

Original Article

Nurses' Knowledge, Attitudes and Practices towards the Use of Physical Restraints and their Affecting Factors: A Multi-Centre Cross-Sectional Study

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Abstract

Background: Physical restraints is one of the important responsibilities of nurses. Physical restraints are used by nurses in order to prevent patients from harming themselves and people around them but there are deaths and serious injuries due to physical restrictions.

Aim: This research was carried out to determine the nurses' knowledge, attitudes and practices, with affecting factors, on the use of physical restraints.

Methodology: The research is a descriptive, cross-sectional study. The research population consisted of 700 nurses. The sample consisted of 548 nurses who participated in the study voluntarily. Data were collected through the completion of a 'Personal Information Form' and a 'Levels of Knowledge, Attitudes, and Practices of Staff Regarding Physical Restraints Questionnaire'. The data were analyzed by percentage, arithmetic mean, ANOVA and t-test.

Results: The nurses' knowledge average score relating to physical restraints was 7.8 ± 1.8 , the mean score for attitudes was 31.9 ± 3.8 and mean score for practices was 37.2 ± 3.8 . A statistically significant difference was found between the hospitals and clinics where nurses work, and knowledge, attitude and practice scores relating to the use of physical restraints ($p < 0.05$).

Conclusions: Nurses have a good level of information on the use of the physical restraints, and they largely reflect a positive attitude towards applying this knowledge to the practice of physical restraints. However, the ratio of developing positive attitude was found to be lower than the mean scores of knowledge and practice.

Keywords: Attitude, knowledge, nursing, restraints, practice

Introduction

While there are different definitions of physical restraints, a consensus has been reached regarding its definition in a recent study (Bleijlevens et al., 2016). In this study; "physical restraint is defined as 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" (Bleijlevens et al, 2016).

Physical restraints are primarily used in order to prevent patients from harming themselves and people around them. They also provide safety, control agitation, prevent unwanted behavior and aggressiveness and protect against falls and injuries (Kruger et al., 2013; Laurin et al., 2004;

The Joanna Briggs Institute [TJBI], 2002). The principles for using physical restraints in line with the above-mentioned purposes are specified by the Centers for Medicare & Medicaid Services and the Joint Commission (CMS). Due to improvements in patient rights in the last decades, countries and accreditation organizations have started to support studies that promote the limiting use of physical restraints (CMS, 2016; Demir, 2007a; Joint Commission on Accreditation of Healthcare Organization [JCAHO], 2002).

Improper use of physical restraints may cause patients serious harm. It is reported that patients subjected to physical restraints die due to pneumonia, constipation and incontinence, as well as circulatory and respiratory complications. Furthermore, studies indicate that patients who have been subjected to physical restraints experience mental and behavioral problems such as fear, panic, anger and rage, in addition to changes in their blood chemistry (Bleijlevens et al., 2015; Berzlanovich, Schöpfer, & Keil, 2012; Hakverdioglu, Demir, & Ulusoy, 2006; JCAHO, 2002).

Studies on the use of physical restraints reveal that the use of physical restraints varies from 5-70% (Kalula & Petros, 2016; TJBI, 2002; Berzlanovich et al., 2012; De Vries, Ligthart, & Nikolaus, 2004; Evans & Cotter, 2008; Feng, et al., 2009; Sercan & Bilici, 2009). Turkish studies indicate that physical restraints are often used in Turkey for unconscious patients. Turkish nurses seem to have low levels of knowledge about the purpose of physical restraints and there is a lack of knowledge about alternative methods that should be applied previously. The studies also demonstrate that physical restraints are occasionally used without doctors' knowledge, consent is not asked from patients or their relatives and that their use is not documented effectively in patient files (Hakverdioglu et al., 2006; Kaya, Asti, Acaroglu, Erol, & Savci, 2008; Eser & Hakverdioglu, 2006; Tekkas and Bilgin, 2010; Demir, 2007b; Demir- Zencirci, 2009, Kaya & Dogu 2018). These deficiencies indicate that more studies should be conducted on the use of physical restraints, and that a revision of the educational curriculum and legal regulations surrounding their use are necessary.

Many studies have been conducted in recent years for limiting the usage frequency of physical restraints (TJBI, 2002; Laurin et al., 2004; Kruger et al., 2013; Pellfolk, Gustafson, Bucht, & Karlsson, 2010; Huang, Chuang, & Chiang, 2009). Despite all these studies, physical restraints are still in use in many countries as long as they fulfill certain criteria. Negative results obtained in these studies necessitate the development of alternative methods to replace physical restraints. These methods can be listed as frequent observation of patients, increased family visits, providing rapid reorientation and placing certain stimulants around patients (Potter, Perry, Stockert, & Hall, 2012).

