



## Original Article

# The effects of physical restraint education on the knowledge and attitude of nurse interns

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### Abstract

**Objectives:** The aim of this study was to determine the effect of training regarding the use of physical restraint of patients on the knowledge and attitude of nurse interns.

**Methods:** This was an experimental study with a pre-test and post-test design. The population consisted of a total of 140 intern students attending the faculty of nursing of a single university in Turkey. Data related to demographic characteristics and experience were collected, and the respondents were also asked about alternative methods to physical restraint in an open-ended question during the pre-test phase. The Physical Restraint Knowledge, Attitude, and Practice Scale was used to assess the students before and after a nursing care management class that included physical restraint training.

**Results:** Most of the nurse interns (63.6%) stated that they had experienced the use of physical restraint; most (29.3%) had encountered the practice in a psychiatry clinic. A majority of the students indicated that the content of the undergraduate education regarding physical restraint was not sufficient (65.7%) and that they did not know about alternatives to physical restraint (80%). The mean post-test scores in the knowledge, attitude, and practice subdimensions of the scale were significantly higher than the pre-test scores recorded prior to the training ( $p \leq .001$ ). There was a statistically significant increase in the following items: "Residents may refuse to be placed in a restraint" ( $p \leq .001$ ;  $\chi^2 = 0.03$ ), "If physical restraints are to be used, it is required to have signed consent from a member of the patient's family" ( $p = 0.002$ ;  $\chi^2 = 7.98$ ), and "Restraints should be released every 2 hours" ( $p \leq .001$ ;  $\chi^2 = 13.49$ ) in the knowledge subdimension. Higher scores were also seen in many attitude subdimension items, such as "I feel that family members have the right to refuse the use of restraints" and "I feel guilty placing a resident in restraints," and in the practice subdimension, improved scores were seen in items such as "I try alternative measures before restraining a resident" and "When I restrain a resident, I make this decision only with a physician's order" after the training.

**Conclusion:** Detailed training on the use of physical restraint, including consideration of alternative techniques, rights, and legal aspects, significantly improved the knowledge and attitude the nurse interns. Additional observational studies of practice are recommended.

**Keywords:** Legal liability; nursing education; nursing evaluation research; nursing students; physical restraint.

The use and definition of physical restraint is a complex subject; however, an international, multidisciplinary group study provided a research definition of "...any action or procedure that prevents a person's free body movement to a position of choice and/or normal access to his/her body by the use of any method, attached or adjacent to a person's body that

he/she cannot control or remove easily."<sup>(1)</sup> Physical restraint is used in many hospital units, particularly intensive care, psychiatry, emergency, and neurology, in order to control the behavior of patients who display agitation; to prevent patients from harming themselves, other patients, or employees; to prevent a patient from falling out of bed; and to ensure the

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**Submitted Date:** March 18, 2021 **Accepted Date:** September 03, 2021 **Available Online Date:** March 21, 2022

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#### What is presently known on this subject?

- There are a number of potentially consequential risks and adverse effects associated with the use of physical restraint. Numerous studies continue to recommend reduced use of these techniques. While awareness and regulations are improving, widespread use continues, largely due to insufficient education of staff and others, a lack of corresponding institutional guidelines, and clinical conditions.

#### What does this article add to the existing knowledge?

- The results of this study indicated that nursing students, many of whom had already experienced the use of physical restraint, were not aware of alternative methods and were negatively affected by routine practices in clinics, however, training was effective in improving their knowledge and attitude about the use of physical restraint.

#### What are the implications for practice?

- The content in the undergraduate curriculum regarding the ethical, legal, and patient safety aspects of physical restraint should be improved in accordance with current literature. Nursing students should be given the tools and instruction needed to develop and implement the philosophy that physical restraint is to be applied as a last resort when alternative methods are inadequate before they graduate.

continuation of medical treatment, among other reasonable circumstances.<sup>[2-6]</sup> The measures employed can include limb restraint, a chest strap, bed rails, a restraint shirt, or restraint sheets, among other methods.<sup>[7]</sup>

Though it may be used for patient safety and have therapeutic value in some instances, physical restraint can have numerous significant negative effects, such as agitation, delirium, or hallucinations; deep vein thrombosis; cutaneous, vascular, neural, and musculoskeletal injuries; post-traumatic stress disorder; and a longer hospital stay.<sup>[8-10]</sup> In a literature review examining the legal and medical aspects of physical restraint, it was reported that most deaths due to physical restraint were caused by asphyxiation associated with delirium.<sup>[11]</sup> In one study conducted in Turkey, psychiatric patients reported that they felt punished during the restriction and their basic needs were not met.<sup>[12]</sup> The potential physical and psychological harms that may result due to the use of physical restraint and the impact of the practice on the patient's autonomy, dignity, and general well-being make the practice a complex and controversial issue.<sup>[13-15]</sup> Efforts to reduce the rate of use of physical restraint have grown substantially worldwide.<sup>[16-19]</sup> In the USA, guidelines developed by the Centers for Medicare and Medicaid Services and the Joint Commission, a healthcare accreditation organization, emphasize that physical restraint should be applied only when alternative, less restrictive techniques fail or in the case of an emergency that endangers the life or physical safety of the patient or another party.<sup>[20,21]</sup> The current version of the Turkish Ministry of Health Quality Standards for Hospitals (2020) includes limited guidance, such as when physical restraint may be applied, especially in psychiatry clinics, the need to inform patients and their relatives, process management in the event of emergencies, the materials to be used, who can make the decision to apply restraint, and how restraint is to be applied.<sup>[22]</sup> The literature recommends the use of alternatives designed to avoid the use of physical restraint when feasible, including risk assessment with standard scales, psychotherapy, reducing sensory stimuli, using thera-

peutic communication and verbal and nonverbal de-escalation techniques, and including the patient in their own care.<sup>[10,23,24]</sup> However, it has been reported that physical restraint is still commonly used in many countries, and often misused for non-therapeutic purposes. Nurses can face complex ethical dilemmas regarding their responsibilities that only become more challenging when the facility is under-resourced and alternatives to physical restraint and the complications it may cause are unknown.<sup>[25-27]</sup> It has been observed that physical restraint is widely used in Turkey, especially in psychiatry and intensive care, that physical restraint records are not kept adequately, it is applied without a doctor's request, and that the knowledge level of employees about the subject is insufficient.<sup>[7,8,28,29]</sup>

