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Pediatric Nurses' Knowledge and Practices Related Pain Management in Children with Cognitive Impairment

Bilişsel Bozukluğu Olan Çocuklarda Ağrı Yönetimine İlişkin Pediatri Hemşirelerinin Bilgi ve Uygulamaları

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ABSTRACT

This study was conducted with a cross-sectional design to determine pediatric nurses' knowledge and practices related to pain management in children with cognitive impairment. The sample of the study consisted of 65 pediatric nurses working in two different hospitals in one city. After obtaining institutionals, ethics committee permissions, and written consent from participants, the data were collected using a ıntroductory characteristics form and a questionnaire to determine knowledge and practices regarding pain management in children with cognitive impairment. Descraiptive statistics and Chi-square tests were used for data analyses.

The majority of the pediatric nurses reported the parameters used to assess pain among children with cognitive impairment as facial expressions and behavioral responses. Only 16.9% of nurses evaluated pain using a scale. In terms of reducing the pain of children with cognitive impairment, 55.4%, 35.4% of nurses reported that they used nonpharmacological, pharmacological methods, respectively, and 9.2% no specific methods were used in the clinic where they worked. The commonly used nonpharmacological methods were distraction, massage, cold application, etc. A significant difference was found in the use of nonpharmacological methods with respect to gender and previous training on pain management ($p<0.05$). It is recommended to organize training for nurses on the assessment of pain in children with cognitive impairment and non-pharmacological pain relief methods, and to popularize the use of appropriate scales in pain assessment in clinics.

Keywords: Child, Cognitive Impairment, Nurse, Pain.

ÖZ

Bu kesitsel çalışma, pediatri hemşirelerinin bilişsel bozukluğu olan çocuklarda ağrı yönetimine ilişkin bilgi ve uygulamalarını belirlemek amacıyla yapıldı. Araştırmanın örneklemini bir ilde bulunan iki farklı hastanede görev yapan 65 pediatri hemşiresi oluşturdu. Kurum izinleri, etik kurul izni ve katılımcı onamının alınmasının ardından veriler tanıtıcı özellikler veri formu ile bilişsel bozukluğu olan çocuklarda ağrı yönetimine ilişkin bilgi ve uygulamaları belirlemeye yönelik bir anket formu kullanılarak toplandı. Verilerin analizinde tanımlayıcı istatistiksel analizler ve ki-kare testi kullanıldı.

Pediatri hemşirelerinin çoğunluğu, bilişsel bozukluğu olan çocuklarda ağrının değerlendirilmesinde kullanılan parametreleri, yüz ifadeleri ve davranışsal tepkiler olarak bildirdi. Hemşirelerin sadece %16.9'unun ağrıyı ölçek kullanarak değerlendirdiği saptandı. Bilişsel bozukluğu olan çocukların ağrısının giderilmesinde hemşirelerin çalıştıkları klinikte %55.4'ünün nonfarmakolojik, %35.4'ünün farmakolojik yöntemleri kullandıkları ve %9.2'sinde spesifik bir yöntem kullanılmadığı belirlendi. Hemşirelerce en sık kullanılan nonfarmakolojik yöntemlerin sırasıyla dikkati başa yöne çekme, masaj, soğuk uygulama olduğu belirlendi. Nonfarmakolojik yöntem kullanma ile hemşirelerin cinsiyeti ve daha önce ağrı yönetimi konusunda eğitim alma arasında anlamlı farklılık bulundu ($p<0.05$). Bilişsel bozukluğu olan çocuklarda ağrının değerlendirilmesi ve nonfarmakolojik ağrı giderme yöntemleri hakkında hemşirelere yönelik eğitimler düzenlenmesi, ayrıca kliniklerde ağrı değerlendirmesinde uygun ölçeklerin kullanımının yaygınlaştırılması önerilir.

Anahtar Kelimeler: Ağrı, Bilişsel Bozukluk, Çocuk, Hemşire.