Maintaining a secure environment and protecting patients from secondary injuries are some of the main legal and ethical responsibilities of nurses (Savci et al., 2009). For instance, a primary indication of care quality provided by nurses is the protection of patients against falls and injuries (Demir, 2007a).

Research questions

- What are the individual characteristics of nurses?
- What are the occupational characteristics of nurses?
- What are the knowledge level, attitude, and practices of nurses regarding the use of physical restraints?
- How do characteristics of nurses affect their knowledge level, attitude, and practices regarding use of physical restraints?

Aim: The objective of the study was to identify nurses' knowledge, attitude, and practices in relation to using physical restraints, in addition to factors influencing their use.

Methodology

Study design

The study was conducted as a descriptive, multi-center cross-sectional research with the aim of identifying nurses' knowledge, attitude and practices in relation to using physical restraints as well as factors influencing their use.

Setting and sample

The study was conducted at the adult intensive care unit, department of neurology, neurosurgery unit, psychiatric ward and emergency clinics of

six hospitals with different statuses in Adana, Turkey, between 1-31 March 2012. These clinics were chosen for the study as the use of physical restraints are believed to be common in these clinics (Kalula & Petros, 2016; Bilici, Sercan, & Tufan, 2013; Balci, 2016). The hospitals were chosen as these are 6 big hospitals in Adana with different statuses (medical faculty, training-research, public, special branch and private). Within the scope of the study, Cukurova University Faculty of Medicine Balcali Hospital (Hospital A) is a university hospital with a bed capacity of 1131 and 600 nurses. Adana Numune Education and Research Hospital (Hospital B) is a training and research hospital with a bed capacity of 1200 and 900 nurses. Adana Askim Tufekci State Hospital (Hospital C) is a public hospital with a bed capacity of 750 and 515 nurses. Adana State Hospital (Hospital D) is a public hospital with a bed capacity of 325 and 165 nurses. Dr. Ekrem Tok Mental Health and Diseases Hospital (Hospital E) is a special branch hospital with a bed capacity of 649 and 160 nurses. Lastly, Private Adana Acibadem Hospital (Hospital F) is a private hospital with a bed capacity of 100 and 123 nurses.

The research population consisted of 700 nurses (A hospital 145, B hospital 160, C hospital 155, D hospital 50, E hospital 160 and F hospital 30) who work in intensive care units, department of neurology, neurosurgery units, psychiatry wards and emergency clinics of the six hospitals where the study was conducted. The sample number determined within a 95% confidence interval with a 2 percent error margin was 543. The sample number consisted of 548 nurses who were working at the clinics during the month the study took place and the participation of nurses was voluntary. Simple random sampling which is a probability sampling method was used in data collection (Arli & Nazik, 2001; Yazicioglu & Erdogan, 2004).

Instruments

The data were collected through two forms. These were a 'Personal Information Form' and a "Levels of Knowledge, Attitudes, and Practices of Staff Regarding Physical Restraints Questionnaire". The researcher collected data in March 2012, by distributing data collection forms to nurses who worked in the relevant clinics, volunteered to participate in the study

and who provided oral consent. The researchers distributed the data collection forms to nurses between 1-31 of March 2012 based on simple random sampling, which is a probability sampling method, and collected the forms from the nurses within the next 48 hours. The nurses who were not on leave during the research but volunteered to participate in the study were also included.

The personal information form consisted of questions about the hospitals and clinics the nurses worked at, the nurses' age and gender, their level of education, the number of years of work experience, the duration of their work in the last clinic they had worked at, their shift schedules, the education they had received on physical restraints in school and following their graduation, their interest in following the research within their profession and the frequency of physical restraint usage in their clinics.

Levels of knowledge, attitudes, and practices of staff regarding physical restraints questionnaire was created by Janelli, Scherer and Kuhn, developed by Suen and adapted to Turkish society by Kaya et al. (2008). The first section consisted of 11 items that include 10 right and 1 wrong questions that aim at measuring nurses' knowledge on the usage of physical restraints. Right answers were marked as "1" while wrong answers were marked as "0". This section had a point range of 0-11 with higher points indicating higher levels of knowledge. Section two was a four-point Likert scale that consisted of 12 items and measured the attitudes of nurses towards the usage of physical restraints. "I completely agree" was given 4 points, "I agree" as 3 points, "I do not agree" as 2 points and "I completely disagree" as 1 point. This section had a point range of 12-48, with higher points indicating a positive attitude and lower points indicating a negative attitude. Section three included 14 items that evaluated nurses' use of physical restraints. The 10th item was a negative item and considered after its reversal. In this section, which was a 3-point Likert scale, "never" was given 1 point, "sometimes" 2 points and "always" 3 points. The point range was 14-42, with higher points indicating the successful use of physical restraints and lower points indicating improper use of physical restraints (Kaya et al., 2008).

