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Knowledge, Attitudes and Practices of Pediatric Nurses in Turkey Towards the Use of Physical Restraints

Esra Tural Büyük

Department of Child Health Nursing, Ondokuz Mayıs University Faculty of Health Sciences, Samsun, Turkey

Abstract

BACKGROUND/AIMS: The use of physical restraint in children holds greater importance compared to adults due to the fact that children cannot express themselves. This research, taking into account the important role of pediatric nurses in ensuring patient rights and safety, was conducted as a descriptive and cross-sectional study to determine the knowledge, attitudes, and practices regarding the use of physical restraint.

MATERIALS AND METHODS: The study population consisted of 152 nurses working in the pediatric clinics of a university and a public hospital. The participant data were collected using the "Levels of Knowledge, Attitudes and Practices of Staff Regarding Physical Restraints Questionnaire". The data were analyzed using SPSS, and percentage, Mann-Whitney U and Kruskal-Wallis analyses were performed.

RESULTS: It was observed that all of the pediatric nurses who participated in this study used physical restraints. The most common type of physical restraints were wrist restraints (95.4%) and the reason for physical restraints was to prevent the agitated child from harming themselves and/or others (93.4%). It was observed that the knowledge, attitudes and practices regarding the use of physical restraint were affected by whether the nurses had received any previous education on physical restraints and which unit they worked in ($p<0.05$).

CONCLUSION: The results of this study suggest that pediatric nurses in Turkey need education and specialist counseling regarding physical restraints and relevant protocols must be established by health organizations.

Keywords: Physical restraints, pediatric nurses, knowledge, attitudes, practices

INTRODUCTION

Physical restraining is the use of physical, chemical or mechanical tools and devices which allow the restriction of a part of a demented, agitated or confused patient's body to control/restrain the patient's physical movements in order to prevent the patient from harming and/or injuring themselves, and to ensure the safe treatment of the patient.[1,2] The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) defines physical restraint as the "use of physical restraints for the purpose of controlling the actions of a person, without the consent of the person".[3,4] Physical restraint is generally used for pediatric patients, patients in intensive care units and patients over 65 years of age.[5] Physical restraint is mostly used in cases where the patient exhibits physically harmful behavior and alternative methods are insufficient to protect the patient.[6,7] There is often a need to completely restrain children for special procedures.[8] In this respect, physical restraint is used to control movement with the aim of providing appropriate posture, reducing the risk of falling, preventing the removal of critical equipment, reducing the risk of harm to themselves or others and facilitating the application of medical treatments in pediatric patients.[4,8-12] In addition, physical fixation application in the child is frequently used in cases of staff shortage and when the child needs urgent medical interventions.[7]

Physical restraint applications are perceived as beneficial for the patient, however, it is highly important to evaluate the advantages and disadvantages of physical restraints especially in pediatric patients who

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ORCID ID of the author: E.T.B. 0000-0001-8855-8460.

Address for Correspondence: Esra Tural Büyük
E-mail: esratural55@gmail.com
ORCID ID: orcid.org/0000-0001-8855-8460

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are unable to express themselves. In the literature, the prolonged and uncontrolled use of physical restraints has been associated with muscle weakness, urinary and fecal incontinence, pressure sores and related infections, insomnia, agitation, confusion, fear, depression, decreased self-confidence and self-respect, deteriorated body image, lack of sensation and negative consequences such as death due to asphyxia.[5,13,14] Health care providers need to identify opportunities to decrease the risks associated with the use of restraints through preventive strategies, innovative alternatives and procedural improvements in order to help focus on the pediatric patients overall well-being, health and safety.[8]

It is known that there are differences in restraint standards between different countries.[15-17] However, according to the JCAHO standards, the use of physical restraint should be initiated by professionals upon the order of a physician, and nurses are entitled to use physical restraints only in the absence of the physician and provided that a written order is obtained within 12 hours.[18] In Turkey, it is necessary to obtain a physician order and informed consent given by the patient or surrogate in order to use physical restraint.[3,19] In recent years, there has been a significant increase in studies which aimed to determine the frequency of application, levels of knowledge and attitudes of nurses and to minimize the use of physical restraint.[20-22] However, there are a limited number of studies in pediatric nurses in Turkey and developing countries.[10] The use of physical restraint in children holds greater importance compared to adults due to the fact that children cannot express themselves. Therefore, taking into account the important role of nurses in providing patient rights and safety, this topic holds great importance since physical restraint often causes harm to pediatric patients rather than preventing it and it is a critical issue of human rights with regard to physical, psychological, social and legal aspects.

