

Original Article

Intensive Care Unit Nurses' Knowledge, Attitudes And Practices Related To Using Physical Restraints

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Abstract

Background: Physical restraints are more commonly used in intensive care units, so further study is needed to provide basis for evidence based practices and to develop protocols and to emphasize the importance of this subject.

Objectives: This descriptive research was carried out to determine the knowledge, attitudes and practices of intensive care unit nurses with regard to the use of restraints.

Setting: This study was carried out with 97 volunteer nurses in Sakarya, Turkey who worked in general and coronary intensive care units.

Methodology: Data were collected face to face interview using the "Information Form" which included demographical characteristics and "Levels of Knowledge, Attitudes and Practices of Staff Regarding Physical Restraints Questionnaire". The data obtained were assessed by SPSS 17 Program, using percentage, arithmetic mean, independent samples T-test, Mann-Whitney and Kruskal-Wallis tests.

Results: Majority of nurses above 26 years or older (52.6%), female (79.4%) worked 1-5 years (50.5%), high school and associate degree graduates (80.4%) was found to be. Nurses knowledge score was 7.83 ± 1.59 (0-11), attitudes score was 30.00 ± 4.82 (12-48) and practices score was 36.01 ± 2.82 (14-42) and their demographical characteristics such as age groups, gender, working year and education levels were not statistically significantly associated with restraint knowledge, attitudes or practices ($p > 0.05$).

Conclusion: Once the gaps in knowledge are closed, more positive attitudes among staff towards the use of restraints can be cultivated, thus leading to a higher standard of nursing practice.

Key words: attitudes, knowledge, intensive care, nursing, restraint

Introduction

Physical restraining is the use of physical, chemical or mechanical tools and devices which allow the restriction of a part of a demented, agitated or confused patient's body to control/restrain the patient's physical movements in order to prevent the patient from harming and injuring himself, and to ensure safe treatment of the patient (Çelik et al, 2012; Demir 2007; Eşer& Hakverdioglu 2006; Kaya et al.2008; Orhan& Yakut 2012). Joint Commission on Accreditation of Healthcare Organizations (JCAHO) defines physical restraint as "use of physical for the purpose of controlling the actions of a person, without the consent of the person" (Demir 2007; Orhan& Yakut 2012).

Patients who are admitted to intensive care units generally have agitation and disorientation. Therefore safety measures must be taken. These measures include preventing patients from being alone, using easily accessible nurse call button and answering these calls promptly, lowering bed height, and raising bed rails. However healthcare professional may have to use physical restraints from time to time. Especially patient can be more agitated when taken off a ventilator and in order to avoid adverse effects of long terms sedation, physical restraint can be preferred (Benbenbishty, Adam& Endacott 2010; Çelik et al, 2012; Minnick, Leipzig& Johnson 2001; Orhan& Yakut 2012).

Although there are differing opinions on the acceptability of physical restraints, both chemical and physical restraints are often used in intensive care units. Minnick et al (2001) determined that physical restraints are 30% more frequently used in intensive care units when compared to other departments. Physical restraints in intensive care units are mostly used to prevent patients from falling or to prevent patients from risks such as patients' taking off devices such as endotracheal tubes when they still have to be used. In a study conducted by Mion et al., (2007) found that 44% of the patients tried to take off devices, tubes etc even when they were physically restrained.

In literature physical restraints are recommended as a protective measure in acute care to prevent falls and self injuries and indicated as not the best practice as a protective measure in intensive care patients that require long term monitoring (Eşer, Khorshid& Hakverdioglu 2007; Goethals, Casterle& Gastmans 2012; Neufeld et al 1999; Shorr et al 2002). Adverse outcomes such as muscle weakness and myasthenia, urinary/fecal incontinence, pressure wounds, insomnia, agitation, confusion, fear, depression, decreased self confidence and self-esteem, distorted body image, sensory deprivation and asphyxial death especially with jacket restraints can be used during prolonged use of physical restraints. Therefore when deciding on using physical restraints, the person/patient must be assessed very carefully in terms of the benefits of the measure. And at this stage the necessity to have knowledge about physical restraints become apparent (Hakverdioglu, Demir& Ulusoy 2006; Kaya et al.2008; Lane& Harrington 2011; Rateau 2000; Shorr et al 2002).