Data analysis

The data was analyzed using number, percentage, arithmetic mean, ANOVA and t-test in IBM SPSS Statistics 20. The critical value significance was set at $p < 0.05$.

Ethical statement

Approval from Cukurova University Faculty of Medicine Non-Invasive Clinical Research Ethics Committee (4/24, 5 Jan 2012), permission from the hospitals and informed consent from the participants were received. Permission regarding the use of the questionnaire was also taken from Kaya et al. (2008) who had conducted validity and reliability studies of the questionnaire in Turkey.

Results

The study found that the nurses' average age is 31.8 ± 6.99 , the average years of work experience is 10.40 ± 7.92 , 91.1% are women, 51.8% were between 31-40 years old, 64.6% are married, 54.6% have children, 25.2% work at Adana Numune Education and Research Hospital, 44.9% work at intensive care units, 55.5% have 10 years or less occupational experience, 47.1% work the shifts, 84.1% work in clinics willingly, 85.9% like their profession, 45.5% hold bachelor degrees, 42.5% received education on physical restraints before graduation and 31.9% after graduation. 75.2% keep up to date with information regarding physical restraints, 25.0% use physical restraints often, 64.8% use physical restraints sometimes, 10.2% never use physical restraints, 61.5% do not obtain informed consent before using physical restraints.

Table 1 provides average scores and distribution ranges for levels of knowledge, attitudes, and practices of staff regarding physical restraints questionnaire. The average scores of nurses were 7.80 ± 1.78 for knowledge, 31.92 ± 6.10 for attitude and 37.17 ± 3.76 for the practice sections on the questionnaire (Table 1).

Table 2 shows the distribution of average scores for levels of knowledge, attitudes, and practices of staff regarding physical restraints questionnaire based on individual characteristics of nurses. Gender-based distribution of the average questionnaire scores indicated that there were statistically significant differences between nurses' gender and average score in knowledge

section, nurses' ages and average scores in knowledge and practice sections and nurses' marital status, as well as having children and average score in practice section ($p < 0.05$) (Table 2).

The findings indicated that women's average knowledge score is higher than men's, average knowledge and practice scores increase as the age increases, nurses who are married and have children have higher average scores in the practice section in comparison to nurses who are single and do not have children.

Table 3 shows the distribution of average scores for levels of knowledge, attitudes, and practices of staff regarding physical restraints questionnaire based on occupational characteristics of the nurses. It was found that there were statistically significant differences between the hospitals and clinics nurses work in; collecting informed consent from patients or their relatives prior to the use of physical restraints and the average scores on the knowledge, attitude and practice sections; between liking the clinics they worked in, the frequency of using physical restraints and average scores for attitude and practice sections; as well as between years of professional experience, shift patterns, liking their profession and average score for practice section ($p < 0.05$) (Table 3).

It was found that the nurses who work at Private Adana Acibadem Hospital (Hospital F) had higher average scores in the knowledge and attitude sections, while nurses at Dr. Ekrem Tok Mental and Neurological Diseases Hospital (Hospital D) had higher average scores in the practice section.

The nurses at neurology clinics had higher average scores in the knowledge section and the nurses at emergency clinics had higher average scores in the attitude section. The nurses in psychiatry clinics had higher average scores in the practice section in comparison to other nurses. It was also found that the nurses with 11-20 years of occupational experience had higher average scores in the practice section when compared with the other nurses. The nurses who only work day shifts had higher average scores in the practice section when compared with the nurses who work night shifts or rotating shifts.

The nurses who work in their clinics willingly had higher average scores in the attitude and practice sections when compared with those who work unwillingly. The nurses who like their profession had higher scores in the practice section when compared with those who do not like their profession. The nurses who have never used physical restraints had higher average

scores in attitude and practice sections in comparison to those who used the restraints. The nurses who obtain the informed consent of patients or their relatives before using physical restraints had higher average scores in the knowledge, attitude and practice sections when compared with those who do not obtain consent.

Table 1. Mean scores for levels of knowledge, attitudes, and practices of staff regarding physical restraints questionnaire (n=548).

Questionnaire Sections	Mean±SD	Distribution Range	Expected Distribution Range
Knowledge	7.80±1.788	0-11	0-11
Attitude	31.92± 6.108	12-48	12-48
Practice	37.17±3.761	16-42	14-42

Table 2. Distribution for average scores of nurses for the questionnaire on levels of knowledge, attitudes, and practices regarding physical restraints based on some occupational characteristics (n=548).

