., 2011; Heinrich et al., 2015; Twycross & Finley, 2013; Twycross & Finley, 2014; Yobas-Klainin et al., 2015).

Numeric Pain Rating Scale: “Numeric Pain Rating Scale”, that is for determining the severity of pain, is composed of numbers between “0” and “10” in order to identify the pain of pediatric patient with numbers. In the scale, 0 was regarded as “no pain”, 1-2 as “mild pain”, 3-4-5 as “annoying pain”, 6-7 as “severe pain”, 8-9 as “very severe pain”, and 10 as “intolerable pain” (Yıldırım et al., 2015).

Wong-Baker Faces Pain Rating Scale: It was developed by Wong and Baker (1988) in order to make pain diagnosis in children. This scale is most frequently used for pain assessment in children and is also used for individuals who have a limited mental and speaking ability. In the scale, there is a grading system of 0-10; and an image close to the facial expression of pediatric patient is identified by the expressions such as “no pain”, “I have mild pain”, “I have moderate pain”, “I have severe pain” and “I have intolerable pain” that started from the lowest score, increased by 2 points and corresponded to each point. Based on the identified image, grading is done (Balga et al., 2013; Sorenson & Hennrikus, 2015; Thrane et al., 2016; Twycross et al., 2015).

Data collection

Firstly, pediatric information form was filled and then, parent information form was filled by meeting with the mother. Mother was instructed about Numeric Pain Rating Scale and Wong-Baker Faces Pain Rating Scale. Later, mother was provided to make pain assessment by using these scales at the moment when pediatric patient was admitted to the clinic following the operation and at 2 hours after the admission. Secondly, pain assessment was done by the independent observer by using Numeric Pain Rating Scale and Wong-Baker Faces Pain Rating Scale at the moment when pediatric patient was admitted to the clinic following the operation and at 2 hours after the admission. Finally, nurse who was providing care for the child was made to fill information form and she was intended to make pain assessment by using similar scales at the same time. Pain scores of parent, independent observer and nurse were recorded.

Data analysis: For the assessment of data, independent samples t test was used for the comparison of pain scores of two independent groups and one-way ANOVA and Kruskal Wallis tests were used to compare pain scores of three and more independent groups besides descriptive statistical methods. Intraclass correlation coefficient was used for the evaluation of the compatibility of pain scores between parent, nurse and independent observer. Results were assessed within a confidence interval of 95% and at a significance level of $p < 0.05$.

Ethical considerations: Written permissions to perform study were taken from Bulent Ecevit University Clinical Research Ethics Committee (2015-115-18/11) and the hospital where the study was conducted. Informed consents were taken from the mother of pediatric patient and from the nurse who was providing care for the child.

Results

Characteristics of Pediatric Patients, Parents, and Nurses: Mean age of the children was 4.94 ± 2.12 years old; 5.9% were females, 94.1% were males; 88.1% underwent urogenital surgical treatment; 99.6% underwent operation in a planned way; 98.7% were given general anaesthesia. In the same table, it was determined that 78.8% of the pediatric patients were not given analgesics following the operation, 98% were given non-opioid analgesics, 73.7% have not been hospitalized previously and 73.3% have not experienced any pain previously (Table 1). A 99.6% of the parents included in the study were mothers, 0.4% were fathers; 66.9% were within the age group of 29-39 years old; all were married; 41.1% have been graduated from high school; 76.7% were unemployed; 75.4% had more than one child (Table 2).

In Table 3, is shown that 90% of the nurses were within the age group of 29-39 years old, 80% were married and 60% were undergraduates. It was also detected that 70% of them have been working as a nurse for 10 years and more, 40% have been working in their current department for 4-6 years, 60% were working at changing times as day/night shifts, 40% were providing care for 10 patients at one shift, all had knowledge about pain and 50% got knowledge about pain through in-service trainings.

Pain Rating Scores of the Parent, Nurse and Independent Observer

When pain rating scores of the parents, nurses and independent observer included in the study were compared based on the scales used, it was found that parents, nurses and independent observer gave a mean score of 4.30 ± 2.86 , 3.46 ± 1.92 and 3.30 ± 1.92 in the numeric pain rating scale, respectively for the severity of pain experienced by the children at first admission to the service following the operation. It was determined that severity of pain was assessed by a mean score of 3.21 ± 2.37 by the parents, 1.96 ± 1.63 by the nurses and 1.86 ± 1.53 by the

independent observer at two hours after the admission to service following the operation.