The number of studies on use of physical restraints has been increased in recent years in Turkey. Based on these studies, it was found that the level of knowledge on the purpose of using physical restraints among nurses is low, that nurses do not have sufficient information about alternative measures that should be used before resorting to physical restraints, that the records are insufficient and complication rates are high. (Çelik et al, 2012; Demir 2007; Hakverdioglu, Demir& Ulusoy 2006; Kaya et al.2008; Karagozoglu& Ozden 2013; Tel& Tel 2002). Despite these findings, insufficient protocols and regulations on the use of physical restraints presents itself as a serious problem. Given the fact that physical restraints are more commonly used in intensive care units, further study is

needed to provide basis for evidence based practices and to develop protocols and to emphasize the importance of this subject.

Methodology

Design and sample

This study is a descriptive and cross sectional study intended to identify knowledge attitudes and practices of nursing staff in intensive care units regarding physical restraints.

Answers to the following questions are sought in the study:

- What are the knowledge, attitudes and practices of nursing staff in intensive care units regarding physical restraints?
- Is there any difference in knowledge, attitudes and practices of nurses regarding physical restraints depending on their socio-demographics?

There are 3 hospitals with intensive care units in the city centre of Sakarya. The population of the study consists of all of the nurses (115 nurses) working in the general adult and coronary intensive care units in 1 university hospital, 1 state hospital and 1 private hospital in the city centre of Sakarya. We tried to include the entire population however 97 nurses who have been informed verbally and consented volunteered to participate to the study (participation 84%).

Main Outcome Measures

Data were collected in one to one interviews using Information Form which include socio-demographics and Level of Knowledge Attitudes and Practices of Staff Regarding Physical Restraints Questionnaire.

The Information Form was developed by the researchers and includes questions to obtain information on the age, sex, marital status, education level and work experience of nurses.

Level of Knowledge Attitudes and Practices of Staff Regarding Physical Restraints Questionnaire was developed by Janelli, Scherer and Kuhn (1994) and improved by Suen LKP (1999) and was adapted to Turkish by Kaya et al. in 2008. Test-retest total correlation coefficient of the original scale was 0.85-0.99; and the scale adapted to the Turkish society has a test-retest value of 0.88-0.90 and Cronbach's Alpha coefficient of the scale is 0.69. (Kaya et al.2008; Suen 1999)

The first section of the scale consists of 11 items which include 10 correct questions and 1 false question which measure the knowledge of nursing staff regarding the use of physical restraints. Correct answer is assessed as 1, and the wrong answer is assessed as 0. The scoring range of this section is 0-11; the highest score represent the highest level of knowledge. The second section is a 4 point likert scale that consists of 12 items and measures attitudes of nursing staff regarding the use of physical restraints; "I strongly agree" is 4 point, "I agree" is 3 points, "I don't agree" is 2 points and "I strongly disagree" is 1 point. The scoring range of this section is 12-48; the highest score represent positive and the lowest score represent negative attitude. The third section includes 14 items which measure practices of the nursing staff regarding the use of physical restraints. The 10th item is a negatively worded item and is reverse scored. This section, a 3 point likert scale "never" is 1 point, "sometimes" is 2 points and "always" is 3 points. Scores range between 14 and 42 and higher scores represent excellent physical restraints practices whereas lower scores indicate unsuitable practices. (Janelli, Sherer&Kuhn 1994; Kaya et al.2008; Suen 1999)

Data Analysis

SPSS 17 program was used to statistically analyse the findings of the study. Number, percentage, mean and standard deviation were used to evaluate descriptive data t test, Mann Whitney U and Kruskal Wallis Variance Analysis were used to evaluate scale scores and socio-demographic variables. Significance was accepted as $p < 0.05$.

Ethical Considerations

A protocol was signed with the Sakarya State Hospitals Association, which include written permissions of the study hospitals before the study began. The study was approved by the Ethics Committee. Nurses included in the study were explained about the purpose of the study and what were expected of them and written informed consents were obtained from these nurses to participate to the study on a voluntary basis.