Ques.	n (%)	Knowledge	Attitude	Practice
Characteristics				
Gender				
Female	499 (91.1)	7.86±1.74	31.94±6.04	37.16±3.71
Male	49 (8.9)	7.22±2.10	31.73±6.79	37.20±4.25
t- value		2.391	0.220	-0.070
p-value		0.017*	0.826	0.944
Age				
30 and ↓	156 (28.5)	7.50±1.84	31.76±6.66	36.46±4.41
31-40	284 (51.8)	7.93±1.82	32.05±5.80	37.02±3.64
41 and ↑	108 (19.7)	7.93±1.55	31.80±6.09	38.59±2.48
F value		3.194	0.145	11.155
p-value		0.042*	0.865	0.000**
Marital Status				
Single	194 (35.9)	7.76±1.71	31.54±5.88	36.53±4.01
Married	354 (64.6)	7.83±1.83	32.13±6.22	37.52±3.57
t- value		-0.455	-1.083	-2.955
p-value		0.649	0.279	0.003*
Having Children				
Have children	299 (54.6)	7.86±1.74	31.99±5.96	37.74±3.28
Do not have children	249 (45.4)	7.74±1.84	31.84±6.28	36.48±4.18
t- value		-0,738	-0,288	-3,864
p-value		0.461	0.773	0.000

*p<0.05, **p<0.001

Table 3. Distribution for average scores of nurses for the questionnaire on levels of knowledge, attitudes, and practices regarding physical restraints based on some occupational characteristics (n=548).

Ques. Characteristics	n (%)	Knowledge	Attitude	Practice
Hospitals				
Hospital A	111 (20.3)	7.97±1.51	32.11±4.27	35.18±3.22
Hospital B	138 (25.2)	7.72±2.12	32.88±6.09	36.56±4.47
Hospital C	114 (20.8)	8.11±1.79	32.53±7.90	37.08±3.76
Hospital D	45 (8.2)	7.91±1.60	34.16±3.96	38.36±2.84
Hospital E	115 (21.0)	7.30±1.43	28.15±4.69	39.26±1.91
Hospital F	25 (4.6)	8.32±2.19	35.88±4.99	38.00±4.14
F value		3.287	14.659	17.525
p-value		0.006*	0.000**	0.000**
Clinics, Department and Units				
Emergency	61 (11.1)	8.70±1.32	35.75±8.35	37.57±3.13
Orthopedy	35 (6.4)	7.86±1.33	33.14±4.11	37.54±4.10
Neurology	37 (6.8)	9.14±1.15	34.00±5.48	39.05±1.98
Adult Intensive Care	246 (44.9)	7.61±2.03	31.78±5.5	35.52±4.22
Neurosurgery	43 (7.8)	8.14±1.35	32.60±5.59	38.51±2.44
Psychiatry	126 (23.0)	7.2 2±1.48	29.15±5.37	39.07±1.94
F value		11.796	12.440	22.877
p-value		0.000**	0.000**	0.000**
Years of professional experience				
10 years and ↓	304 (55.5)	7.68±1.83	32.08±6.50	36.70±4.08
11-20 years	177 (32.3)	8.00±1.80	31.68±5.61	37.53±3.44
21 years and ↑	65 (11.9)	7.81±1.78	31.91±6.11	37.18±3.76
F value		1.904	0.273	7.64
p-value		0.150	0.761	0.001*
Shift pattern				
Always day shifts	117 (21.4)	7.94 ± 1.33	31.85 ± 5.39	37.49±3.59
Duty guard	258 (47.1)	7.77 ± 1.90	31.84 ± 6.54	37.48±3.60
Working by shifts	173 (31.6)	7.77 ± 1.88	32.09 ± 5.91	36.49±4.02
t-value		0.426	0.096	4.137
p-value		0.653	0.908	0.016*
Willingness to work in their clinic				
Works willingly	461 (84.1)	7.87±1.70	31.61±5.92	37.38±3.48
Works unwillingly	87 (15.9)	7.47±2.14	33.55±6.80	36.06±4.85
t-value		-1.629	2.736	-2.422
p-value		0.058	0.006*	0.003*
Attitudes towards their profession				
Likes their profession	471 (85.9)	7.86±1.75	31.90±6.06	37.41±3.55
Does not like their profession	77 (14.1)	7.45±1.96	32.05±6.40	35.70±4.57
t-value		-1.858	0.208	-3.121
p-value		0.064	0.836	0.000**
Frequency of physical restraints usage				
Often	137 (25.0)	7.78±1.70	31.63±6.79	36.02±4.13
Sometimes	355 (64.8)	7.87±1.82	31.54±5.64	37.45±3.49
Never	56 (10.2)	7.46±1.69	35.05±6.37	38.20±3.84
F		1.248	8.456	9.738
p-value		0.288	0.000**	0.000**
Asking for consent to use physical restraints				
Asks for consent	211 (38.5)	8.32±1.55	33.07±6.75	37.73±3.65
Does not ask for consent	337 (61.5)	7.48±1.85	31.20±5.55	36.82±3.79
t-value		-5.729	-3.379	-2.785
p-value		0.000**	0.001*	0.006*

*p<0.05, **p<0.001

Table 4. Distribution of average scores of nurses for the questionnaire on levels of knowledge, attitudes, and practices regarding physical restraints based on their level of education (n=548).

