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Running head: PERCEPTION OF PHYSICAL RESTRAINT IN SPANISH HOSPITAL NURSES

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Physical restraint use with elderly patients: Perceptions of nurses and nursing assistants in Spanish acute care hospitals

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Ethical Conduct of Research: The study was conducted in accordance with the Code of Good Practices of the EDULPGC (*Escuela de Doctorado de la Universidad de Las Palmas de Gran Canaria*). The protocol was approved by the Ethics Committee for Human Research at the University of Las Palmas de Gran Canaria ULPGC (CEIH-2014-05).

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Abstract

Background: Physical restraint is often used during the hospitalization of elderly people. However, this procedure is associated with many problems; therefore it is necessary to be aware of the circumstances that promote this practice, such as the perceptions of professionals who use it. ***Objectives:*** The purpose of the research was to determine the situations in which nursing staff considered the use of physical restraint most important and to evaluate the possible associations with the sociodemographic and professional variables. ***Methods:*** A descriptive cross-sectional multicenter study was carried out in 52 units of eight Spanish acute hospitals. A survey of registered nurses and nursing assistants was used to collect data related to sociodemographics, experience, training in restraint, and the PRUQ questionnaire, that assesses the perceived importance of reasons frequently given for the use of physical restraint. ***Results:*** The sample comprised 508 registered nurses and 347 nursing assistants. 98% had used physical restraint and 82% thought their training was insufficient. Nursing assistants scored higher ($p < .005$; $d = 0.68$) on PRUQ total score than registered nurses, as well as on individual item scores, suggesting they thought the factors were more important in restraint use. Both groups considered restraint most important in the prevention of falls and the removal of medical devices. No association was found between the PRUQ total score and the other variables considered. ***Discussion:*** The professionals considered restraint very important in preventing safety problems. In order to improve the quality of care it is essential to identify the factors that can have an effect on the application of physical restraint. Educational programs are of fundamental importance, but to be more effective in reducing the use of these procedures they should be accompanied by institutional policies promoting a restraint-free environment.

Key Words: aged; hospital; nursing staff; perception; restraint, physical

The hospitalization of frail elderly people in acute medical units increases the probability of adverse events occurring and safety issues arising (Long, Brown, Ames, & Vincent, 2013). To minimize some of these risks, professionals often limit patient's freedom of movement by applying a physical restraint. Physical restraint is "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, Wagner, Capezuti, Hamers, & International Physical Restraint Workgroup, 2016, p. 2309). This includes bilateral bedrails, vest, limb or waist restraints, and any other devices that could limit the person's mobility. However**,** this procedure can cause numerous complications such as immobility, pressure ulcers, infections, incontinence, disorientation, agitation or delirium, and can lengthen the patient´s stay (Evans, Wood, & Lambert, 2003; Luk et al., 2014); there are also many ethical and legal considerations (Gastmans, 2010).

Consequently, regulations and recommendations have been determined with the objective of avoiding the inappropriate use of physical restraint at health institutions, as well as the implementation of alternatives, where possible. On an international level there are several bodies formulating standards of care, such as those proposed by the Joint Commission on Accreditation of Healthcare Organization (CPI, 2009). In the USA there are state and federal regulations established for the Centers for Medicare & Medicaid Services (DHHS & CMS, 2016). In Spain, there are no specific regulations at national level, although the Spanish Society of Geriatrics and Gerontology has published a consensus document providing guidance on good practice for the use of physical restraint in elderly patients (SEGG, 2014).

The prevalence of the use of physical restraint in acute hospitals is very variable, ranging from 9.3% in general wards (Heinze, Dassen, & Grittner, 2012) to more than 50% in intensive care units (Luk et al., 2014). Among the factors that influence their use would be the

characteristics of the patient and the institution, lack of knowledge among staff about alternatives or fear of litigation (Park 2007, Heinze 2012). Other aspects to consider are the perceptions and attitudes that professionals have about this procedure (McCabe, Alvarez, McNulty, & Fitzpatrick, 2011; Möhler & Meyer, 2014), given that they may influence the decision-making process.