This study was carried out to determine the knowledge, attitudes and practices of pediatric nurses with regard to the use of restraints and their associated factors.

MATERIALS AND METHODS

Type of study: This research was conducted as a descriptive and cross-sectional study.

Study place and features: This study was carried out on pediatric nurses working in a university hospital and a public hospital located in the north of Turkey.

Study population-sample: Data collection was conducted between May and June 2018. The number of nurses in the population was 228, while the number of nurses in the sample (those with an experience of at least one year and those not working in polyclinics) was 191 in total. The study was completed with 152 nurses (66% rate of participation) excluding those who were on leave, those who did not fill in the questionnaire completely and those who did not agree to participate in this study.

Data collection tools: The data were collected using the "Information form" developed by the authors and the "Levels of Knowledge, Attitudes and Practices of Staff Regarding Physical Restraints Questionnaire".[23] A face-to-face questionnaire was conducted. The questionnaires were filled in with the nurses in their rest-room so that they would not be affected by each other.

Personal information form: This form was designed by the author according to the literature. It consisted of a total of 13 questions on the socio-demographic and occupational characteristics, previous educational background on physical restraint, application and reasons for physical restraint among the nurses.

Levels of Knowledge, Attitudes and Practices of Staff Regarding Physical Restraints Questionnaire: The Levels of Knowledge, Attitudes and Practices of Staff Regarding Physical Restraints Questionnaire was improved by Suen[24] in 1999 and the test-retest total correlation co-efficient of the original scale was determined to be 0.85-0.99. The scale was adapted into Turkish by Kaya et al.[23] with a test-retest value of 0.88-0.90 and a Cronbach's alpha co-efficient of 0.69. In this study, the Cronbach's alpha co-efficient was determined to be 0.64. This scale was used in different previous studies whose samples included nurses working in pediatric clinics.[4,5,25] The scale was adapted into Turkish by the authors and includes three sections. The first section consists of 11 items with 10 correct answers (true) and 1 wrong answer (false) to the questions. This section aims to measure the knowledge of nurses on the use of physical restraint. Correct responses are given 1 point, whereas incorrect responses are given 0 points. The score limits of this section range between 0 and 11, with higher scores indicating higher levels of knowledge. The second section is a 4-point Likert-type scale consisting of 12 items which measure the attitudes of nurses toward the use of physical restraints, in which "*I definitely agree*" is evaluated as 4 points: "*I agree*" as 3 points, "*I disagree*" as 2 points and "*I absolutely disagree*" as 1 point. The score limits of this section range between 12 and 48, with high scores indicating positive and lower scores indicating negative attitudes. The third section consists of 14 items which evaluate the use of physical restraints among nurses. In this section, item 10 is a negative item and is evaluated in reverse order compared to the rest of the items. This section was designed as a 3-point Likert scale, in which "never" is evaluated as 1 point, "sometimes" as 2 points and "always" as 3 points. Scores range between 14 and 42 and higher scores indicate an excellent application of physical restraints practices whereas lower scores indicate unsuitable practices. In this study, the Cronbach's alpha value was determined to be 0.76 with the knowledge subscale value of $\dot{\alpha}$=0.59, the attitude subscale value of $\dot{\alpha}$=0.77 and the practice subscale value of $\dot{\alpha}$=0.84.[23]

Ethical consideration: The data collection was initiated after obtaining the approval of the Ondokuz Mayıs University Ethics Committee (approval number: B.30.2.ODM.0.20.08/1563-1620, date: 30.04.2018). The participants signed written informed consent forms before completing the survey. They voluntarily and anonymously participated in this study, and there were no actions taken against non-participation.