Ques. Education	n (%)	Knowledge	Attitude	Practice
Level of Education				
Medical-Vocational High School	110 (20.1)	7.85±2.07	32.94±6.67	38.01±3.48
Two-year Degree	183 (33.4)	7.74±1.79	31.18±5.90	37.74±3.24
Bachelor's Degree and higher	255 (46.5)	7.84±1.64	32.00±5.94	36.40±4.07
F value		0.194	2.889	10.577
p-value		0.824	0.056	0.000**
Training on the Usage of Physical Restraints Before Graduation				
Received Training	233 (42.5)	8.18±1.46	32.60±6.60	37.27±3.39
Did not receive Training	315 (57.5)	7.52±1.94	31.41±5.67	37.09±4.01
t-value		-4.532	-2.260	-0.562
p-value		0.000**	0.024*	0.574
Training on the Usage of Physical Restraints After Graduation				
Received Training	175 (31.9)	8.18±1.70	32.64±6.75	37.90±3.39
Did not receive Training	373 (68.1)	7.63±1.80	31.58±5.75	36.82±3.87
t-value		-3.372	-1.900	-3.314
p-value		0.001*	0.058	0.001*
Following Research Relating to the Usage of Physical Restraints				
Yes	412 (75.2)	7.95±1.76	31.83±6.22	37.39±3.62
No	136 (24.8)	7.38±1.80	32.18±5.74	36.51±4.09
t-value		-3.262	-0.569	-2.229
p-value		0.001*	0.570	0.027*

*p<0.05, **p<0.001

Table 4 shows the distribution of average scores for levels of knowledge, attitudes, and practices of staff regarding physical restraints based on the nurses' level of education. There were statistically significant differences between their level of education and average scores in the practice section; training received on the usage of physical restraints before graduation and average scores in the knowledge and attitude sections; and training received on the usage of physical restraints after graduation and average scores in the knowledge and practice sections (p<0.05) (Table 4).

Medical-Vocational High School graduate nurses had higher average scores in the practice section in comparison with nurses with two-year degrees or bachelor degrees. As the education level increased, the average score for practice section decreased. The nurses who received training on physical restraints prior to graduation had higher average scores in the knowledge and attitude

sections in comparison to those who did not and the nurses who received training after graduation had higher average scores in the knowledge and practice sections in comparison to those who did not. The nurses who follow publications on physical restraints had higher average scores in the knowledge and practice sections when compared with those who do not follow such publications.

Discussion

In consideration with nurses' average score of 7.80±1.78 in the knowledge section of using physical restraints questionnaire and the highest possible score of 11 in this section, it can be claimed that knowledge level was high (Table 1). In a study by Kaya et al. (2008) nurses' average score was 9.75±1.70 in knowledge section. In their study on using physical restraints, Orhan & Yakut (2012) stated that the knowledge level of nurses using physical restraints was medium.

In other studies on this subject, nurses' average scores for the knowledge section were different (Hakverdioglu et al., 2006; Karagozoglu & Ozden, 2013) and were evaluated as high (Kaya et al., 2008; Potter et al., 2012), medium (Orhan & Yakut, 2012) and low (Hakverdioglu et al., 2006; Karagozoglu & Ozden, 2013).

In consideration of nurses' average score of 31.92 ± 6.10 in the attitude section of using physical restraints questionnaire and the highest possible score of 48 in this section, it can be claimed that the average score for attitude is lower when compared with knowledge and practice (Table 1). In a study on nurses' use of physical restraints conducted by Kaya et al. (2008), the average score for attitude was 38.39 ± 3.05 . A study by Orhan & Yakut (2012) demonstrated that nurses' positive attitude towards using physical restraints was at a medium level.

In consideration of nurses' average score of 37.17 ± 3.76 in the practice section of using physical restraints questionnaire and the highest possible score of 42 in this section, it can be stated that nurses reflect their knowledge on their practice to a great extent (Table 1). In a study by Kaya et al. (2008) the average score for practice was 36.08 ± 3.62 . A study by Orhan & Yakut (2012) stated that nurses applied good practices regarding physical restraints. In literature, it is emphasized that the use of physical restraints is high both in Turkey and in the rest of the World. Nurses often use physical restraints and serious complications arise from their use of restraints such as death. It is also argued that the use of physical restraints should be reduced and studies to that end must increase. (Hakverdioglu et al., 2006; Laurin et al., 2004; Demir, 2007a; Kaya et al., 2008; Eser & Kakverdioglu, 2006; Tekkas & Bilgin, 2010; Pellfolk et al., 2010; Huang et al., 2009). The results of our study are in line with the literature.