The education level, attitudes, and beliefs of healthcare employees have a great effect on reducing the use of physical restraint.<sup>[28,30-36]</sup> Nurses who are well informed about the topic use alternatives more often than restraint.<sup>[19,37]</sup> These results support the theory of planned behavior. Environmental factors have an effect, and nurses' knowledge, experience, and attitudes are among the strongest determinants of the use of physical restraint.<sup>[31]</sup> The need for training related to the use of physical restraint has been emphasized in many studies.<sup>[25-27,38]</sup> Several authors have observed that appropriate undergraduate education was associated with reduced initiation and duration of physical restraint,<sup>[19]</sup> that nurses should adopt proactive care approaches based on training to avoid and reduce the use of restraint,<sup>[39]</sup> that ethics training should be provided to inform nurses' attitudes and beliefs regarding physical restraint,<sup>[35]</sup> and that nursing education should include finding alternative practices.<sup>[26]</sup> Recent physical restraint protocols emphasize that patients have the right to receive care from trained and qualified health professionals.<sup>[21,40]</sup> Proper and adequate evaluation of the effect of restraints on the reduction of physical violence, maintenance of the dignity of the patient, and the prevention of possible complications requires training.<sup>[21,40]</sup> The American Nurses Association (ANA) recommends discussing the ethical dimensions and implementation policies of physical restraint as part of undergraduate nursing education and teaching the use of alternatives.<sup>[40]</sup> The Registered Nurses' Association of Ontario (RNAO) also recommends that the theoretical knowledge, crisis management, and least restrictive methods be taught to nursing students before graduation to ensure the safety of patients.<sup>[41]</sup>

During the nursing internship period, clinical and theoretical experience are combined. This is a good opportunity to discuss the very complex subject of the application of physical restraint in a safe environment and to encourage the student to analyze this practice by focusing on their attitudes and values.<sup>[42]</sup> Fradkin et al.<sup>[43]</sup> concluded that most of the nursing students in a study conducted in Israel followed the accepted practice in the hospital, even when contrary to protocol and indeed, their own views of restraint. Karagozoglu et al.<sup>[44]</sup> noted that nurses need continuous training on physical restraint. Wang et al.<sup>[39]</sup> suggested that in-service training content should include

case discussions and the ethical and legal aspects of physical restraint. Early, thorough, and consistent training as well as support and guidance from experienced professionals can help nurse interns develop the appropriate ethical framework to understand the implications of the use of physical restraint, to avoid it when possible, and to implement it safely when necessary. Although a review of the literature revealed some descriptive studies on this subject, to our knowledge, there is no study focusing on the effect of physical restraint training on the knowledge and attitude of student nurses.

### **Purpose and Hypotheses of the Research**

The objective of this research was to determine the effect of physical restraint training provided to nurse interns on the students' knowledge and attitudes regarding physical restraint.

*Hypothesis 1:* The post-training knowledge subdimension score of the nurse interns who participated in the physical restraint training would be higher than the pre-training score.

*Hypothesis 2:* The post-training attitude subdimension score of the nurse interns who participated in the physical restraint training would be higher than the pre-training score.

*Hypothesis 3:* The post-training practice subdimension score of the nurse interns who participated in the physical restraint training would be higher than the pre-training score.

## **Materials and Method**

### **Ethics Considerations**

Before starting the research, permission was obtained from Kaya et al.<sup>[47]</sup> who conducted the validity and reliability study of a Turkish version of the scale used. The study was approved by the dean of the faculty and the Dokuz Eylül University Non-Interventional Clinical Research Ethics Committee on January 18, 2019 (no: 2019/01-141). The study was conducted in accordance with the principles of the Declaration of Helsinki. The students were informed that participation in the study was voluntary and that the results would be analyzed anonymously and would have no effect on grades. The purpose of the research was explained and informed consent was provided verbally.

### **Study Design and Sample**

This was a limited experimental design study with a single group using a pre-test and post-test model. The universe of the study consisted of 168 fourth year nurse intern students (84 in the fall semester, 84 in the spring semester) who took the Nursing Care Management course in 2018-2019 academic year. A sample size was not calculated; the sample comprised 140 students (69 in the fall semester and 71 in the spring semester) who agreed to participate in the study and completed the course. In all, 83.3% of those eligible participated in the research. Students working as nurses were not included in the sample. A post-hoc power analysis of the study using G\*Power

3.1.9.2 software (Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A.) yielded a result of 0.81 with a 95% confidence level.

### **Data Collection**

Before the training, the pre-test evaluation was carried out using a descriptive characteristics form and the Physical Restraint Knowledge, Attitude, and Practice Scale. The students then completed a 120-minute physical restraint training session. The content of the training was prepared based on studies and guides in the literature.<sup>[3,21,40,41]</sup> The content included the definition of physical restraint; types; reasons for application; potential physical, psychological, and social complications; alternative methods to physical restraint; physical restraint application steps; ethical issues; and the legal responsibilities of nurses. A sample case of malpractice related to a nurse who applied physical restraint on an agitated patient was discussed at the end of the presentation. The ethical, legal, and clinical issues of physical restraint, as well as communication between patient, nurse, and family were discussed. The class included a slide presentation, video demonstration, and the presentation of the case study (90 min) and a discussion and question period (30 min) to encourage active learning. The scale was administered after the course to determine the post-test results.

### **Data Collection Tools**

#### ***Descriptive Characteristics Form***

Prior to the training session, the students were asked to complete a form consisting of questions to gather data such as age, gender, the adequacy of the content related to physical restraint received during undergraduate education, experience with the application of physical restraint and the clinic where it was applied, the medical diagnosis of the restrained patient, and who can make the decision to apply restraint. An open-ended question was used to determine the respondents' knowledge and suggestions about alternative methods to physical restraint.

#### ***Physical Restraint Knowledge, Attitude, and Practice Scale***

The original scale was created by Janelli et al.<sup>[45]</sup> and subsequently adapted by Suen et al.<sup>[46]</sup> Suen et al. reported a Cronbach alpha value of 0.65, 0.61, and 0.94 for the knowledge, attitude, and practice subdimensions, respectively. Kaya et al.<sup>[47]</sup> adapted the scale for use with a Turkish population and reported a Cronbach alpha value of 0.88, 0.85, and 0.90 for the knowledge, attitude, and practice subdimensions, respectively, and 0.69 for the whole scale. In this study, the mean value of the pre-training scale was 0.67, and 0.74 after the training.