Statistical Analysis

The data were analyzed using the SPSS software version 23. Descriptive statistics included number, percentage, mean, standard deviation, and median. Inferential statistics for normally distributed data included parametrical tests (independent two-sample t-test, One-Way analysis of variance and Tukey's test), and for non-normally distributed data included non-parametric tests (Mann-Whitney U, Kruskal-Wallis H test, Tamhane's T^2 test).

RESULTS

It was determined that the majority of the nurses were in the 31-40 age group, female, married, had a bachelor's degree and a professional experience of 1-10 years and, finally, one third of them worked mainly in maternity departments, and one quarter worked mainly in pediatric intensive care units (Table 1).

The study results demonstrated that all of the pediatric nurses who participated in this study (100%) used physical restraints. In addition, 45.4% of the nurses stated that they had previously participated in an education program on physical restraints and 71.7% said that both nurses and physicians were entitled to decide on the use of physical restraints. It was found that the most common types of restraint used by the nurses were wrist restraints and ankle restraints. When questioned about the factors as to why they used physical restraints, the most significantly reported reasons were to prevent the agitated children from harming themselves and/or others, to prevent the child from pulling at the attached medical devices, to prevent falls and to manage pediatric patients with altered consciousness. A high proportion of the nurses stated that physical restraint applications should be recorded, while all of them stated that the child who underwent physical restraint should be monitored. A small number of the pediatric nurses stated that they observed complications associated with the use of physical restraints.

Table 1. Descriptive characteristics of the nurses (n=152)

Characteristics	Number (n)	Percentage (%)
Age (years): 35.03±7.09 (minimum: 23-maximum: 55)		
20-30-year olds	34	22.4
31-40-year olds	78	51.3
40 years and older	40	26.3
Gender		
Female	149	98.0
Male	3	2.0
Marital status		
Married	120	78.9
Single	32	21.1
Educational background		
High school	7	4.6
Associate degree	27	17.8
Graduate degree	109	71.7
Post graduate degree	9	5.9
Length of professional experience		
1-10 years	73	48.0
11-20 years	51	33.6
21-30 years	28	18.4
Current unit		
Maternity unit	53	34.9
Pediatric intensive care unit	37	24.3
General pediatrics	33	21.7
Pediatric emergency care	16	10.5
Surgical unit	13	8.6
Total	152	100.00

When the nurses were asked what measures they took to minimize the use of physical restraints, it was determined that the majority of the nurses raised bed rails and ensured the child was accompanied by the mother and they tried to calm the child down by talking to them. Only a small number of the nurses stated that they obtained permission from the family before using physical restraints, with nearly all of them reporting that they recorded the procedure (Table 2).

Among the nurses, the mean scores regarding the use of physical restraints were determined as follows; the mean knowledge level score was 8.37±1.02, the mean attitude score was 20.14±3.90 and the mean practice score was 33.91±3.13 (Table 3).

Age, marital status, gender, educational background and length of professional experience were not statistically correlated with the

Table 2. Nurses' attitudes regarding physical restraints (n=152)

	Yes, n (%)	No, n (%)
Application of physical restraint	152 (100)	-
Obtaining information about physical restraint during nursing education	69 (45.4)	83 (54.6)
The authority to use physical restraint		
Nurse	6 (3.9)	146 (96.1)
Physician	37 (24.3)	115 (75.7)
Both	109 (71.7)	43 (28.3)
Most common type of physical restraint		
Wrist restraints	145 (95.4)	7 (4.6)
Ankle restraints	131(86.2)	21 (13.8)
Use of physical force to prevent harm to the agitated patient	27 (17.8)	125 (82.2)
Hand and ankle restraints in addition to chest or waist restraints to the bed at the same time	16 (10.5)	136 (89.5)
Chest and waist restraints	7 (4.6)	145 (95.4)
Reasons for physical restraint in pediatric patients		
To prevent agitated patients from harming themselves and/or others	142 (93.4)	10 (6.6)
To prevent pediatric patients from removing attached medical devices	132 (86.8)	20 (13.2)
To prevent falling off the bed	129 (84.9)	23 (15.1)
Altered state of consciousness	113 (74.3)	39 (25.7)
To carry out medical treatment	91 (59.9)	61 (40.1)
To compensate for insufficient staff	20 (13.2)	132 (86.8)
Complications associated with physical restraints	12 (7.9)	140 (92.1)
Methods to minimize the use of physical restraints		
Raise bed rails	141 (92.8)	11 (7.2)
Ensure the child is accompanied by the mother	147 (96.7)	5 (3.3)
Calm the child down by talking	118 (77.6)	34 (22.4)
Allow the child to play games	104 (68.4)	48 (31.6)
Administer drugs	68 (44.7)	84 (55.3)
Family consent	6 (3.9)	146 (96.1)
Written record of physical restraint application	146 (96.1)	6 (3.9)