It was found that women's average score in knowledge section is higher than men's, average scores in the knowledge and practice sections increase as the age increases, nurses who are married and have children have higher average scores in practice section comparison to nurses who are single and do not have children (Table 2). In a study by Kaya et al. (2008), there was no statistically significant difference between age

groups and average scores ($p > 0.05$). Orhan & Yakut's (2012) study revealed that male nurses have a higher level of knowledge.

The study revealed that (Table 3) nurses' average scores in the knowledge and attitude sections were higher in Dr. Ekrem Tok Mental Health and Diseases Hospital (Hospital E) and the average score in the practice section was higher in Adana Askim Tufekci State Hospital (Hospital C), ($p < 0.05$). These findings can be associated with frequent and effective in-service training provided in private hospitals, as well as the frequent use of physical restraints in the psychiatric hospital (Tekkas & Bilgin, 2010).

In our study (Table 3) nurses from neurology clinics had higher average scores in the knowledge section, nurses from emergency departments had higher average scores in the attitude section and nurses from psychiatry clinics had higher average scores in the practice section ($p < 0.05$). Findings by Kaya et al. (2008) indicate that practice is better in psychiatry clinics when compared with other clinics, which is in line with our study. This can be associated with effective in-service training in psychiatry clinics as physical restraints are used more often (Tekkas & Bilgin, 2010).

In our study (Table 3) nurses with 11-20 years of professional experience had a higher average score in the practice section when compared with others ($p < 0.05$). Some studies indicated that there is no statistically significant difference between years of experience and the average scores in the knowledge, attitude and practice sections of the questionnaire ($p > 0.05$) (Kaya et al., 2008; Hakverdioglu et al., 2006). These findings are in contradiction to our own study.

Our study (Table 3) indicated that nurses who always work day shifts have higher average scores in the practice section than compared to nurses who work different shifts ($p < 0.05$). A study by Sercan & Bilici (2009) indicated findings that were in contrary to our own study, as it was found that the use of physical restraints was more common by nurses not working day shifts.

The study found that nurses who unwillingly work in clinics have higher average scores in the attitude section while nurses who willingly work in clinics have higher average scores in the

practice section (Table 3). Nurses who like their profession had higher average scores in the practice section when compared with nurses who do not like their profession (Table 3). Nurses who never used physical restraints had higher average scores in the practice and attitude sections when compared with other nurses (Table 3). Nurses who collect informed consent forms had higher average scores in the knowledge, attitude and practice sections when compared with nurses who do not collect consent forms (Table 3) ($p < 0.05$).

In our study (Table 4) graduates of medical vocational high schools had higher average scores in the practice section in comparison to graduates of higher education ($p < 0.05$). In contrast with our study, Kaya et al. (2008) revealed that there is no statistically significant difference between the level of education and average scores in the knowledge, attitude and practice sections of the questionnaire on the use of physical restraints.

Our study indicated that nurses who received training before graduation had higher average scores in knowledge and attitude sections in comparison to nurses who did not. Nurses who received training after graduation had higher average scores in knowledge and practice sections in comparison to nurses who did not. Nurses who followed changes concerning the use of physical restraints had higher average scores in knowledge and practice sections in comparison to nurses who did not (Table 4) ($p < 0.05$). These results are in line with the literature (Huang et al., 2009).

The study indicated that the majority of nurses (89.8%) use physical restraints. A study conducted by Demir (2007a) demonstrated that 96.1% of nurses use physical restraints on wrists, 88.2% on legs and 60.2% on the chest area. Another study by Demir (2007b) revealed that 96.7% of nurses use physical restraints on wrists, 81.0% on legs and 17.4% on the whole body. In the same study, Demir (2007b) stated that 58.7% of nurses use alternative methods. In a study conducted by Karagozoglu & Ozden (2013), it was found that 86.9% of nurses use physical restraints while 91.9% of them have seen them used. These rates are similar to our own study. A study conducted in a mental health and diseases hospital by Sercan & Bilici (2009) revealed that

the rate for using physical restraints was 29.3%. Feng et al. (2009) pointed out that the rate of using physical restraints vary in different countries with a usage rate of 65.0% in Sweden, 9.0% in the United States of America, 20.0% in Hong Kong, 28.0% in Finland and 31.0% in Canada. A study by Tekkas & Bilgin (2010) underlined that physical restraints are most often used in order to prevent psychiatric patients from harming themselves in Turkey, with different physical restraint methods preferred for patients internationally. Furthermore, social and cultural factors are important for the preference in using physical restraints and methods. Although physical restraints are advised as a practice, they should not be used very often and without a doctor's request due to risk factors in the literature (Berzlanovich et al., 2012; Sercan & Bilici, 2009; Potter et al., 2012), these studies still indicated a high rate of use which is in line with our study (Eser & Hakverdioglu, 2006).