The scale consists of 3 parts. The first part consists of 11 items, 10 true and 1 false question to measure nurses' knowledge of physical restraint use. A correct answer is scored as 1, and an incorrect answer is scored as 0. The possible score is 0-11; a high score indicates a greater level of knowledge. The Kuder-Richardson (KR-20) value was calculated as a measure of

reliability.<sup>[48]</sup> A KR-20 value of 0.50 has been considered acceptable, however the value was determined to be 0.37 in our study.<sup>[48,49]</sup> This result may be due to the fact that each item in the first section measures a different variable; that is, it is heterogeneous. Although the 10th and 11th items on the form are particularly important, notably, the rate of correct answers in other studies in the literature is much lower than that of other questions.<sup>[28,37]</sup> When the 27% upper and lower groups were compared, it was determined that the difference ( $p < 0.001$ ) was significant. This suggests that the first part, measuring knowledge, has the feature of distinguishing the low and high groups from each other. The second part uses a 4-point, Likert-type scale consisting of 12 items measuring nurses' attitudes toward the use of physical restraint. A response of "strongly agree" scores 4 points, "agree" scores 3 points, and "strongly disagree" scores 1 point. The possible score is 12-48, with a high score indicating a positive attitude and a low score indicating a negative attitude. The Cronbach alpha value of this section was determined to be 0.67 before the training and 0.73 after the training in this study. The third part of the scale consists of 14 items evaluating nurses' practices regarding the use of physical restraint. A 3-point, Likert-type scale is used. A response of "never" scores 1 point, "sometimes" scores 2 points, and "always" scores 3 points. The 10th item in this practice subdimension of the scale is a negative item and is scored in reverse. The possible score is 14-42, with a high score indicating good practice in the use of physical restraint, while a low score indicates inappropriate practice. The Cronbach alpha value of this section was 0.72 before the training and 0.56 after the training in this study.

### Data Analysis

The data obtained from the research were analyzed using IBM SPSS Statistics for Windows, Version 24.0 software (IBM Corp., Armonk, NY, USA). In addition to descriptive statistical methods (frequency, mean, SD, minimum-maximum value, number, and percentage), a paired t-test and the Wilcoxon test were applied to compare the knowledge, attitude, and practice score averages. McNemar's test was also used to compare the proportions of paired nominal data in the knowledge items of the scale. A p value  $< 0.05$  was considered statistically significant. The open-ended question was analyzed using the principles of descriptive content analysis to group and count the responses.<sup>[50]</sup>

### Results

The mean age of the students was  $22.17 \pm 1.02$  years and 75% of the participants were female. In all, 63.6% of the students stated that they had experienced the application of physical restraint. Most (65.7%) indicated that the content of the education they had received regarding physical restraint education was insufficient, 9.3% stated that they had applied physical restraint themselves, and 29.3% responded that they had used physical restraint in a psychiatry clinic. Importantly, prior

to the training, most (80%) did not know about alternative approaches (Table 1).

In all, 59.28% of the students answered the question "Do you have any alternative suggestions to the use of physical restraint?" The recommendations were mainly therapeutic communication ( $n=57$ ), chemical restraint ( $n=29$ ), and distraction methods ( $n=20$ ). Some examples of the student responses are presented below.

- "Make the patient feel safe and try to calm them down through communication and therapeutic touch."
- "Chemical restraint can be used more often."
- "If the patient is very anxious, we can use sedatives."
- "Checking on the patient frequently, using massage, music, and exercise, assisting with basic daily living activities."

Continuing education ( $n=9$ ) ranked first among the students' suggestions for means to reduce the practice of physical restraint. Other recommendations are given in Table 1. Some of the student statements were:

- "Increase the number of nurses and employees. Institutions should provide compulsory training to reduce misunderstandings on this subject."
- "Other methods should be attempted before physical restraint. For this to occur, other methods must be taught in training sessions."
- "Provide more training regarding patients who need physical restraint."
- "I was disappointed that physical restraint was used as a routine practice in the clinic. More detailed undergraduate education is required."
- "The workload should be reduced and legal regulations should be implemented."

### Distribution of Student Responses to the Knowledge Scale Items Related to the Use of Physical Restraint

The mean knowledge subdimension score of the students before and after the training session was  $6.85 \pm 1.59$  and  $7.86 \pm 1.55$ , respectively, and demonstrated a significant increase ( $Z = -5.549$ ;  $p = .\leq 0.001$ ) (Table 2). According to the results, there was a significant increase in the items: "Residents may refuse to be placed in a restraint" ( $p = .\leq 0.001$ ;  $\chi^2 = 0.03$ ), "If physical restraints are to be used, it is required to have signed consent from a member of the resident's family" ( $p = .002$ ;  $\chi^2 = 7.98$ ), "Restraints should be released every 2 hours if the patient is awake" ( $p = .\leq 0.001$ ;  $\chi^2 = 13.49$ ), "Restraint can lead to an increase in skin breakdown" ( $p = .012$ ;  $\chi^2 = 5.38$ ), and "Deaths have been linked to the use of vest restraints" ( $p = .\leq 0.001$ ;  $\chi^2 = 5.06$ ) (Table 3).

### Distribution of Student Responses to Scale Attitude Items Related to the Use of Physical Restraint

The mean attitude score regarding the use of physical re-

<b>Table 1. Demographic characteristics and physical restraint awareness of nurse interns (n=140)</b>		
	<b>n</b>	<b>%</b>
Age (years) (min-max: 20-26; mean±SD=22.17±1.02)		
Gender		
Female	105	75.0
Male	35	25.0
Previous experience with use of physical restraint		
Yes	89	63.6
No	51	36.4
Year of nursing study in which first physical restraint experience occurred (n=89)		
2 <sup>nd</sup>	36	40.4
3 <sup>rd</sup>	34	38.2
4 <sup>th</sup>	19	21.3
Adequacy of relevant content received during nursing education		
Sufficient	48	34.3
Insufficient	92	65.7
Previous experience personally applying physical restraint		
Yes	13	9.3
No	127	90.7
Clinic where physical restraint was encountered *(n=89)		
Psychiatry	41	29.3
Surgical	21	15
Internal-medicine	24	17.1
Other	21	38.6
Diagnosis of restrained patient *(n=89)		
Medical	25	17.9
Psychiatric	57	40.7
Both medical and mental health	10	7.1
Knowledge of alternatives to physical restraint		
Yes	28	20
No	112	80
Who has authority to make the decision to apply physical restraint*		
Nurse	26	18.6
Physician	27	19.3
Multidisciplinary group	114	81.4
Patient's family	6	4.3
Nursing assistant	2	1.4
Suggested alternatives of intern nurses to the use of physical restraint* (n=83)		
Therapeutic communication with the patient	57	68.67
Chemical restraint	29	34.93
Distractions and other therapy (music [6], massage [2])	20	24.09
Understanding the underlying cause	10	12.04
Frequent patient evaluation	10	12.04
Providing holistic care	10	12.04
Involve the patient in the treatment and care plan	9	10.84
Deciding on a care plan with the healthcare team and family	4	4.81
Recommended practices to reduce use of physical restraint* (n=83)		
Continuous training on evidence-based practices for nurses	9	10.84
Increase the number of nurses	4	4.81
Develop standards and policies	3	3.61
Increase the number of caregivers	2	2.40
Develop nurses' empathy skills	1	1.20

\*Line percentage.