knowledge levels, attitudes and practice scores of the nurses regarding physical restraints (p>0.05). Knowledge on physical restraints and the working units were significantly correlated with the mean knowledge and attitudes scores (p<0.05). Moreover, there was a statistically significant correlation between knowledge and previous education programs on physical restraints and the mean attitude scores (p<0.05), whereas no statistically significant correlation was found between the mean practice scores (p>0.05) (Table 4).

DISCUSSION

In this study, we aimed to explore the knowledge and practices of pediatric nurses about physical restraint, and our findings show that all of the nurses used physical restraint (Table 2). International and national studies have also revealed that the use of physical restraint in pediatrics and other fields is highly common in clinical settings, which is also consistent with our study results.[5,6,10,22,26,27]

Our study results showed that almost half of the pediatric nurses had received previous education on physical restraint (Table 2). In fact, the subject of physical restraint and application is included in both the nursing undergraduate education and the clinical training conducted in the hospital. However, the other half stated that they had not received such training. Other current studies have noted that nurses have insufficient education with respect to physical restraint.[9,10,14,16,20] However, it is also emphasized that the use of physical restraint should only be preferred after the elimination of alternative methods in order to ensure patient safety and that nurses should be educated and experienced in order to ensure that physical restrains are applied safely.[1,3,28,29]

The participating nurses stated that they mostly used physical restraints to prevent agitated children from hurting themselves and/or others, to prevent the removal of attached medical devices, and to prevent children from falling off the bed (Table 2). Pediatric nurses are more likely to use restraints depending on the need to ensure the security of pediatric patients and to prevent adverse sequelae.[10,30] In addition, nurses working in pediatric clinics stated that the need to use restraint was more related to the application of interventions (such as nasogastric tube insertion, Lumber puncture, IV catheter insertion) rather than the individual care needs of the child,[7,22,30] which was consistent with other studies in the literature.

The majority of nurses in this study stated that they raised the bed rails, ensured that the child was accompanied by the mother, calmed the child down by talking to them and allowed the child to play in order to minimize the use of physical restraints (Table 2). Previous studies have noted that physical restraints should be applied carefully and only when necessary and that alternative methods should always be considered in order to reduce the negative effects on children and their family, although the use of physical restraint is frequently required in many pediatric cases.[22,29] It is known that physical restraint is mostly used for medical procedures in pediatric clinics, therefore, it is stated that supporting a child and their family in medical interventions before, during and after the restraint procedure (e.g. lumber puncture) may reduce the need for physical restraint.[7,22,31] Methods such as the presence of the family during medical interventions applied on the child, using distractive methods (breathing exercises, listening to music, watching film, etc.), ensuring that the child is in a comfortable position during invasive procedures, using oral or local analgesics before the procedure

Table 3. The mean subscale scores of the participants in the Scale of Nurses Using Physical Restraint (n=152)

	Mean ± SD	Min.-max.	Median
Nurses' knowledge level regarding physical restraints	8.37±1.02	5-9	9
Nurses' attitudes regarding physical restraints	20.14±3.90	7-28	20
Nurses' practices regarding physical restraints	33.91±3.13	16-36	35

SD: standard deviation, Min.: minimum, Max.: maximum.