Limitations of the Study

The study population consists of only the intensive care nurses working in the city centre

of Sakarya. Therefore these study results cannot be generalised.

Results

Majority of the intensive care nurses participated to the study were above 26 years or older (52.6%, $n=51$), female (79.4%, $n=77$), high school and associate degree graduates (80.4%, $n=78$) and single (54.6%, $n=53$). 50.5% ($n=49$) of the participants had a work experience of 1-5 years. 71.1% ($n=69$) reported that there are guidelines on the use of physical restraints in their hospital. No statistically significant different is found between the age groups, sex, education level, marital status and work experience and their scores in knowledge, attitude and practices regarding physical restraints ($p < 0.05$) (Table 1).

The mean score of the nurses for their knowledge on the use of physical restraints was found to be at moderate level (7.83 ± 1.59 , 0-10) (Table 2).

In this section 93.8 % of the nurses responded correctly to the question, "A resident should never be restrained while lying flat in bed because of the danger of choking" and 94.8% of the nurses responded wrong to the question "Good alternatives to restraints do not exist" and 41.2% of the nurses responded wrong to the question, "If physical restraints (safety vest, garment) are to be used, a member of the patient's family is required to sign a consent form". (Table 3).

The mean score of the nurses for their attitude towards physical restraints was (30.00 ± 4.82 , 16-48) (Table 2).

In this section, 96.9% of the nurse reported that they agreed (agree + strongly agree) with "It is important to apply restraints to assure legal protection for myself and my centre.", and 95.8% of the nurses reported that they agreed with "I believe that restraints lead to a reduction in the number of residents who fall" and 83.5% of the nurses reported that they disagreed (disagree + strongly disagree) with "I feel that the main reason that restraints are used is that our centre is short staffed" and 81.5% of the nurses reported that they disagreed with "I feel guilty placing a resident in restraints" statements and 72.1% of the nurses reported that disagreed with "I believe that restraints increase the risk of strangulation." statements (Table 4).

Table 1. Comparison of socio-demographic factors and the mean scores of the nurses knowledge, attitudes and practices on the use of physical restraints (N=97)

			Knowledge		Attitudes		Practices	
		n (%)	mean± SD	p	mean± SD	p	mean± SD	p
Age	25 and below	46 (47.4)	7.71±1.86	t= -0.689 p=0.124*	29.34±4.51	t=-1.413 p=0.983	35.67±3.12	t=-1.116 p=0.535*
	26 and above	51 (52.6)	7.94±1.30		30.72±5.03		36.31±2.50	
Education	High school and associate degree	78 (80.4)	7.79±1.62	Z= -0.491 p=0.623**	29.85±5.18	Z= -1.451 p=0.147	36.15±2.70	Z= -0.831 p=0.406**
	Bachelor graduates	19 (19.6)	8.00±1.49		30.94±2.81		35.42±3.27	
Sex	Female	77 (79.4)	7.81±1.66	Z=- 0.161 p=0.872**	30.05±4.79	Z= -0.300 p=0.764	35.88±2.82	Z=-0.996 p=0.319**
	Male	20 (20.6)	7.90±1.29		30.15±5.02		36.50±2.83	
Marital Status	Married	44 (45.4)	8.06±1.33	t=-1.319 p=0.269*	31.86±4.64	t= -3.528 p=0.550	36.00±2.83	t=0.033 p=0.648*
	Single	53 (54.6)	7.64±1.76		28.58 ±4.48		36.01±2.83	
Work experience	0-11 month	23 (23.7)	7.86±1.98	KW=0.53 2 p=0.766** *	29.56±3.95	KW=0.093 p=0.954	36.08±3.10	KW=1.291 p=0.524***
	1-5 year	49(50.5)	7.71±1.63		29.85±4.91		36.10±2.94	
	5 year and above	25 (25.8)	8.04±1.05		30.96±5.40		35.76±2.36	

*t test, **Mann Whitney U ***Kruskall Wallis test

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	5 year and above	25 (25.8)	8.04±1.05		30.96±5.40		35.76±2.36	

*t test, **Mann Whitney U ***Kruskall Wallis test

Table 2. The mean scores of the nurses knowledge, attitudes and practices on the use of physical restraints (N=97)