**Table 2. Comparison of the mean scores of nurse interns before and after training on the use of physical restraint in the subdimensions of knowledge, attitude, and practice (n=140)**

	Before training	After training	Significance test
	Mean±SD	Mean±SD	
Knowledge	6.85±1.59	7.86±1.55	Z <sup>-</sup> =-5.549; p=.000
Attitude	32.95±3.74	37.35±4.26	t <sup>**</sup> =-12.165; p=.000
Practice	38.10±2.94	39.45±1.96	Z <sup>-</sup> =-5.848; p=.000

\*: Paired-t test; \*\*: Wilcoxon test.

straint was 32.95±3.74 and 37.35±4.26 before and after the education, respectively, and showed a significant increase (t=12.165; p=.≤.001) (Table 2). The results revealed a large increase in the proportion of students who answered "I strongly agree" to the following items: "I feel that family members have the right to refuse the use of restraints" (from 15.7% to 63.6%), "If I were the resident, I feel that I should have the

right to refuse or resist the use of restraints on me" (from 35.6% to 76.4%), "It is important to apply restraints to ensure legal protection for myself and my institution" (from 53.6% to 75%), and "I believe that restraints increase the risk of strangulation" (from 5% to 41.4%). Examination of the items related to the psychological effects of physical restraint demonstrated that there was a large increase in the scores of items related to a decrease in the self-confidence of the patient and feeling bad after the application of physical restraint (Table 4).

### Distribution of Student Responses to the Practice Scale Items Related to the Use of Physical Restraint

The mean practice score of the students before and after the training was 38.10±2.94 and 39.4±1.96, respectively, which represented a significant increase (Z=-5.848; p=.≤.001) (Table 2). There was an increase in the selection of the "always" option after the training in all of items related to practice, which indicates greater awareness of good practice. After the training, 95.7% of the students agreed with the item "I try alternative measures before restraining a resident," 50% indicated "When

**Table 3. Comparison of nurse intern responses to the knowledge subdimension items of the physical restraint scale before and after training (n=140)**

Knowledge items	Before training n (%)		After training n (%)		p <sup>**</sup>
	Agree	Disagree	Agree	Disagree	
1- Physical restraints are safety vests or garments designed to prevent injury.	98* (70%)	42 (30%)	97 (69.3%)	43 (30.7%)	p=1.000 x <sup>2</sup> =19.69
2- Restraints should be used when one cannot watch the resident closely.	89 (63.6%)	51* (36.4%)	98 (70%)	42 (30%)	p=0.272 x <sup>2</sup> =3.24
3- Residents may refuse to be placed in a restraint.	88* (62.9%)	52 (37.1%)	129 (92.1%)	11 (7.9%)	p=≤.001 x <sup>2</sup> =0.03
4- If physical restraints (safety vest, garment) are to be used, a member of the patient's family is required to sign a consent form.	100* (71.4%)	40 (28.6%)	120 (85.7%)	20 (14.3%)	p=0.002 x <sup>2</sup> =7.98
5- Restraints should be released every 2 hours if the resident is awake.	87* (62.1%)	53 (37.9%)	118 (84.3%)	22 (15.7%)	p=≤.001 x <sup>2</sup> =13.49
6- Restraints must be put on snugly so that there is no space between the restraints and the resident's skin.	117 (83.6%)	23* (16.4%)	109 (77.9%)	31 (22.1%)	p=0.229 x <sup>2</sup> =7.26
7- Restraint can lead to an increase in skin breakdown.	121* (86.4%)	19 (13.6%)	133 (95%)	7 (5%)	p=0.012 x <sup>2</sup> =5.38
8- When a resident is restrained in bed, the restraint should not be attached to the side rail.	108* (77.1%)	32 (22.9%)	85 (60.7%)	55 (39.3%)	p=0.005 x <sup>2</sup> =0.05
9- A resident should never be restrained while lying flat in bed because of the danger of choking.	121* (86.4)	19 (13.6%)	116 (82.9%)	24 (17.1%)	p=0.473 x <sup>2</sup> =3.22
10- Good alternatives to restraints do not exist.	136 (97.1%)	4* (2.9%)	136 (97.1%)	4 (2.9%)	p=1.000 x <sup>2</sup> =0.12
11- Deaths have been linked to the use of vest restraints.	26* (18.6%)	114 (81.4%)	92 (65.7%)	48 (34.3%)	p=≤.001 x <sup>2</sup> =5.06

\*: Correct answer; \*\*: McNemar test.

**Table 4. Distribution of nurse intern responses to the attitude subdimension items of the physical restraint scale before and after training (n=140)**

Attitude items	Before training n (%)				After training n (%)			
	Strongly agree	Agree	Disagree	Strongly disagree	Strongly agree	Agree	Disagree	Strongly disagree
1- I feel that family members have the right to refuse the use of restraints.	22 (15.7)	87 (62.1)	30 (21.4)	1 (0.7)	89 (63.6)	44 (31.4)	6 (4.3)	1 (0.7)
2- If I were the resident, I feel that I should have the right to refuse or resist the use of restraints on me.	54 (38.6)	66 (47.1)	19 (13.6)	1 (0.7)	107 (76.4)	31 (22.1)	2 (1.4)	0 (0)
3- I feel guilty placing a resident in restraints.	9 (6.4)	46 (32.9)	70 (50)	15 (10.7)	23 (16.4)	59 (42.1)	52 (37.1)	6 (4.3)
4- I feel that the main reason that restraints are used is that the hospital is short-staffed.	4 (2.9)	22 (15.7)	68 (48.6)	46 (32.9)	20 (14.3)	69 (49.3)	43 (30.7)	8 (5.7)
5- I feel embarrassed when the family enters the room of a resident who is restrained.	11 (7.9)	73 (52.1)	48 (34.3)	8 (5.7)	22 (15.7)	63 (45)	49 (35)	6 (4.3)
6- It makes me feel bad if a resident becomes more upset after restraints have been applied.	15 (10.7)	81 (57.9)	36 (25.7)	8 (5.7)	33 (23.6)	80 (57.1)	24 (17.1)	3 (2.1)
7- It makes me feel bad when residents become more disoriented after restraints have been applied.	19 (13.6)	87 (62.1)	34 (24.3)	0 (0)	50 (35.7)	70 (50)	19 (13.6)	1 (0.7)
8- A resident suffers a loss of dignity when placed in restraints.	25 (17.9)	91 (65)	23 (16.4)	1(0.7)	68 (48.6)	67 (47.9)	5 (3.6)	0 (0)
9- It is important to apply restraints to ensure legal protection for myself and my institution.	75 (53.6)	61 (43.6)	4 (2.9)	0 (0)	105 (75)	32 (22.9)	3 (2.1)	0 (0)
10- I feel that placing a resident in restraints can decrease nursing care time.	6 (4.3)	38 (27.1)	85 (60.7)	11 (7.9)	16 (11.4)	41 (29.3)	64 (45.7)	19 (13.6)
11- I believe that restraints increase the risk of strangulation.	7 (5)	69 (49.3)	59 (42.1)	5 (3.6)	58 (41.4)	63 (45)	17 (12.2)	2 (1.4)
12- I believe that restraints lead to a reduction in the number of residents who fall.	23 (16.4)	91 (65)	24 (17.1)	2 (1.4)	27 (19.3)	69 (49.3)	36 (25.7)	8 (5.7)

4: Strongly agree, 3: Agree, 2: Disagree, 1: Strongly disagree.