Table 4. Knowledge, attitudes and practice scores regarding the use of physical restraints based on any previous education programs on physical restraints

	Nurses' knowledge level regarding physical restraints		Nurses' attitudes regarding physical restraints		Nurses' practices regarding physical restraints		
	Mean ± SD/median (min.-max.)	Test statistics, p-value	Mean ± SD/median (min.-max.)	Test statistics, p-value	Mean ± SD/median (min.-max.)		Test statistics, p-value
Current unit							
Newborn intensive care unit	8.60±7.43/9 (7-9)	KW=8.954 **0.030**	20.75±3.38	F=4.42 **0.002**	34.77±1.76/35 (24-36)		KW=7.695 **0.042**
Pediatric intensive care unit	8.56±1.14/9 (6-9)		18.56±3.61		34.60±1.14/35 (24-36)		
General pediatric service	8.30±0.91/8 (6-9)		20.18±3.25		34.37±2.65/34 (32-36)		
Pediatric emergency unit	8.03±1.14/8 (7-9)		18.25±3.08		33.13±3.25/34 (25-36)		
Pediatric surgery unit	8.08±1.18/8 (6-9)		17.53±3.64		32.46±5.26/34 (16-24)		
Obtaining information about physical restraint during nursing education							
Yes	8 (6-9)	U=1956.000 **0.001**	18 (7-25)		U=2313.000 **0.040**	35 (25-36)	U=2723.500 0.593
No	9 (5-9)		20 (9-28)			35 (16-36)	

KW: Kruskal-Wallis tests, U: Mann-Whitney U test, min.: minimum, max.: maximum, F: One-Way analysis of variance and Tukey's test.

and having an experienced health team perform the invasive procedure decrease the need to use physical restraints.[13,30] It is necessary to reward or praise the child after a medical procedure, accompany the child until calm if he/she is upset and explain to the child and their parents why it is necessary to use physical restraint.[22,31] This information suggests that the use of alternative methods to physical restraint should be promoted and expanded.

In our study, only one quarter of the nurses acknowledged that the physician was the true authority on deciding whether to use physical restraint (Table 2). However, according to the JCAHO standards, the use of physical restraint should be initiated by professionals only upon the order of a physician. Additionally, nurses are entitled to use physical restraints only in the absence of a physician provided that a written order is obtained within 12 hours.[32] In Turkey, physical restraint can only be used upon a physician's order according to the instructions published by the Ministry of Health on the care of patients under restriction.[19] Previous studies conducted in Turkey have determined that nurses use physical restraints independently without obtaining a physician's order.[9-11,14,25,33] According to several international studies, nurses in Singapore used physical restraints without a physician's order, nurses in Hong Kong tended to decide on the use of physical restraints, and the use of physical restraints could be only authorized by physicians in Canada.[20,34] The comparison of Turkey with other countries show that there are some differences in the application of physical restraints, which may be due to different policies related to public health between the countries.

This study shows that none of the nurses obtained permission from the family for the use of physical restraints (Table 2). Studies conducted in Turkey have revealed that there is a serious deficiency in obtaining permission from the family in cases where physical restraint is required.[5,10,11,13] International studies have demonstrated that nurses frequently obtain permission from the families and even the children at times.[6,7,21,30,35] According to some recent studies, the use of physical restraint in children without their consent should be considered as a last resort.[31,35] The results of these studies are thought to be related to the insufficient knowledge of nurses regarding procedures and their responsibilities in terms of the physical restraint practices in our country and the ineffective use of the consent form in hospitals. In Turkey, it seems apparent that legal arrangements should be made on this issue.

In this study, most of the nurses reported recording physical restraint applications (Table 2). It is unclear whether patients should be monitored closely considering the physical, psychological and social impact which physical restraints may cause. A previous study found it important to evaluate the patients' responses after undergoing physical restraints, to monitor the patient closely and to record these results properly.[28] The results of this study showed that the nurses did not record the use of physical restraints, some did not deem it necessary,[3] and some nurses were aware of the importance of keeping records, and they often refrained from doing so in practice.[23,25] Our findings contradict the literature. Considering the role and importance of maintaining records and reports in nursing care, it appears that the necessary training should be carried out to improve the nurses' knowledge, attitudes and practices on such topics.