By using Wong-Baker Faces Pain Rating Scale, it was determined that parents, nurses and independent observer gave a mean score of 4.91 ± 3.09 , 3.68 ± 2.10 and 3.61 ± 2.27 , respectively at first admission to the service following the operation. It was determined that severity of pain was assessed by a mean score of 3.63 ± 2.53 by the parents, 2.21 ± 1.69 by the nurses and 2.25 ± 1.74 by the independent observer at two hours after the admission to service following the operation (Table 4).

Table 1. Demographic and Clinical Characteristics of Pediatric Patients

	X±SD	Minimum-Maximum
Age	4.94±2.12	1-7
	Number (n)	Percentage (%)
Sex		
Female	14	5.9
Male	222	94.1
Type of operation		
Urogenital surgery	208	88.1
Hernia	28	11.9
Way of undergoing operation		
Emergent	1	0.4
Planned	235	99.6
Type of anesthesia given		
General	233	98.7
Regional	3	1.3
Status of having analgesics following operation		
Yes	50	21.2
No	186	78.8
Type of analgesics (n=50)		
Non-opioid	49	98.0
Opioid	1	2.0
Status of previous hospitalization		
Often since birth	5	2.1
Few times	57	24.2
Never	174	73.7
Pain experience		
Yes	63	26.7
None	173	73.3

Table 2. Demographic Characteristics of the Parents

	Number (n)	Percentage (%)
Age groups		
18-28	51	21.6
29-39	158	66.9
40-50	27	11.4
Gender		
Female	235	99.6
Male	1	0.4
Marital status		
Married	236	100.0
Single	0	0.0
Education level		
Illiterate	1	0.4
Literate	1	0.4
Elementary school	72	30.5
Secondary school	36	15.3
High school	97	41.1
Undergraduate	26	11.0
Graduate	3	1.3
Status of employment		
Employed	55	23.3
Unemployed	181	76.7
Presence of any other child except the patient		
Yes	178	75.4
No	58	24.6
Number of children (n=178)		
Two	130	73.0
Three and more	48	27.0

Table 3. Demographic Characteristics of the Nurses

	Number (n)	Percentage (%)
Age groups		
18-28	1	10.0
29-39	9	90.0
Marital status		
Single	2	20.0
Married	8	80.0
Status of having a child		
Yes	8	80.0
None	2	20.0
Education level		
Associate degree	4	40.0
Undergraduate	6	60.0
Duration of work in the profession (years)		
7-9	3	30.0

10 and more	7	70.0
Duration of work in the department (years)		
1-3	1	10.0
4-6	4	40.0
7-9	2	20.0
10 and more	3	30.0
Mode of work		
Always 8 hours/day	4	40.0
At changing times as day/night shifts	6	60.0
Number of patients at one shift		
5	1	10.0
10	4	40.0
14	2	20.0
20	1	10.0
24	1	10.0
25	1	10.0
Knowledge of pain		
Yes	10	100.0
None	0	0.0
Sources of knowledge about pain		
In-service training	5	50.0
Care process	1	10.0
Undergraduate education	4	40.0

Table 4. Pain Rating Scores of Parent, Nurse and Independent Observer Based on the Scales Compatibility of Pain Scores

	Parent	Nurse	Independent observer	Intraclass Correlation	95% Confidence Interval	p
	X±SD	X±SD	X±SD			
Numeric Pain Rating Scale Score						
At first admission *	4.30±2.86	3.46±1.92	3.30±1.92	0.676	0.61-0.73	0.001
At two hours after admission **	3.21±2.37	1.96±1.63	1.86±1.53	0.702	0.64-0.75	0.001
Wong-Baker Faces Pain Rating Scale Score						
At first admission*	4.91±3.09	3.68±2.10	3.61±2.27	0.696	0.63-0.74	0.001
At two hours after admission **	3.63±2.53	2.21±1.69	2.25±1.74	0.684	0.62-0.73	0.001

* At first admission to service following operation **At two hours after admission to service following operation

Table 5. Evaluation of Compatibility between Pain Rating Scores of Nurse and Independent Observer

	Intraclass Correlation	95% Confidence Interval	p
Numeric Pain Rating Scale Score			
At first admission to service following operation	0.834	0.79-0.86	0.001
At two hours after admission to service following operation	0.829	0.78-0.86	0.001
Wong-Baker Faces Pain Rating Scale Score			
At first admission to service following operation	0.862	0.82-0.89	0.001
At two hours after admission to service following operation	0.824	0.77-0.86	0.001

Compatibility Between Pain Rating Scores of Parent, Nurse and Independent Observer

At pain assessment made by using numeric pain rating scale, it was determined that pain rating scores between parent, nurse and independent observer were incompatible with an intraclass correlation coefficient of 0.676 at first admission to the service following operation; but it was found to be compatible at a significant level with an intraclass correlation coefficient of 0.702 at two hours after admission to service following the operation ($p < 0.05$) (Table 5). At pain assessment made by using Wong-Baker Faces Pain Rating Scale, it was determined that pain rating scores between parent, nurse and independent observer was incompatible with an intraclass correlation coefficient of 0.696 at first admission to the service following operation; and it was found to be incompatible with an intraclass correlation coefficient of 0.684 at two hours after admission to service following the operation ($p < 0.05$) (Table 5).