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INTRODUCTION

Acute and chronic pain experiences are more common among children with cognitive impairment (CI) due to any cause, such as chromosomal syndromes, neurodegenerative disorders, traumatic brain injury, cerebral palsy, and epileptic syndromes, than in healthy children.[1-3] The term CI covers a wide range of conditions, including any intellectual disability or global developmental delay, and describes the condition of a child whose level of intellectual functioning and adaptive skills are significantly below average for a child of his or her chronological age.[4] In a systematic review and meta-analysis study of twelve studies on postoperative pain in children with CI, Pizzinato et al. (2022) revealed that diagnoses of 586 children with CI in the enrolled population were mainly represented by cerebral palsy (19%), genetic syndromes (10%), perinatal complications (7.5%), and communicating (7%) and non-speaking autism spectrum disorder (4%).[5]

Children with CI have special needs, their intellectual disabilities can be mild to profound, and most of them are unable to self-report their pain as they lack the capacity to either verbally communicate or purposefully communicate their pain through other systems.[3,6] Children with CI experience pain due to medical interventions such as ıntravenous interventions or surgeries and also experience it due to chronic conditions associated with their disorder.[1,5,7,8,9] Children with CI are also more likely to experience purposive injury by other children, and they experience pain due to injuries.[6,10] Compared to children with normal development, children with cognitive and/or other disabilities were two times more likely to be admitted to the emergency room and four times more likely to be hospitalized, and their hospitalization periods were eight times longer.[11] Pizzinato et al (2022) reported that children with CI in a hospital/outpatient setting during surgical or minimally invasive procedures such as tooth extraction, percutaneous endoscopic gastrostomy button change, tonsillectomy, and vascular accesses positioning.[5] Breau et al. (2003), found that the pain experienced by children with CI is mostly caused by chronic medical procedures, whereas pain due to medical procedures accounts for eight percent of all pain episodes.[1] Studies on the subject have revealed the prevalence and levels of pain in children with CI.[1,9,12] It is reported that they often experience a greater number of nociceptive and neuropathic pain episodes and sometimes experience significant daily pain that affects their lives.[1,7,8,9] Stallard et al. (2002), reported that 41% of caregivers assessed that their children diagnosed with severe CI who did not exhibit verbal communication experienced pain on a daily basis.[13] Another study reported that on average, children with CI had pain weekly, lasting about 9 hour.[1]

Data from children's hospitals reveals that pain is not adequately recognized and treated even among healthy pediatric patients, let alone children with CI.[14-16] These children are at higher risk of experiencing pain, and as communication difficulties increase, the likelihood that pain will go unnoticed and therefore untreated due to misinterpreted behavioral observations increases.[17] Pain that is not properly managed has many negative effects on children. Untreated chronic or recurrent pain adversely affects the quality of life, performance and adaptation abilities of children with CI.[6,18] Therefore, accurate evaluation and management of pain is extremely important. Children with CI and consequent problems in verbal expression constitute a vulnerable group in terms of pain assessment and management. Using appropriate pain assessment tools to accurately evaluate pain and multimodal pain relief methods to effectively manage pain among children with CI is necessary.[19,20] To the best of our knowledge, there are no studies in Turkey on managing pain among children with CI.

Nurses assume an important responsibility in terms of dealing with pain, and as

healthcare professionals who communicate with patients the most, they play important roles in the accurate evaluation of pain and pain management in accordance with age and developmental characteristics.[19] The philosophy of pediatric nursing covers family-centered care, primary nursing, evidence-based approach, and atraumatic care. One of the fundamental principles of atraumatic care is pain control. In this context, one of the main objectives of the pediatric nurse should be to relieve children's pain and improve their quality of life.[19,20]

Given the high hospitalization rates and the prevalence of pain among children with CI, it is important for nurses to know and implement appropriate pain assessment and alleviation methods for these children for effective pain management. A nurse with ample knowledge on managing pain among children and who can make the right decision and plan the necessary care will be able to control the child's pain and relieve it.[19] Accordingly, this study aimed to determine the knowledge and practices of pediatric nurses regarding the management of pain among children with CI.