Questionnaire subtitle	mean± SD (min -max)	Score range
Knowledge	7.83±1.59 (0-10)	0-11
Attitudes	30.00±4.82 (16-48)	12-48
Practices	36.01±2.82 (27-40)	14-42

Table 3. Selected items measuring knowledge on the use of physical restraints (N=97)

	Agree n (%)	Disagree n (%)
1- If physical restraints (safety vest, garment) are to be used, a member of the patient's family is required to sign a consent form	57 (58.8)	40 (41.2)
2- Restraints should be released every 2 hours, if the resident is awake	88 (90.7)	9 (9.3)
3- When a resident is restrained, there may be any increase in skin breakdown	85 (87.6)	12 (12.4)
4- When a resident is restrained in bed, the restraint should not be attached to the side rail	90 (92.8)	7 (7.2)
5- A resident should never be restrained while lying flat in bed because of the danger of choking	91 (93.8)	6 (6.2)
6- Good alternatives to restraints do not exist	92 (94.8)	5(5.2)

Table 4. Selected items measuring attitudes towards the use of physical restraints (N=97)

	Strongly agree n (%)	Agree n (%)	Disagree n (%)	Strongly disagree n (%)
1- If I were the resident, I would feel that I should have the right to refuse or resist the placing of restraints on me	16 (16.5)	36 (37.1)	41 (42.3)	4 (4.1)
2- I feel guilty placing a resident in restraints	3 (3.0)	15 (15.5)	57 (58.8)	22 (22.7)
3- I feel that the main reason that restraints are used is that our centre is short staffed.	4 (4.2)	12 (12.4)	42 (43.3)	39 (40.1)
4- I feel embarrassed when the family enters the room of a resident who is restrained	4 (4.2)	24 (24.7)	55 (56.7)	14 (14.4)
5- It makes me feel bad if a resident becomes more upset after restraints are applied	6 (6.2)	49 (50.5)	30 (30.9)	12 (12.4)
6- It is important to apply restraints to assure legal protection for myself and my centre.	36 (37.1)	58 (59.8)	2 (2.1)	1 (1.0)
7- I feel that placing a resident in restraints can decrease nursing care time	9 (9.3)	32 (33.0)	48 (49.5)	8 (8.2)
8- I believe that restraints increase the risk of strangulation.	4 (4.2)	23 (23.7)	56 (57.7)	14 (14.4)
9- I believe that restraints lead to a reduction in the number of residents who fall	46 (47.4)	45 (46.4)	3 (3.1)	3 (3.1)

Table 5. Selected items measuring nursing practice regarding use of physical restraints (N=97)

	Always n (%)	Sometimes n (%)	Never n (%)
1- I try alternative nursing measures before restraining the resident	76 (78.4)	19 (19.6)	2 (2.0)
2- When I restrain a resident, I make this decision only with a physician's order	62 (63.9)	28 (28.9)	7 (7.2)
3- When I feel that the resident does not need to be restrained, I make this suggestion to the doctor	71 (73.2)	20 (20.6)	6 (6.2)
4- I answer the call for the resident who is restrained as soon as possible	87 (89.7)	10 (10.3)	0 (0.0)
5- I check the restraints at least every two hours to make sure they are in the proper position	89 (91.8)	8 (8.2)	0 (0.0)
6- I inspect the skin of the resident for abrasions or skin tears if I bath a resident who is restrained	89 (91.8)	6 (6.2)	2 (2.0)
7- I tell family members why the resident is being restrained	86 (88.7)	9 (9.3)	2 (2.0)
8- I explain to the resident why the restraint is being applied	82 (84.5)	14 (14.4)	1 (1.1)
9- I tell the resident when the restraint(s) will be removed	79 (81.4)	13 (13.4)	5 (5.2)
10- More residents are restrained when we are short of staff than when we are fully staffed	15 (15.5)	30 (30.9)	52 (53.6)
11- In our centre, staff members work together to discover ways to control the behaviour of residents other than by using physical restraints	55 (56.7)	38 (39.2)	4 (4.1)
12- I frequently assess if the restraint should be removed	84 (86.6)	13 (13.4)	0 (0.0)
13- When physical restraint are applied, I record on the kardex the type of restraint used, the reason for adopting it, the time the application commenced, and the related nursing care required	71 (73.2)	24 (24.8)	2 (2.0)
14- I frequently evaluate and record the effect of physical restraint when applied to a resident	82 (84.5)	15 (15.5)	0 (0.0)