The study found that less than half of the nurses have training the usage of physical restraints both before (42.5%) and after (31.9%) graduation. Some studies also revealed that nurses do not receive any training (Sercan & Bilici, 2009; Huang et al., 2009) or that the level of training received for their usage is very low (Hakverdioglu et al., 2006; Karagozoglu & Özden, 2013).

Our study revealed that more than half of the nurses (61.5%) do not collect informed consent before using physical restraints. The studies conducted by Demir (2007b) & Demir-Zencirci (2009) on the use of physical restraints indicated that almost none of the nurses collected informed consent from patients and their relatives. A study by Karagozoglu & Ozden (2013) indicated similar results to our study with 65.0% of nurses not collecting informed consent from patients or their relatives and 15.6% using physical restraints upon a doctor's request. A study by Hakverdioglu et al. (2006) revealed that 12.2% of nurses thought that doctors should decide when to use physical restraints and 7.6% of them thought that this decision belonged to patients and their relatives. These results explain the high rate of not collecting informed consent or asking for the doctor's permission in using physical restraints. The high rate for not collecting informed consent may be associated with nurses' inadequate education on physical restraints and

their ignorance about patient autonomy. Another study by Eser & Hakverdioglu (2006) emphasized the necessity of considering the use of informed consent forms, patient autonomy, principles of no harm and usefulness when nurses have to use physical restraints on patients. A study by Huang et al. (2009) demonstrated that in-service training programs on physical restraints influences knowledge levels in a positive way and increases average scores significantly. A study on minimizing the effects of restraints by Pellfolk et al. (2010) indicated that education increases the level of knowledge, changes attitudes and causes a decrease in the use of restraints.

Limitations

The results of the research are limited to the nurses who voluntarily participated in the study and worked at departments where physical restraints were often used such as neurology, neurosurgery, psychiatry, intensive care units and emergency clinics in the hospitals which were included in the study.

Conclusions and Recommendations

The study revealed that the majority of nurses use physical restraints, they have a high level of knowledge on the usage of physical restraints and that they reflect their knowledge on practices to a large extent. However, their scores for developing positive attitude were lower when compared with average scores in the knowledge and practice sections in Adana/Turkey. It was determined that the individual and professional characteristics of nurses affected the knowledge attitudes and practices related to physical restraint.

With reference to our study, use and the harmful effects of physical restraint practices should be included in course contents and in-service training programs. In addition to this, in-service training programs must be repeated periodically and instructions in practice should be prepared and provided for nurses. Studies should be conducted on bigger groups, such as nurses from all clinics, and the harmful effects of using physical restraints on patients should also be identified.

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References

- Arli, M., & Nazik, H. (2001) Introduction to scientific research. Gazi Bookstore, Ankara, Turkey.
- Balci, H. (2016) Knowledge, attitudes and practices of intensive care nurses to use physical restraints. Doctoral Dissertation, Selçuk Universty, Konya, Turkey. Available <https://tez.yok.gov.tr/UlusalTezMerkezi/tarama.jsp>
- Berzlanovich, A.M., Schöpfer, J., & Keil, W. (2012) Deaths due to physical restraint. *Dtsch Arztebl Int.* 109: 27-32.
- Bilici, R., Sercan, M., & Tufan, E. (2013) Using of seclusion and restraint in psychiatry clinics. *Dusunen Adam* 26(1): 80.
- Bleijlevens M.H., Wagner, L.M., Capezuti, E., Hamers, J.P., & (2016) Physical restraints: consensus of a research definition using a modified delphi technique. *J Am Geriatr Soc.* 64(11): 2307-10.
- Centers for Medicare & Medicaid Services (CMS). (2016) *CMS-20077 Physical Restraints./SurveyCertificationGenInfo/Downloads/CMS-20077-Physical-Restraints.pdf*.
- De Vries, O.J., Ligthart, G.J., & Nikolaus, T. (2004) Differences in period prevalence of the use of physical restraints in elderly inpatients of European hospitals and nursing homes. *European Academy of Medicine of Ageing-Course III. J Gerontol A Biol Sci Med Sci* 59: 922–23.
- Demir, A. (2007a) Nurses' use of physical restraints in four Turkish hospitals. *Journal of Nursing Scholarship* 39.
- Demir, A. (2007b) The use of physical restraints on children: practices and attitudes of pediatric nurses in Turkey. *International Nursing Review* 54, 367-74.
- Demir-Zencirci, A. (2009) Feelings of nurses regarding physical restraints, rates and attitudes of collecting informed consent. *Turkiye Klinikleri J Med Sci.* 29: 1573-82 (in Turkish).
- Eser, I., & Hakverdioglu, G. (2006) Decision on using physical restraints. *Cumhuriyet Universty Journal of High School* 10: 37-42 (in Turkish).
- Evans, L.K., & Cotter, V.T. (2008) Avoiding restraints in patients with dementia: understanding, prevention, and management are the keys. *AJN* 108: 40–9.
- Feng, Z., Hirdes, J.P., Smith, T.F., Finne-Soveri, H., Chi, I., Du Pasquier, J.N., Gilgen, R., Ikegami, N., & Mor, V. (2009) Use of physical restraints and antipsychotic medications in nursing homes: a cross-national study. *Int J Geriatr Psychiatry* 24: 1110-1118.