MATERIAL AND METHOD

Study Design and Participants

This cross-sectional study was conducted between August and December 2020. The study population consisted of nurses who work in pediatric clinics, and outpatient clinics caring for children in two different hospitals in one province in Turkey. Nurses who were actively working during the specified dates, had at least one year of experience working in the field of pediatrics, cared for children aged three years and older, had experience providing care to children with CI, and agreed to participate in the study were included in the sample. Accordingly, a total of 65 pediatric nurses occurred of the study sample who met the inclusion criteria.

Data Collection

The introductory characteristics form prepared by the researcher and the knowledge and practices questionnaire prepared according to relevant literature and expert opinions on the management of pain among children with CI were used to collect data. Before initiating the research, hospitals were contacted to create a data collection schedule and visits were organized to clinics on specific days and at specific times. The data were collected in a separate room. The face-to-face following infection control measures was obeyed and the interviews took an average of 15 minutes. Data collection tools used in the study are explained below.

Introductory Characteristics Form

The form consisted of questions on age, gender, work experience in children's services, work experience as a nurse, and previous training on pain management, etc.

Questionnaire on Knowledge and Practices regarding Pain Management among Children with CI

This questionnaire was prepared by the researcher based on the relevant literature.[2,6,7,21] Expert opinions were obtained and a pilot study was conducted. The questionnaire consists of questions on the knowledge and practices of pediatric nurses regarding pain assessment and pain relief methods for managing pain among children with CI.

Statistical Analysis

The data were analysed using IBM SPSS Statistics Standard Concurrent User V 25 (IBM Corp., Armonk, New York, USA) statistical package program. Descriptive characteristics were presented as number of units (n) and percentage (%), and the relationship between categorical variables was assessed using the Chi-square test (χ^2). $P<0.05$ was accepted as statistically significant in all the analyses.

The Ethical Aspect of the Research

Ethics approval (Decision number: 2017-KAEK-189_2020.07.29_02) from a university's clinical research ethics committee, institutions permissions were obtained from the two different hospitals (16142545-903.99-E.10439 and 92198657-772.02) where the study was conducted, before beginning the research. The nurses were provided necessary explanations about the purpose of the study and written consent was obtained from all the pediatric nurses.

RESULTS AND DISCUSSION

Table 1 shows the introductory characteristics of pediatric nurses included in the study. A total of 35.4% of pediatric nurses belonged to the 30-39 years age group, and 80.0% were female. Further, 60.0% of the nurses had a bachelor's degree, 35.4% worked in the general pediatric clinic, 21.5% worked in the surgery clinic, 15.4% worked in the child emergency department, 16.9% worked in the child intensive care units, and 10.8% worked in pediatric outpatient clinics. Moreover, 73.9% of the nurses included in the study had a work experience of 1–5 years in the pediatric field, and 64.6% of pediatric nurses had not previously received training on pain management in children (Table 1).

Pediatric nurses' answers to questions evaluating pain management knowledge among children with CI are shown in Table 2. The majority of the nurses reported the parameters used in assessing pain among children with CI as facial expressions and behavioral responses, and reported the same parameters in healthy children. In the present study, the majority of nurses stated that pain assessment in children with CI contains observing the child's reactions and expressions, pain symptoms, and the parents' assessments into account when assessing pain (Table 2).