The mean score of the nurses for their practice of physical restraints was 36.01 ± 2.82 (27-40) (Table 2). In this section 91.8% of the patients gave the answer "always" to the question "I check the restraints at least every two hours to make sure they are in the proper position" and "I inspect the skin of the resident for abrasions or skin tears if I bath a resident who is restrained" and 39.2% of the nurses gave the answer "sometimes" to the question "I try alternative nursing measures before restraining the resident" and 28.9% of the nurses gave the answer "sometimes" to the question, "When I restrain a resident, I make this decision only with a physician's order" and 24.8% of the nurses gave

the answer "sometimes" to the question "When physical restraint are applied, I record on the kardex the type of restraint used, the reason for adopting it, the time the application commenced, and the related nursing care required" (Table 5).

Discussion

This study investigated knowledge, attitude and practices of nurses in intensive care units regarding the use of physical restraints. Majority of the nurses in this study were older than 26, high school and associate degree graduates, and have a professional experience of 1-5 years. These findings are similar to other studies conducted with nurses in Turkey and indicate

that young and less experienced nurses are employed in intensive care units (Çelik et al, 2012; Kaya et al.2008; Orhan&Yakut 2012). The good news is that 71.1% of the nurses declared that they have a guideline on the use of physical restraints in their hospitals. This finding demonstrates that regulations have started to be made on this subject.

There are no significant differences between scores for knowledge, attitudes and practices of nursing staff regarding physical restraints. Yet, nurses with bachelor's degrees are expected to have higher scores in knowledge, attitude and practices when compared to high school and associate degree graduate nurses. Myers et al., (2001) reported that there was no significant difference between the attitudes of nurses depending on their sex and education level. Suen et al (1999) found that the attitudes of nurses showed a significant difference according to their education levels and work experience and there was a positive correlation.

Users must have comprehensive knowledge about physical restraints in order to use these measures correctly and efficiently. The mean knowledge score of the nurses in this study was 7.83 ± 1.59 . These findings are higher than the findings of the studies of Janelli et al. (1994), Suen et al. (1999), Hakverdioglu et al. (2006), Orhan and Yakut (2012) but lower than the findings of the study of Kaya et al (2008) and Çelik et al. (2012) The reason for this may be the use of different sample groups. Although nurses generally gave correct answers to the questions that evaluate their knowledge, most of the nurses gave wrong answer to the following question; "Good alternatives to restraints do not exist". Lack of knowledge among nurses can cause incorrect practices. In fact, in previous studies it was found that incorrect application of physical restraints caused several complications including suffocation and mortality and morbidity rates also increased (Eşer& Hakverdioglu 2006; Hine 2007; Mion et al.2007;Neufeld et al 1999; Potter& Perry 2005; Werner& Mendelsson 2001).

An informed consent must be obtained from the patient or from his/her legal guardian before using physical restraints. The patient or his/her legal guardian is informed about the reason for physical restraint and the possible risks for the patient if it is not used and if the patient or his/her legal guardian does not give consent,

physical restraints should not be used under any circumstances. Patient care standards have been developed and regulations have been made in many countries. (Hakverdioglu 2006; Lee et al. 2003). However majority of the nurses gave the wrong answer to the following question, "If physical restraints (safety vest, garment) are to be used, a member of the patient's family is required to sign a consent form". Given the fact that nurses have insufficient information about ethics, they can experience ethical or legal problems when they use physical restraints. Yet, nurses who are expected to be careful about patients' autonomy believe in patient rights should have knowledge about these concepts in order to perform correct nursing practices. (Eşer& Hakverdioglu 2006; Hakverdioglu 2006; Potter& Perry 2005). With this in mind, on the job training programs should be considered for nurses who are the primary user of physical restraints to improve their knowledge.