Regarding Spain, in 2015 there were 791 centers with a total of 158,566 beds in the Spanish acute hospitals network, the majority public of which are owned (Ministerio de Sanidad, n.d.). More than half of the stays involved people over 65 years of age and these stays were also more prolonged than for the rest of the population (Abellán García & Pujol Rodríguez, 2016). Registered nurses with 3-4 years of college education are usually responsible for the care of patients; nursing assistants with 2 years of vocational training undertake basic care (Martínez, 2007).

The aim of this study was to determine the situations in which registered nurses and nursing assistants considered the use of physical restraint in hospitalized older people most important and to evaluate the possible associations with sociodemographic and professional variables.

Methods

Participants and Procedure

A descriptive cross-sectional and multicenter study was carried out between February and October 2016. Eight acute hospitals located in four Spanish regions were selected by non-probabilistic sampling: Canarias, Castilla-La Mancha, Galicia, and Madrid. All were public teaching hospitals, six of them of tertiary level and two of primary level.

The study comprised a total of 3,140 beds in 52 units, and included intensive care, resuscitation, internal medicine, trauma, general surgery, rehabilitation, neurology, neurosurgery and medical-surgical; psychiatric and emergency units were excluded given their special

characteristics. The nursing professionals working in these units (1,425 registered nurses and 1,062 nursing assistants) were invited to participate. The inclusion criteria were: (a) to be a registered nurse or nursing assistant, and (b) to have worked for at least one month in the unit.

The protocol of the study was approved by the Ethics Committee for Human Research at the University of Las Palmas de Gran Canaria (CEIH-2014-05). Authorization was requested from the hospitals by letter. The participation of professionals was voluntary and data collection was anonymous.

Measures

Sociodemographic and professional characteristics. A survey was used to collect data related to sociodemographics, experience and training regarding the use of physical restraint in elderly patients.

Perception of Restraint Use Questionnaire. The Perception of Restraint Use Questionnaire (PRUQ; Evans & Strumpf, 1993) was used. The PRUQ comprises 17 items assessing the importance of each factor for use of physical restraint in patients. Items are answered in a 5-type Likert scale format, from 1 = *not at all important* to 5 = *most important.* A summary score is obtained as the average of the item responses ; if a question is skipped, the average was obtained using all available responses (item-mean substitution method), rounding off to discrete values, when participants answered to more than 75% of the items. Higher values indicate that the respondent perceived that the use of such device was more important. The Spanish adaptation of the questionnaire was applied (Fariña-López, Estévez-Guerra, Núñez González, Calvo Francés, & Penelo, 2016). In the present sample, internal consistency estimated using Cronbach's alpha was .94.

Data Analysis

The comparison between registered nurses and nursing assistants was conducted with chi-square tests for categorical measures and Student's *t*-tests for quantitative variables. The association between PRUQ total score and the other measures was evaluated with Pearson's (r_p) or Spearman's (r_s) correlation coefficients for quantitative and ordinal variables, respectively, and ANOVA for measures with two or more than two categories (*t*- or *F*-tests, respectively). Effect sizes for mean comparisons were measured with Cohen's *d* and interpreted following the usual rules of thumb: a small effect for absolute values ranging between .20 and .50, medium between .50 and .80 and large above .80; for correlation coefficients, *r* values ranging between .10 and .30 were considered small, medium between .30 and .50, and large above .50 (Cohen, 1992). Analyses were performed with SPSS v24.