Evaluation of Compatibility between Pain Rating Scores of Nurse and Independent Observer

By using numeric pain rating scale, pain scores of nurse and independent observer were found to be compatible at a significant level with an intraclass correlation coefficient of 0.834 at first admission to the service following the operation; and also found to be compatible at a significant level with an intraclass correlation coefficient of 0.829 at two hours after the admission to the

service following the operation ($p < 0.05$). Based on Wong-Baker Faces Pain Rating Scale, severity of pain scored by nurse and independent observer was found to be significantly compatible with an intraclass correlation coefficient of 0.862 at first admission to the service following the operation; and found to be significantly compatible with an intraclass correlation coefficient of 0.824 at two hours after the admission to the service following the operation ($p < 0.05$) (Table 6).

Discussion

The most reliable indicator in pain assessment is pain expression of the patient itself (Twycross et al., 2015). However, previous studies indicated that pain scales should be used to convert this subjective expression to measurable values by making it objective and to determine the effectiveness of pain relief interventions (Alakus et al., 2015; Andersen et al., 2017).

Since pediatric patients included in the study were between 1 and 7 years old, their own pain statements were not taken; and compatibility between pain rating scores of parent, nurse and independent observer were compared based on the scales used. At pain assessments made based on Numeric Pain Rating Scale and Wong-Baker Faces Pain Rating Scale at first admission and two hours after the admission to service following the operation, it was determined that parents scored the highest score and it was followed by the nurse and independent observer. It was found that there was not a compatibility

between pain scores of parent, nurse and independent observer at first admission to service following the operation; but, pain scores of nurse and independent observer were found to be compatible ($p < 0.05$). Similar results were also obtained in rating scores for pain assessment at two hours after the admission of the pediatric patient to service following the operation ($p < 0.05$).

In the study by Hla- Khin et al that compared the assessment of pain by the child, parent, nurse and independent observer among pediatric patients following operation, mean pain score given by the parents was found to be 1.0; 0 by nurses and 0 by the independent observer; and the difference was found to be statistically significant (Hla-Khin et al., 2014). Similarly, in our study, it was observed that nurse and independent observer gave lower scores compared to the parents.

In the study by Mahoney et al. (2010) comparing the responses of family, nurse and the children, it was determined that families expressed the pain of their children higher than the nurses. In the study by Brudvik et al. (2017), pain that might occur in children was compared through Numeric Pain Rating Scale by the parent and doctor and they were compared by the pediatric children through a pain severity scale that was adapted according to their age (assessments of the parents were taken into account when the child could not assess own pain). In their study, it was found that pain scores of the children and their parents were very close to each other; but, the correlation between the assessments of child-doctor and parent-doctor was found to be low. In the study by Rjasagaram et al (2009) in which severity of pain assessed by triage nurse, parent and the child were compared, pain scores of the nurses were found to be significantly lower than the parents and pediatric patients. In the same study, pain scores of the parents and pediatric patients were reported to be close to each other.

In this study, pain levels of the children were indicated as highest by the parents; and it can be stated that education levels of the parents, their knowledge regarding pain and differences in their previous pain experiences might be effective on this outcome and parents might approach more emotionally to the pain of their children. It is thought that knowledge and experiences of the independent observer and service nurses and in-service trainings that they have taken contributed for pain management.

Besides, this result showed that nurses should also consider family in pain management.

There are some limitations in this study. The first limitation is that it was carried out in one centre. Another limitation is that own pain statements of the children were not taken due to the wideness of their age range; and only pain scores of the parents and pediatric nurses were taken into consideration.

Conclusion

The study showed that pain levels of operated pediatric patients between 1-7 years old were evaluated differently by parents, nurse and independent observer; and pain scores of the nurse and independent observer were compatible. It was recommended to use combined scales providing information about all components of pain and make them common; to generate education materials for the parents about pain evaluation; to provide trainings with education materials that were prepared for the parents and all team members that have a role in pain evaluation in order to eliminate different perceptions and to repeat these trainings at regular intervals. In this context, providing a training for the parents regarding postoperative pain and its assessment will be effective in the success of family-centered care that is adopted in pediatric nursing. In addition, inclusion of parents in the planning and implementation of nursing care for decreasing or eliminating pain by the nurses will enhance the quality of the care given and satisfaction of the parents.

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