I restrain a resident, I make this decision only with a physician's order," and 95.7% replied "I tell family members why the resi-

dent is being restrained." Additional responses are provided in Table 5.

**Table 5. Distribution of nurse intern responses to the practice subdimension items of the physical restraint scale before and after training (n=140)**

Practice items	Before training n (%)			After training n (%)		
	Always	Sometimes	Never	Always	Sometimes	Never
1- I try alternative measures before restraining a resident.	103 (73.6)	36 (25.7)	1 (0.7)	134 (95.7)	6 (4.3)	0 (0)
2- When I restrain a resident, I make this decision only with a physician's order.	37 (26.4)	73 (52.1)	30 (21.4)	70 (50)	52 (37.1)	18 (12.9)
3- When I feel that a resident does not need to be restrained, I make this suggestion to the doctor.	123 (87.9)	16 (11.4)	1 (0.7)	131 (93.6)	9 (6.4)	0 (0)
4- I answer the call of a resident who is restrained as soon as possible.	118 (84.3)	21 (15)	1 (0.7)	135 (96.4)	5 (3.6)	0 (0)
5- I check the restraints at least every 2 hours to make sure they are in the proper position.	122 (87.1)	15 (10.7)	3 (2.1)	128 (91.4)	10 (7.1)	2 (1.4)
6- I inspect the skin for abrasions or skin tears if I bathe a resident who is restrained.	128 (91.4)	11 (7.9)	1 (0.7)	138 (98.6)	2 (1.4)	0 (0)
7- I tell family members why the resident is being restrained.	127 (90.7)	11 (7.9)	2(1.4)	134 (95.7)	6 (4.3)	0 (0)
8- I explain to the resident why restraint is being applied.	124 (88.6)	15 (10.7)	1 (0.7)	136 (97.1)	4 (2.9)	0 (0)
9- I tell the resident when the restraint will be removed.	119 (85)	17 (12.1)	4 (2.9)	130 (92.9)	9 (6.4)	1 (0.7)
10- More residents are restrained when we are short of staff than when we are fully staffed.	27 (19.3)	67 (47.9)	46 (32.9)	41 (29.3)	67 (47.9)	32 (22.9)
11- In our center, staff members work together to find ways to control the behavior of residents other than the use of physical restraint.	72 (51.4)	66 (47.1)	2 (1.4)	104 (74.3)	33 (23.6)	3 (2.1)
12- I frequently assess if the restraint should be removed.	115 (82.1)	23 (16.4)	2 (1.4)	128 (91.4)	12 (8.6)	0 (0)
13- When physical restraints are applied, I record the type of restraint used, the reason for use, the time it was applied, and the related nursing care required.	128 (91.4)	11 (7.9)	1(0.7)	135 (96.4)	5 (3.6)	0 (0)
14- I frequently evaluate and record the effect of physical restraint on the resident.	129 (92.1)	11 (7.9)	0 (0)	134 (95.7)	6 (4.3)	0 (0)

4: Strongly agree, 3: Agree, 2: Disagree, 1: Strongly disagree.

## Discussion

The results of this study indicated that nursing students largely did not know of alternative methods to physical restraint, they were negatively affected by clinical routine practices, and the educational training provided was effective in improving their knowledge and attitude about the use of physical restraint.

The RNAO and the ANA have recommended that nursing students be thoroughly trained in physical restraint during their undergraduate education.<sup>[40,41]</sup> In our study, it was observed that most of the intern students had witnessed the use of physical restraint and some had even applied restraint themselves. The application of physical restraint by those who do not have enough knowledge of the practice threatens patient safety, and is also striking in terms of ethical and legal obligations. In their responses prior to the training session, some of the students incorrectly stated that a nurse could make this decision alone. This result reveals that the students did not have sufficient knowledge about the legal aspects of the use

of physical restraint. Studies in the literature have found that physical restraint training positively affects patient safety and care.<sup>[51]</sup> The statements provided by the students in this study and other nurses have supported the implementation of additional training that would focus on alternatives of physical restraint.<sup>[37]</sup> Coşkun and Avlamaz<sup>[7]</sup> found that efforts to increase therapeutic activities in acute psychiatry clinics were an effective method to reduce the use of physical restraint. When asked about alternatives, the students most commonly suggested therapeutic communication. Studies in the literature recommend increased therapeutic communication between the employee and the patient as a basic alternative to the physical restraint.<sup>[23,24,52,53]</sup> Chieze et al.<sup>[10]</sup> noted in their systematic review that therapeutic communication can also be a valuable means to reduce negative effects and patient perception of coercion when restrictive methods are unavoidable. It was also noteworthy that chemical restraint was the second most frequently mentioned alternative to restraint suggested by the students in this study before the training.

Recent studies in the literature and several available guidelines offer many nonrestrictive crisis management strategies and techniques, such as therapeutic communication to establish cooperation and identify individual causes of disturbance, identifying stress triggers, creating a crisis management plan with the patient, using exercise, close observation, reducing noise, involving the family in the care process, adjusting the environment, music therapy, employing distraction or de-escalation, using various alarms, and programs designed to help the patient develop anger management skills.<sup>[23,24,32,53]</sup> The fact that the students frequently suggested chemical restraint and remarked on the lack of available resources indicates insufficient knowledge about the management of agitated or potentially violent patients and the effect of routine practices in the clinic. Copeland and Barron<sup>[54]</sup> observed that student nurse experience in this area varies widely and emphasized the need for standardization in nursing undergraduate education on behavioral intervention. There is great risk to patient health as well as other potential jeopardy associated with new nurses making decisions to use physical restraint without the appropriate training and guidance. Several studies conducted in Turkey have noted that physical restraint is a common practice, often performed without protocols or guidelines and without a physician's request.<sup>[8,32,37]</sup> The significant need to improve undergraduate education and training is confirmed by the student remarks in this study.