Results

Participant Characteristics

A total of 918 nurses and nursing assistance agreed to take part; of these, 63 were excluded because they did not meet the inclusion criteria. Thus, the final sample comprised 855 nursing staff, of whom 508 were registered nurses and 347 nursing assistants. The mean age of respondents was 40.7 years (*SD* = 8.98), most of them were females (85.0%) and had a mean time-experience of 14.6 years (*SD* = 8.24). Nearly 98% had used physical restraint with the elderly on occasion; more than 85% said they had received little or no training and 82% thought their training was insufficient; no differences were found between registered nurses and nursing assistants (Table 1).

PRUQ Scores and Correlates

Table 2 shows PRUQ scores by professional category and the comparison between both professional groups. Nursing assistants had a higher total score than registered nurses (3.80 *vs*. 3.25 points; $p < .005$; $d = 0.68$) and the same pattern was observed for all items ($p < .005$; *d*

values between 0.26 and 0.71). The situations in which both groups considered the use of restraint most important were the prevention of falls and the accidental removal of medical devices. Reasons considered least important were as a substitute for staff observation and the prevention of an older person taking things from others.

No association was found between the PRUQ total score and sociodemographic characteristics such as age (r_p = .14), years of experience (r_p = −.01), previous use of restraints by the professional (r_s = −.09), participation in training activities (r_s = .03) or reading articles about physical restraint (r_s = .03), since all correlation coefficients were low or almost null (≤ .15 in absolute value). In addition, no differences on the PRUQ total score were found between those participants who considered that they had received enough training and those who did not [t(849) = 1.20; p = .23], between hospitals [F(7, 846) = 1.68; p = .11] or units grouped across hospitals [F(8, 845) = 1.38; p = .20]. Lastly, females scored slightly higher than males [t(846) = 2.71; p = .007], but the difference found can be considered small, considering effect size (d = .26).

Discussion

Professionals included in this study considered the use of physical restraint in certain circumstances very important, patient safety being identified as the primary reason (PRUQ average score around 4 points in a scale rated from 1 to 5). Mean PRUQ total scores obtained in our sample were higher than those reported by McCabe (2011) in the United States, both for registered nurses (3.3 vs. 2.6) and nursing assistants (3.8 vs. 3.0). This data reflects that nursing staff continue to perceive physical restraint as necessary, which could lead to a higher use of the procedure (Fariña-López et al., 2014).

Prevention of falls was felt to be the most important reason for the use of physical restraint, a result also obtained in other studies (Johnson et al., 2016; , Möhler & Meyer, 2014;, Huang, Huang, Lin, & Kuo, 2014). However, the literature has highlighted that these procedures

do not reduce the number of falls or fall-related injuries (Evans et al., 2003; Heinze et al., 2012); therefore, it is necessary to consider other measures, such as addressing risk factors (e.g., vision loss, delirium), implementing continuous observation, evaluating physical needs (e.g., toileting, feeding) or making environmental modifications (Park & Tang, 2007; Muñiz et al., 2016).

Another situation in which professionals considered the use of restraint important was to prevent the accidental removal of medical devices. This result was consistent with previous studies, which have confirmed the relationship between physical restraint and the use of feeding tubes or urinary catheters (Huang et al., 2014; Krüger, Mayer, Haastert, & Meyer, 2013). Improving their method of attachment or disguising them are possible interventions to avoid interference, but using less invasive and discomforting alternatives might be a better option (Park & Tang, 2007).

A significant difference was observed between professionals, nursing assistants considering the use of restraint more important than registered nurses. A lower level of education concerning the complications of restraint and the fear of legal liability for patient falls might explain these differences (Fariña-López et al., 2014; McCabe et al., 2011).

Another significant fact is the lack of professional training in physical restraint, which is surprising given that the majority of respondents had used it. But although educational programs are of fundamental importance, they might not be effective in reducing the use of these procedures by themselves (Möhler, Richter, Köpke, & Meyer, 2012). Experts suggest that they should be accompanied by institutional policies promoting a restraint-free environment including individualized care based on non-pharmacological therapies, alternative technical devices (e.g., low beds, motion sensors), expert consultation for complex situations (e.g., challenging behaviour), as well as the collaboration of all staff involved in the process (Johnson et al., 2016; Muñiz et al., 2016; Park & Tang, 2007).