- Hakverdioglu, G., Demir, A., & Ulusoy, F. (2006) Evaluation of emergency nurses' knowledge on physical restraints. *Türkiye Klinikleri J Med Sci.* 26, 634-641 (in Turkish).
- Huang, H.T., Chuang, Y.H., & Chiang, K.F. (2009) Nurses' physical restraint knowledge, attitudes, and practices: the effectiveness of an in-service education program. *Journal of Nursing Research* 17: 241-48.
- Joint Commission on Accreditation of Healthcare Organization (JCAHO). (2002) Restraint and seclusion: complying with Joint Commission standards. Illinois, USA: Oakbrook Terrace. Available <https://www.jointcommission.org/>.
- Kalula, S.Z., & Petros, S.G. (2016) Use of physical restraint in hospital patients: A descriptive study in a tertiary hospital in South Africa. *Curationis* 39(1): 1-8. doi: 10.4102/curationis.v39i1.1605.
- Karagozoglu, S., & Ozden, D. (2013) Knowledge and practices of nurses working at a university hospital related to use of physical restraints. *Journal of Nursing Research and Development* 1: 11-22 (in Turkish).
- Kaya, H., Asti, T., Acaroglu, R., Erol, S., & Savci, C. (2008) Nurses' knowledge and attitude in relation to using physical restraints. *Maltepe University Journal of Nursing Science and Art* 1: 21-29 (in Turkish).
- Kaya, H., & Dogu O. (2018). Intensive Care Unit Nurses' Knowledge, Attitudes And Practices Related To Using Physical Restraints. *International Journal of Caring Sciences*, 11:1, 61-70.
- Kruger, C., Mayer, H., Haastert, B., & Meyer, G. (2013) Use of physical restraints in acute hospitals in Germany: A multi-centre cross-sectional study. *International Journal of Nursing Studies* 50: 1599–1606.
- Laurin, D., Voyer, P., Verreault, R., & Durand, P.J. (2004) Physical restraint use among nursing home residents: a comparison of two data collection methods. *BMC Nursing* 3: 1-7. doi: 10.1186/1472-6955-3-5.
- Pellfolk, T.J., Gustafson, Y., Bucht, G., & Karlsson, S. (2010) Effects of a restraint minimization program on staff knowledge, attitudes, and practice: a cluster randomized trial. *J Am Geriatr Soc.* 58: 62-9.
- Potter, P.A., Perry, A.G., Stockert, P. A., & Hall, A.M. (2012) *Fundamentals of Nursing.* (8th ed., pp. 192-279). USA, Mosby, Elsevier eBook. <https://www.elsevier.com/books/fundamentals-of-nursing/potter/978-0-323-07933-4>
- Savci, C., Kaya, H., Acaroglu, R., Kaya, N., Bilir, A., Kahraman, H., & Gökerler, N. (2009) Risk of falling for neurology and neurosurgery patients and identification of precautions. *Maltepe Univ Journal of Nursing Science and Art* 2: 19-25 (in Turkish).
- Sercan, M., & Bilici, R. (2009) Variables of physical restraints practices in a regional psychiatric hospital in Turkey. *Turkish Journal of Psychiatry* 20: 37-48 (in Turkish).
- Orhan, M.F., & Yakut, H.I. (2012) Observing knowledge, manner and level of practice in terms of usage of physical restraints of pediatric intensive care nurses. *Turkey Journal of Pediatrics* 6, 155-160 (in Turkish).
- Tekkas, K., & Bilgin, B. (2010) Professional control methods in psychiatry services: reasons of usage, types, international practices and perceptions. *Turkish Journal of Psychiatry* 21: 235-42 (in Turkish).
- The Joanna Briggs Institute (TJBI). (2002) Physical restraint-Part 1: Use in acute and residential care facilities. *Best Practice*, 6(3): 1-6. Retrieved from <http://connect.jbiconnectplus.org/ViewSourceFile.aspx?0=4326>
- Yazicioglu, Y., & Erdogan, S. (2004) *SPSS Applied Scientific Research Methods.* Detay Publishing, Ankara, Turkey.