The study results demonstrate that the training offered increased the students' knowledge about physical restraint and improved their attitude. After the training session, the knowledge subdimension scores of the students reflected a significant increase in awareness that the patient has the right to object to physical restraint and the necessity of obtaining informed consent. The significant improvement in the scores related to the ethical and legal aspects of physical restraint is important in terms of providing students with an appropriate ethical foundation for making decisions in what are often very challenging circumstances.<sup>[15]</sup> In order to preserve respect for the patient's autonomy, freedom, and dignity, it is important to inform the patient and their family about the use of restraint and to include them in the care plan.<sup>[41]</sup> Consent of the patient or responsible family member is recommended prior to the application of physical restraint, and family involvement in the care process can help to avoid the need for physical restraint.<sup>[15]</sup>

Improvement after the training was also seen in items related to complications, control, and care. There was a significant increase in the number of responses recognizing the appropriate technique to apply physical restraint and that there is a risk of deterioration in skin integrity. Physical restraint of the extremities must include a margin of at least 2 cm to allow adequate circulation and the patient should be observed frequently for complications.<sup>[7,40,41]</sup> Taha and Ali<sup>[55]</sup> observed that nurse training was effective in preventing complications due to physical restraint. Ye et al.<sup>[6]</sup> also noted that education was important to reducing the negative effects and extended application of physical restraint, and recommended that com-

pulsory training programs be implemented for nurses before starting clinical practice to reduce the unnecessary use of restraint with psychiatric patients.

The students in our study also demonstrated greater awareness that physical restraint can result in death, an item in the knowledge subdimension, after the training. The Joint Commission recommends that physical intervention be used only as a last resort that the least restrictive intervention be used at all times, and encourages training regarding the dangers associated with using restraints.<sup>[21]</sup> Our study results revealed that the students were initially confused about the proper application of physical restraints. Future observational studies may be valuable.

Strengthening the knowledge and risk awareness of students as well as the group discussion of a clinical scenario were beneficial to improving the students' awareness of the ethical and legal aspects of physical restraint and its associated complications. The positive development in the students' attitudes shows that education and training provide an opportunity to add to their experience and improve their approach to the use of physical restraint. While some studies have shown that education increased the attitude score of nurses, other studies have found that it had no effect.<sup>[30,56]</sup> Among the attitude items, we observed greater recognition that family members have the right to oppose the restriction, that restraint can affect the self-confidence of the patient, and has a risk of suffocation. This demonstrates greater awareness of the law and significant potential risks related to the use of physical restraint. Greater sensitivity was also seen following the training in responses to items that described putting oneself in the place of a patient and indications of greater reluctance to use physical restraint. The literature notes that the rate of application of physical restraint is affected by many environmental factors, including an insufficient number of employees and excessive workload, which can lead to a sense of guilt for the use of restraint, but it continues to be applied routinely.<sup>[10]</sup> Restrained patients have reported expectations of a more sensitive approach to their needs and emotions.<sup>[38]</sup> Chieze et al.<sup>[52]</sup> emphasized that traditional habits rather than evidence-based therapeutic approaches persist in the practice of physical restraint. Appropriate management of patients who are at risk of harming themselves or others is an indicator of the quality of care. Nurses must be able to make an ethical and reasonable decision with due consideration for the risks of physical restraint.<sup>[57]</sup> In addition to adding physical restraint management training to the undergraduate curriculum, regular training should be provided to continuously reinforce the appropriate considerations and method of application. This should include recognition that while restrictive methods may be required in certain situations, nurses must include deliberation of the potential harms and human rights, use restrictions as a last resort, involve the patient in this process when possible and focus on therapeutic communication and other alternatives as an initial approach.<sup>[21,30,40,41,52]</sup>

Consistent with the results of our study, research in the literature indicate that nurses' scores in the practice subdimension increased in parallel with an increase in their knowledge and attitudes.<sup>[28]</sup> According to the students' own statements after the training, there was a significant improvement in the application subdimension, including items related to alternatives and avoidance techniques, such as preventing falls and finding different ways to control a patient's movements. Kavak et al.<sup>[58]</sup> suggested that educators encourage alternative methods such as adjusting environmental conditions that may be problematic, providing soft music to reduce a patient's agitation, providing support and supervision, timely evaluation of the effects of sedation and analgesics, and responding to patient needs in a timely manner. Ye et al.<sup>[58]</sup> also suggested that physical restraint guidance should be included in training content. Greater knowledge of the use of physical restraint can lead to more positive attitudes and better practices. We saw a positive change in the items related to appropriate use of physical restraint and responding to patient needs as soon as possible. Physical restraint practice guidelines emphasize that the decision should involve the nurse, physician, patient, family, and other healthcare team members, and that the techniques employed should be recorded.<sup>[21,22,40,41]</sup> Studies in Turkey have noted that physical restraint was employed without the request or approval of a physician and that it was not registered.<sup>[28,47,37]</sup> The greater awareness demonstrated following training seen in our study is also important for these students to be able to act professionally and in accordance with legal requirements.<sup>[21,22]</sup>

### Limitations of the Study

There are some limitations to this study. Since the sample consisted of senior students of a university located in western Turkey, the results may not be generalizable to other nursing students. In addition, since the responses were self-reported, there may have been reluctance to describe their true beliefs or behaviors. Although the Cronbach alpha values for the attitude and practice subdimensions suggest reliability, observation-based cohort studies evaluating student practices in future studies could provide useful additional data of retention and application. In addition, there was no control group in this study because all of the students took the course. Future studies based on our initial findings that further explore the topic are recommended.

### Conclusion

To our knowledge, this is the first study to measure the effect of physical restraint training on nursing interns in the literature. The results demonstrated that the training improved the scores of intern nurses, who are very close to graduation, in the subdimensions of knowledge, attitude, and practice of physical restraint, and that their knowledge was quite good after the training. The significant improvement in awareness

of the legal dimension is particularly important, in terms of protecting patients' rights and proper attentiveness to their own legal responsibilities. Our study findings support compulsory physical restraint education in the undergraduate curriculum. The training should also be supported by the development and enforcement of appropriate protocols and regular reinforcement training. Additional observational studies to analyze attitudes and practices could be very beneficial. Undergraduate nursing educators need to raise awareness that physical restraint is a complex subject and a method that should only be applied as a last resort when alternatives are not sufficient.

**Financial support:** The researchers did not receive financial support for this study from any institution or organization.