Table 1. Introductory Characteristics of Pediatric Nurses (N=65)

Introductory Characteristics	Number (n)	Percentage (%)
Age		
23–29 years	29	44.6
30–39 years	23	35.4
40-49 years	13	20.0
Gender		
Female	52	80.0
Male	13	20.0
Education status		
High school	23	35.4
Bachelor's	39	60.0
Higher education	3	4.6
Child clinics where the nurse works		
General pediatric	23	35.4
Emergency	10	15.4
Surgery	14	21.5
Intensive care	11	16.9
Policlinic/outpatient	7	10.8
Work experience as a nurse		
1–5 years	28	43.1
6–10 years	17	26.1
11 years and above	20	30.8
Work experience in a pediatric clinic		
1–5 years	48	73.9
6–10 years	14	21.5
11 years and above	3	4.6
Previous training on the management of pain among children		
Yes	23	35.4
No	42	64.6

Additionally, nurses reported that pain management in children with CI consisted of nonpharmacological practices (55.4%), pharmacological treatment (40.0%), therapeutic communication (26.2%), psychological strategies (26.2%), accurate assessment of pain (26.2%), and family participation (26.2%), respectively. Moreover, 84.6% of pediatric nurses wanted to receive course/training on pain management, and the majority of nurses need

information on pain assessment in children with CI (Table 2).

Table 2. Knowledge of Pediatric Nurses' on Pain Management Among Children with Cognitive Impairment

Characteristics	n	%
Parameters used in assessing pain among healthy children*		
Verbal expression	22	33.8
Facial expression	35	53.8
Behavior reactions/expressions	38	58.5
Parents' statement	7	10.8
Physiological parameters	7	10.8
Parameters used in assessing pain among children with CI*		
Facial expression	35	53.8
Behavior reactions/expressions	27	41.5
Parents' statement	17	26.2
Physiological parameters	8	12.3
Crying	5	7.7
Knowledge about scope pain assessment among children with CI*		
Relying on the child's observed reactions and expressions	44	67.7
Observing the symptoms of pain	35	53.8
Taking parents' assessments into account	13	20.0
Using the appropriate pain scale	7	10.8
Following the physiological signs of the child	6	9.2
Knowledge about scope of pain management among children with CI*		
Nonpharmacological practices	36	55.4
Pharmacological treatment	26	40.0
Therapeutic communication	17	26.2
Psychological strategies	17	26.2
Family participation	17	26.2
Accurate assessment of pain	17	26.2
Willingness to attend courses/trainings on pain management in children with CI		
Yes	55	84.6
No	10	15.4
Topics they need information on pain management in children with CI		
Methods of pain relief	22	33.8
Nurse approaches to the painful child with CI	2	3.1
Pain assessment	41	63.1

* multiple answers was given

The practices followed by pediatric nurses related to the management of pain among children with CI are shown in Table 3. Only 16.9% of pediatric nurses evaluated pain using a scale. The most commonly used scales were Visual Analog Scale (VAS), Faces, Legs, Activity, Cry, and Consolability pain assessment tool-FLACC, and Wong Baker Faces pain scale.

In terms of reducing pain among children with CI, 55.4%, 35.4%, and 9.2% of the nurses reported that nonpharmacological, pharmacological, and no specific methods were used in the clinic where they worked, respectively. The commonly used nonpharmacological methods were distraction technique, massage, cold application etc., for children with CI (Table 3).

Table 3. Practices Related to the Management of Pain Among Children with Cognitive Impairment

Characteristics	n	%
Pain assessment among children with CI using a scale		
Yes	11	16.9
No	54	83.1
Scale used (n=11)		
Visual Analog Scale	7	63.6
FLACC Pain Scale	2	18.2
Wong Baker Faces Scale	2	18.2
Methods used in the clinic for pain management		
Pharmacological	23	35.4
Nonpharmacological	36	55.4
No specific interventions are performed	6	9.2
Nonpharmacological methods applied* (n=36)		
Distraction technique	16	44.4
Massage	8	22.2
Cold application	7	19.4
Watching cartoons	6	16.6
Parental engagement	2	5.5
Music therapy	2	5.5
Positioning	2	5.5
Play therapy	2	5.5
Painting	1	2.7
Aromatherapy	1	2.7
Assessing the effect of the method on pain		
Pain reduced	44	67.7
No effect	21	32.3
Ensuring maternal/parental involvement to relieve pain		
Yes	61	93.8
No	4	6.2

* multiple answers was given

Table 4 shows the comparison of nonpharmacological methods used by pediatric nurses according to ıntroductory characteristics. Accordingly, there was no difference between the use of nonpharmacological methods and respect to age, educational status, work experience as a nurse, or work experience in the children's clinic.