The mean scores of knowledge, attitudes and practice scores related to physical restraint were found to be quite favorable among the nurses, which is thought to be correlated with their high quality of nursing care (Table 3). The reason why the nurses exhibited better knowledge, attitudes and practices about physical restraint was attributed to the fact that pediatric areas include more invasive procedures, which require the use of physical restraints more frequently compared to the other clinics.[4,11,28]

This study's findings demonstrated that nurses working in neonatal and pediatric intensive care units have greater knowledge and better attitudes compared to those nurses working in other pediatric clinics (Table 4). A relevant domestic study revealed that the level of knowledge and attitudes is moderate among the pediatric intensive care nurses regarding the use of physical restraints, however they exhibited better behavior. In the same study, it was found that the knowledge and attitudes of nurses working in the service for older children were more positive than the intensive care nurses but there was no difference between their behaviors.[4] Again, in Turkey, another review of the nurses working in the pediatric surgery service demonstrated that most perceived physical restraint as a natural part of treatment and care, and it is mostly used to ensure the safety of the child, however, approximately half of the nurses used alternative methods in order to reduce the use of physical restraint.[13] The pediatric oncology nurses stated that the use of physical restraint is of great benefit when the procedure is managed successfully, however, it should be applied carefully and alternative methods should be considered at all times even when the use of physical restraint is necessary.[29]

In this study, it was found that those nurses who had been trained with regards to physical restraint during their undergraduate education had more information and more positive attitudes about the application of physical restraints, but this did not affect practices about the use of physical restraints. Recent studies have found that having attended training was not related to knowledge, attitude and practices among pediatric nurses, whereas the rate of physical restraint use was even higher among those nurses who had received in-service training compared to the others.[4,10] Performance improvement processes through the education of staff allow for ongoing opportunities to improve care and reduce the risks associated with restraint use.[12]

Study Limitations

The limitations of this study are the facts that it was carried out in only one region of the country and it was based on nurses' self-reporting.

CONCLUSION

This study demonstrated that all of the participating pediatric nurses opted for physical restraint, with the most common type of restraint being extremity, while the most common reason for the use of restraint was to prevent pediatric patients from harming themselves and pulling at medical devices. It was observed that the nurses generally had a favorable level of knowledge, positive attitude and suitable behavior, whereas those working in pediatric intensive care units and neonatal units exhibited higher levels of knowledge, attitude and behavior, in particular. It was found that those nurses who had been trained about physical restraint during their undergraduate education had more

information and more positive attitudes regarding the application of physical restraints, but this did not affect their practices about the use of physical restraints. In addition, it was noted that nurses tried some alternative methods to reduce the use of physical restraints, but they did not seek approval from physicians prior to the application of physical restraint. Again, in the study, it was observed that the nurses did not make an attempt to obtain informed consent from children or their parents for the use of physical restraints.

This study highlights the lack of education and specialist counseling regarding physical restraint among pediatric nurses in Turkey, and the necessity to follow the necessary protocols established by health organizations. In this regard, it is necessary that this topic is widely integrated into the Turkish nursing curriculum, and that regular in-service training programs are carried out, particularly for pediatric nurses, in order to inform and educate them. Given the fact that physical restraints are more commonly used in pediatric care units, further studies are needed to provide a basis for evidence-based practices, to develop protocols and to emphasize the importance of this subject. Therefore, additional studies on the use of physical restraint by pediatric nurses are recommended.

MAIN POINTS

- This study highlights the lack of education and specialist counseling regarding physical restraint among pediatric nurses in Turkey, and the necessity to follow the necessary protocols established by health organizations.
- This study may help to raise awareness among pediatric nurses regarding the ethical aspects of physical restraint applications and to raise awareness regarding the necessity in this regard.
- It is recommended to develop new approaches in order to reduce the use of physical restraint and its associated complications in children.

ETHICS

Ethics Committee Approval: The data collection was initiated after obtaining the approval of the Ondokuz Mayıs University Ethics Committee (approval number: B.30.2.ODM.0.20.08/1563-1620, date: 30.04.2018).

Informed Consent: The participants signed written informed consent forms before completing the survey.

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