**Conflict of interest:** There are no relevant conflicts of interest to disclose.

**Peer-review:** Externally peer-reviewed.

**Authorship contributions:** Concept – D.Ö.; Design – B.E., D.Ö.; Supervision – B.E., D.Ö.; Fundings - B.E., D.Ö.; Data collection &/or processing – B.E.; Analysis and/or interpretation – B.E., D.Ö.; Literature search – B.E., D.Ö.; Writing – B.E., D.Ö.; Critical review – B.E., D.Ö.

### References

1. Bleijlevens MH, Wagner LM, Capezuti E, Hamers JP; International Physical Restraint Workgroup. Physical Restraints: Consensus of a research definition using a modified delphi technique. *J Am Geriatr Soc* 2016;64:2307–10.
2. Jiang H, Li C, Gu Y, He Y. Nurses' perceptions and practice of physical restraint in China. *Nurs Ethics* 2015;22:652–60.
3. Lin YL, Liao CC, Yu WP, Chu TL, Ho LH. A multidisciplinary program reduces over 24 hours of physical restraint in neurological intensive care unit. *J Nurs Res* 2018;26:288–96.
4. Rose L, Burry L, Mallick R, Luk E, Cook D, Fergusson D, et al. Prevalence, risk factors, and outcomes associated with physical restraint use in mechanically ventilated adults. *J Crit Care* 2016;31:31–5.
5. Barton-Gooden A, Dawkins PE, Bennett J. Physical restraint usage at a teaching hospital: A pilot study. *Clin Nurs Res* 2015;24:73–90.
6. Ye J, Wang C, Xiao A, Xia Z, Yu L, Lin J, et al. Physical restraint in mental health nursing: A concept analysis. *Int J Nurs Sci* 2019;6:343–8.
7. Coşkun S, Avlamaz F. Analysis of the use of mechanical restraints and the restraining periods applied in acute psychiatric clinics in a one-year period. *J Psychiatric Nurs* 2010;1:51–5.
8. Ertuğrul B, Özden D. The effect of physical restraint on neurovascular complications in intensive care units. *Aust Crit Care* 2020;33:30–8.
9. da Silva PS, Fonseca MC. Unplanned endotracheal extubations in the intensive care unit: Systematic review, critical appraisal, and evidence-based recommendations. *Anesth Analg* 2012;114:1003–14.

10. Chieze M, Hurst S, Kaiser S, Sentissi O. Effects of seclusion and restraint in adult psychiatry: A systematic review. *Front Psychiatry* 2019;10:491.
11. Castillo EM, Coyne CJ, Chan TC, Hall CA, Vilke GM. Review of the medical and legal literature on restraint chairs. *J Forensic Leg Med* 2015;33:91–7.
12. Okanli A, Yilmaz E, Kavak F. Patients' perspectives on and nurses' attitudes toward the use of restraint/seclusion in a Turkish population. *Int J Caring Sci* 2016;9:932.
13. de Casterlé BD, Goethals S, Gastmans C. Contextual influences on nurses' decision-making in cases of physical restraint. *Nurs Ethics* 2015;22:642–51.
14. Goethals S, Dierckx de Casterlé B, Gastmans C. Nurses' decision-making in cases of physical restraint: A synthesis of qualitative evidence. *J Adv Nurs* 2012;68:1198–210.
15. Gastmans C, Milisen K. Use of physical restraint in nursing homes: Clinical-ethical considerations. *J Med Ethics* 2006;32:148–52.
16. Acevedo-Nuevo M, González-Gil MT, Romera-Ortega MÁ, Latorre-Marco I, Rodríguez-Huerta MD. The early diagnosis and management of mixed delirium in a patient placed on ECMO and with difficult sedation: A case report. *Intensive Crit Care Nurs* 2018;44:110–4.
17. Mitchell DA, Panchisin T, Seckel MA. Reducing use of restraints in intensive care units: A quality improvement project. *Crit Care Nurse* 2018;38:e8–e16.
18. Bray K, Hill K, Robson W, Leaver G, Walker N, O'Leary M, et al. British Association of Critical Care Nurses position statement on the use of restraint in adult critical care units. *Nurs Crit Care* 2004;9:199–212.
19. Goulet MH, Larue C, Dumais A. Evaluation of seclusion and restraint reduction programs in mental health: A systematic review. *Aggress Violent Behav* 2017;34:139–46.
20. Centers for Medicare & Medicaid Services (CMS), DHHS. Medicare and Medicaid programs; Hospital conditions of participation: Patients' rights. Final rule. *Fed Regist* 2006;71:71377–428.
21. Crisis Prevention Institute. Joint commission standards on restraint and seclusion, nonviolent crisis intervention training program; 2010. Available at: <https://www.crisisprevention.com/CPI/media/Media/Resources/alignments/Joint-Commission-Restraint-Seclusion-Alignment-2011.pdf>. Accessed Feb 17, 2022.
22. Türkiye Cumhuriyeti Sağlık Bakanlığı. Sağlıkta kalite standartları hastane (Sürüm 6.0). 1. baskı. Ankara: Tam Pozitif Reklamcılık Matbaa; 2020.
23. Stewart D, Van der Merwe M, Bowers L, Simpson A, Jones J. A review of interventions to reduce mechanical restraint and seclusion among adult psychiatric inpatients. *Issues Ment Health Nurs* 2010;31:413–24.
24. Fernández-Costa D, Gómez-Salgado J, Fagundo-Rivera J, Martín-Pereira J, Prieto-Callejero B, García-Iglesias JJ. Alternatives to the use of mechanical restraints in the management of agitation or aggressions of psychiatric patients: A Scoping Review. *J Clin Med* 2020;9:2791.
25. Du M, Wang X, Yin S, Shu W, Hao R, Zhao S, et al. De-escalation techniques for psychosis-induced aggression or agitation. *Cochrane Database Syst Rev* 2017;4:CD009922
26. Fereidooni Moghadam M, Fallahi Khoshknab M, Pazargadi M. Psychiatric nurses' perceptions about physical restraint; A qualitative study. *Int J Community Based Nurs Midwifery* 2014;2:20–30.
27. Vedana KGG, da Silva DM, Ventura CAA, Giaccon BCC, Zanetti ACG, Miasso AI, et al. Physical and mechanical restraint in psychiatric units: Perceptions and experiences of nursing staff. *Arch Psychiatr Nurs* 2018;32:367–72.
28. Özden D, Karagözoğlu Ş, Vergi İ. Hastanede çalışan hemşirelerde fiziksel tespit eğitim programının bilgi, tutum ve uygulamalarına etkisi. *Türkiye Klinikleri J Nurs Sci* 2014;2:75–86.
29. Uzun Y, Gürhan N, Kaya B. Psikiyatri kliniğinde çalışan hemşirelerin ve hekimlerin hasta kısıtlama yöntemleri ile ilgili görüşleri. *Turk J Research Development Nurs* 2015;17:10–20.
30. Lan SH, Lu LC, Lan SJ, Chen JC, Wu WJ, Chang SP, et al. Educational intervention on physical restraint use in long-term care facilities - Systematic review and meta-analysis. *Kaohsiung J Med Sci* 2017;33:411–21.
31. Suen LK, Lai CK, Wong TK, Chow SK, Kong SK, Ho JY, et al. Use of physical restraints in rehabilitation settings: Staff knowledge, attitudes and predictors. *J Adv Nurs* 2006;55:20–8.
32. Göktaş A, Buldukoğlu K. Physical restraint practice in psychiatric settings and psychiatric nursing approach. *J Human Sci* 2017;14:4206–18.
33. Gaskin CJ, Elsom SJ, Happell B. Interventions for reducing the use of seclusion in psychiatric facilities: Review of the literature. *Br J Psychiatry* 2007;191:298–303.
34. Ye J, Xiao A, Yu L, Guo J, Lei H, Wei H, et al. Staff training reduces the use of physical restraint in mental health service, evidence-based reflection for China. *Arch Psychiatr Nurs* 2018;32:488–94.
35. Muir-Cochrane EC, Baird J, McCann TV. Nurses' experiences of restraint and seclusion use in short-stay acute old age psychiatry inpatient units: A qualitative study. *J Psychiatr Ment Health Nurs* 2015;22:109–15.
36. Larue C, Dumais A, Ahern E, Bernheim E, Mailhot MP. Factors influencing decisions on seclusion and restraint. *J Psychiatr Ment Health Nurs* 2009;16:440–6.
37. Ertuğrul B, Özden D. Nurses' knowledge and attitudes regarding physical restraint in Turkish intensive care units. *Nurs Crit Care* 2021;26:253–61.
38. Tingleff EB, Bradley SK, Gildberg FA, Munksgaard G, Hounsgaard L. "Treat me with respect". A systematic review and thematic analysis of psychiatric patients' reported perceptions of the situations associated with the process of coercion. *J Psychiatr Ment Health Nurs* 2017;24:681–98.
39. Wang L, Zhu XP, Zeng XT, Xiong P. Nurses' knowledge, attitudes and practices related to physical restraint: A cross-sectional study. *Int Nurs Rev* 2019;66:122–9.
40. American Nurses' Association. Reduction of patient restraint and seclusion in health care settings. Silver Spring, MD; 2012. Available at: [https://www.nursingworld.org/~4af287/globalassets/docs/ana/ethics/ps\\_reduction-of-patient-restraint-](https://www.nursingworld.org/~4af287/globalassets/docs/ana/ethics/ps_reduction-of-patient-restraint-)