However, a significant difference was found in the use of nonpharmacological methods with respect to gender and previous training on pain management. Accordingly, using non-pharmacological pain relief methods was more common among female nurses than male nurses ($p<0.05$). The rate of applying non-pharmacological methods was low in those who did not receive training before ($p<0.05$) (Table 4).

Table 4. Nonpharmacological Methods Used According to Introductory Characteristics of Pediatric Nurses

Characteristics	Nonpharmacological method use		Test (χ^2)	p
	Yes (n=36)	No (n=29)		
Age				
23–29 years	17 (47.2)	12 (41.4)	1.910	0.385
30–39 years	14 (38.9)	9 (31.0)		
40–49 years	5 (13.9)	8 (27.6)		
Gender				
Female	33 (91.7)	19 (65.5)	5.327	**0.021**
Male	3 (8.3)	10 (34.5)		
Nurses' education status				
High school	11 (30.6)	12 (41.4)	1.720	0.423
Bachelor's	24 (66.7)	15 (51.7)		
Higher education	1 (2.7)	2 (6.9)		
Work experience as a nurse				
1–5 years	19 (52.8)	9 (31.0)	3.720	0.156
6–10 years	9 (25.0)	8 (27.6)		
11 years and above	8 (22.2)	12 (41.4)		
Work experience in a pediatric clinic				
1–5 years	30 (83.3)	18 (62.1)	3.766	0.152
6–10 years	5 (13.9)	9 (31.0)		
11 years and above	1 (2.8)	2 (6.9)		
Children's clinic where the nurse works				
General pediatric	14 (38.9)	9 (31.1)	6.644	0.156
Emergency	5 (13.9)	5 (17.2)		
Surgery	10 (27.8)	4 (13.8)		
Intensive care	6 (16.7)	5 (17.2)		
Outpatient clinic	1 (2.7)	6 (20.7)		
Previous training on the management of pain among children				
Yes	18 (50.0)	5 (17.2)	6.174	**0.013**
No	18 (50.0)	24 (82.8)		

The present study was carried out to determine the knowledge and practices of pediatric nurses regarding pain management among children with CI, and the findings were discussed in line with the relevant literature. In the present study, it was determined that nurses reported the most common parameters used in assessing pain among children with CI as facial expression and behavioral responses. Physiological parameters, and crying were also reported between pain assessment parameters. Changes in facial expression, sounds, posture, movements, sleep cycle, eating habits, mood, and socialization, as well as physiological changes, are reported as cues used to diagnose pain among children with CI.[22,23] In a study evaluating the beliefs of physicians and nurses regarding the assessment and management of pain among children with and without CI, it was determined that there were differences in the responses to pain assessment methods and behavioral interventions according to the level of CI among children. Although personal statements and observation were preferred pain assessment methods for both physicians and nurses, self-report was clearly reported as less appropriate for children with moderate to severe CI.[21]