One of the elements that play an important role in transforming knowledge into practice is the person's attitude. Attitude is a predisposition with a dynamic and guiding influence. In this study attitudes of the nurses towards physical restraints are evaluated to be not at the expected level. These findings are similar to the findings of the studies of Suen et al (1999) and Çelik et al (2012) but lower than the findings of the study of Kaya et al (2008). Most of the nurses did not agree with the following statements evaluating their attitudes: "I feel that the main reason that restraints are used is that our centre is short staffed" , "I feel guilty placing a resident in restraints" . In the study of Kaya et al.(2008) 50% of the nurses responded negatively to the question, "I feel guilty placing a resident in restraints". In Hakverdioglu et al (2006) study 50% of the nurses answered the question "How would you be affected if you used physical restraints" with "I feel bad to use physical restraint on the patient" and 25% answered with "I feel guilty when I use physical restraints". Similarly in another study conducted by Lee et al (2003) nurses reported that they feel bad when they used physical restraints on patients and hated using this inhumane measure but had to do it for the safety of patients. Based on these results nurses may face with a dilemma about physical restraints and can experience fatigue in the heavy work traffic. Furthermore in the study the fact that the majority of the nurses did not agree with the statement "I believe that restraints

increase the risk of strangulation" indicated that they haven't experienced this in their work. Although physical restraints which were first used in the USA and Great Britain in 1950s are a treatment used according to doctors' orders, nurses are responsible for evaluating patients' responses, monitoring patients and recording the results. In 1980s due to the increasing fall, injury and mortality rates caused by improper use of physical restraints, rules and procedures were developed on the use of physical restraints by the HCFA (Health Care Financing Administration) and JCAHO. (Çelik et al 2012; Goethals, Casterle & Gastmans 2012; Martin & Mathisen 2005; Potter & Perry 2005; Suen et al 1999; Werner & Mendelsson 2001). In this study, nurses have good scores in practice. This findings are similar to the findings of Suen et al., (1999) and Kaya et al. (2008) and can indicate a good level of practice of physical restraints. In this section, 91.8% of the nurses, with highest score gave "always" to these questions; "I check the restraints at least every two hours to make sure they are in the proper position", "I inspect the skin of the resident for abrasions or skin tears if I bath a resident who is restrained". These findings are very positive. Because monitoring patients with physical restraints is important to prevent complications. Patients need to be observed and monitored in order to decide whether to continue with the use of physical restraints. The literature recommends that the patient with physical restraints are monitored and checked for skin condition, restraints should be taken off at least every two hours to allow patients use the bathroom etc, and that the patient is checked to see if she/he is comfortable (Eşer & Hakverdioglu 2006; Eşer, Khorshid & Hakverdioglu 2007; Hakverdioglu et al 2006; Kaya et al. 2008; Shorr et al 2002; Micek et al. 2005; Myers, Nikoletti & Hill 2001; Tel & Tel 2002; Thurmond 1999).

In this study, the number of patients giving the answer "sometimes" to these questions: "I try alternative nursing measures before restraining the resident", "When I restrain a resident, I make this decision only with a physician's order", and "When physical restraint are applied, I record on the kardex the type of restraint used, the reason for adopting it, the time the application commenced, and the related nursing care required" was not low. Given the fact that majority of the nurses gave correct answers to the questions designed to evaluate their

knowledge on the use of physical restraints it is possible to comment that some nurses cannot transform their knowledge into practice. Based on also the results of similar studies conducted in Turkey, the nursing staffs have some practices lacking especially about the legal aspect of this subject. (Çelik et al 2012; Kaya et al. 2008; Karagozolu & Ozden 2013).

Conclusion

In this study it was found that the nurses working in the intensive care units in the city centre of Sakarya had a moderate level of information on the use of physical restraints, that they have insufficient information on the use of some forms such as jacket restraints and they try to transform their knowledge into practice but their performance in legal and ethical issues need to be improved. On the job training programs to improve knowledge, attitude and behaviour and legal regulations can be recommended.

The number of studies that can provide guidance to nursing practices such as studies on the frequency of use of physical restraints in intensive care units, the effect of training on knowledge, attitude and behaviour should be increased. Evidence based guidelines and training methods should be developed to support the use of physical restraints.

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