- and-seclusion-in-health-care-settings.pdf. Accessed Feb 17, 2022.
41. Wagner L, Perivolaris A. Promoting safety: Alternative approaches to the use of restraints. Registered Nurses' Association of Ontario; 2012. Available at: [https://rnao.ca/sites/rnao-ca/files/Promoting\\_Safety\\_-\\_Alternative\\_Approaches\\_to\\_the\\_Use\\_of\\_Restraints\\_0.pdf](https://rnao.ca/sites/rnao-ca/files/Promoting_Safety_-_Alternative_Approaches_to_the_Use_of_Restraints_0.pdf). Accessed Feb 17, 2022.
  42. Wright N, Charnock D. Challenging oppressive practice in mental health: The development and evaluation of a video based resource for student nurses. *Nurse Educ Pract* 2018;33:42–6.
  43. Fradkin M, Kidron D, Hendel T. Israeli student nurses' attitudes about physical restraints in acute care settings. *Geriatr Nurs* 1999;20:101–5.
  44. Karagozoglu S, Ozden D, Yildiz FT. Knowledge, attitudes, and practices of Turkish intern nurses regarding physical restraints. *Clin Nurse Spec* 2013;27:262–71.
  45. Janelli LM, Scherer YK, Kuhn MM. Acute/critical care nurses' knowledge of physical restraints--implications for staff development. *J Nurs Staff Dev* 1994;10:6–11.
  46. Suen KPL. Knowledge, attitude and practice of nursing home staff towards physical restraints in Hong Kong nursing homes. *Asian J Nurs Studies* 1999;5:73–86.
  47. Kaya H, Aşti T, Acaroğlu R, Erol S, Savcı C. Hemşirelerin fiziksel tespit edici kullanımına ilişkin bilgi tutum ve uygulamaları. *Maltepe Üniv Hemşirelik Bilim Sanatı Derg* 2008;1:21–9. (Article in Turkish)
  48. Şencan H. Sosyal ve davranışsal ölçümlerde geçerlilik ve güvenirlik. Ankara: Seçkin Matbaası; 2005.
  49. Alpar R. Applied statistics and validity reliability with examples from sports health and education sciences. 1st ed. Ankara: Detay publishing; 2014. (Article in Turkish)
  50. Vaismoradi M, Turunen H, Bondas T. Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nurs Health Sci* 2013;15:398–405.
  51. Johnson K, Diana S, Todd J, McFarren A, Domb A, Mangram A, et al. Early recognition of delirium in trauma patients. *Intensive Crit Care Nurs* 2016;34:20–4.
  52. Chieze M, Hurst S, Kaiser S, Sentissi O. Effects of seclusion and restraint in adult psychiatry: A systematic review. *Front Psychiatry* 2019;10:491.
  53. Väkiparta L, Suominen T, Paavilainen E, Kylmä J. Using interventions to reduce seclusion and mechanical restraint use in adult psychiatric units: An integrative review. *Scand J Caring Sci* 2019;33:765–78.
  54. Copeland C, Barron DT. "Delirium: An essential component in undergraduate training?". *Nurse Educ Today* 2020;85:104211.
  55. Taha NM, Ali ZH. Physical restraints in critical care units: impact of a training program on nurses' knowledge and practice and on patients' outcomes. *J Nurs Care* 2013;2:1–9.
  56. Huang HT, Chuang YH, Chiang KF. Nurses' physical restraint knowledge, attitudes, and practices: The effectiveness of an in-service education program. *J Nurs Res* 2009;17:241–8.
  57. Goh YS, Seetoh YM, Chng ML, Ong SL, Li Z, Hu Y, et al. Using Empathetic CARE and REsponse (ECARE) in improving empathy and confidence among nursing and medical students when managing dangerous, aggressive and violent patients in the clinical setting. *Nurse Educ Today* 2020;94:104591.
  58. Kavak F, Yılmaz E, Okanlı A, Aslanoğlu E. The effect of psychoeducation given to psychiatry nurses on level of knowledge, attitudes, and practices regarding physical restraint: A randomized controlled study. *Perspect Psychiatr Care* 2019;55:743–51.