Pain assessment methods among children include developmentally appropriate pain rating scales, behavioral observation, and changes in vital symptoms. Nurses' knowledge of this subject is important for accurate pain assessment. [19,20] In the present study, the majority of nurses stated that pain assessment in children with CI involves observing the child's reactions and expressions, pain symptoms, and the parents' assessments into account when assessing pain. As the level of CI significantly affects pain behavior among children, pain assessment based only on facial expression

may be insufficient to assess pain among these children.[24] Research suggests that the parents of children with CI often develop knowledge and skills experientially,[25,26] and assess their children's pain accurately[7,12]; however, there are also results suggest that some parents may underestimate the severity of their children's pain.[13] In some cases, even parents who know their children very well may have difficulty assessing the severity and location of pain. Therefore, it is important to observe the physiological and behavioral parameters associated with pain as well as take the statements of parents into account account for, and appropriate pain scale to accurately assess pain. In the present study, nurses reported that they needed knowledge regarding pain assessment and relief. Similar to this finding, Malviya et al. (2005), also determined that nurses and physicians needed further knowledge on the assessment and management of pain among children with CI.[27] Carter et al. (2016), conducted a qualitative study with health professionals on the assessment and management of pain among children with severe CI and identified gaps in knowledge in terms of pain assessment and management.[6]

The present study determined that the majority of nurses did not use a scale in pain assessment and the scales used were FLACC, VAS, and Wong-Baker Faces scale. As the perception and expression of pain among children varies according to age, pain assessment also varies according to the developmental period of the child. Defrin et al. (2006), demonstrated that standard pain scales or tools based solely on facial reactions are not suitable for children with CI, as the level of CI significantly affects pain behavior.[24] Specific pain assessment tools, such as Pediatric Pain Profile [7,28,29], revised-Face, Legs, Activity, Cry, Consolability (r-FLACC) scale[30], and Non-Communicating Children Pain Checklist-Revised (NCCPC-R)[31] are recommended for children with CI. Disseminating the use of scales in pain assessment among children with CI in pediatric clinics is also recommended. It was thought that of the opinion that nurses lacked knowledge in this regard.

In terms of reducing the pain of children with CI, 55.4%, 35.4% of nurses reported that they used nonpharmacological, pharmacological methods, and 9.2% no specific methods were used in the clinic where they worked, respectively. A study on the management of postoperative pain among children with and without CI found that children with CI were evaluated less for pain on postoperative days and received less controlled analgesia.[32] Another study highlighted that children with CI took fewer opioids during the perioperative period than children without CI.[33] In the present study, it was found that in the nonpharmacological methods most common ones used by nurses were distraction, massage, cold application, etc. Studies on the management of acute pain among children with CI reported that vibrating cooling/buzzy[34] and hypnosis[35] were used as nonpharmacological methods. Fanurik et al., reported that guided imagery/hypnosis and relaxation training are less preferred methods by nurses' and physicians among children with severe CI.[21]. In the present study, the use of nonpharmacological methods was less common among male nurses. It is believed that further in-service training programs are needed to address the knowledge and practice gap on this issue.

CONCLUSION AND RECOMMENDATIONS

The majority of the pediatric nurses reported the parameters used to assess pain among children with cognitive impairment as facial expressions and behavioral responses. The majority of nurses reported that they needed knowledge regarding pain assessment in children with CI. The rate of using a scale in pain assessment among children with CI was low and pain assessment was not performed using appropriate scales. In terms of reducing the pain of children with CI, 55.4%, 35.4% of nurses reported that they

used nonpharmacological, pharmacological methods, and 9.2% no specific methods were used in the clinic where they worked. The commonly used nonpharmacological methods were distraction technique, massage, cold application, etc.

A significant difference was found in the use of nonpharmacological methods with respect to gender and previous training on pain management. Accordingly, using non-pharmacological pain relief methods was more common among female nurses than male nurses. The rate of applying non-pharmacological methods was low in those who did not receive training about pain management before.

Nurses have important roles in assessing and managing pain among hospitalized children.[19] For children with CI and especially who cannot report the severity of pain themselves, nurses should use an appropriate pain measure for this vulnerable population. In this context, in-service training should be organized for assessing pain, and nonpharmacological pain relief methods among children with CI, and the use of appropriate scales should be promoted.

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