Limitations

Regarding the limitations of our study, a non-probability sampling of the centers was used and the study had a moderate response rate, which may weaken the generalizability of the results. On the other hand, data were collected in different regions of Spain, which may strengthen the value of our findings.

Conclusion

In this study, the professionals considered the use of physical restraint especially important in the prevention of falls and the accidental removal of medical devices, specially nursing assistants. No statistical relationship was found between use of restraint and hospitals or units, the socio-demographic characteristics of the professionals or their level of training, the latter being very low. In order to improve the quality of care and promote respectful attention to the dignity of the patients, it is essential to identify the factors that promote the application of physical restraint. This will guide management policies aimed at reducing the use of these procedures, which is of increasing importance in countries where the presence of hospitalized elderly people will become more frequent.

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TABLE 1. Participant Characteristics and Experience with Physical Restraint

	All (*N* = 855)			RNs (*n* = 508)			NAs (*n* = 347)		
Characteristic/value	***M***	**(*SD*)**		***M***	**(*SD*)**		***M***	**(*SD*)**	***p***
Age (years)	40.7	(8.9)		38.4	(8.5)		44.1	(8.6)	<.01
Work experience (years)	14.6	(8.2)		14.7	(8.2)		14.4	(8.3)	.65
	n	**(*%*)**		***n***	**(*%*)**		***n***	**(*%*)**	
Gender (female)	722	(85.0)		412	(81.6)		310	(90.1)	<.01
Restraints used with elderly									.17
Many times	327	(38.6)		187	(37.1)		140	(40.7)	
Sometimes	407	(48.0)		249	(49.4)		158	(45.9)	
Seldom	96	(11.3)		61	(12.1)		35	(10.2)	
Never	18	(2.1)		7	(1.4)		11	(3.2)	
Training									.53
> 3 courses or >10 hours	17	(2.0)		12	(2.4)		5	(1.4)	
1-2 courses or 5-10 hours	94	(11.0)		51	(10.0)		43	(12.4)	
Occasional	242	(28.3)		142	(28.0)		100	(28.9)	
None/do not remember	501	(58.7)		303	(59.6)		198	(57.2)	
Articles read									.06
>5	32	(3.7)		24	(4.7)		8	(2.3)	
3-5	66	(7.7)		44	(8.7)		22	(6.3)	
1-2	250	(29.3)		155	(30.6)		95	(27.4)	
None/do not remember	506	(59.3)		284	(56.0)		222	(64.0)	
Training adequate (yes)	151	(17.7)		87	(17.1)		64	(18.6)	.58

Note. RN = registered nurse; NA = nursing assistant; *SD* = standard deviation.

TABLE 2. Perception of Restraint Use Questionnaire Responses for Registered Nurses and Nursing Assistants

	Missing		All (*N* = 855)		RNs (*n* = 508)		NAs (*n* = 347)		
Item	***n***	**(*%*)**	***M***	**(*SD*)**	***M***	**(*SD*)**	***M***	**(*SD*)**	***d***
Protect: fall from bed	3	(0.4)	4.2	(1.06)	4.1	(1.10)	4.4	(0.96)	.26
Prevent: pull out feeding tube	1	(0.1)	4.2	(0.95)	4.0	(0.95)	4.4	(0.88)	.48
Prevent: pull out catheter	2	(0.2)	4.1	(0.94)	4.0	(0.94)	4.3	(0.90)	.36
Prevent: pull out IV line	2	(0.2)	4.1	(0.98)	3.9	(0.99)	4.4	(0.87)	.56
Protect: fall from chair	8	(0.9)	4.0	(1.04)	3.9	(1.09)	4.2	(0.93)	.33
Prevent: break open suture	2	(0.2)	4.0	(1.02)	3.8	(1.03)	4.2	(0.97)	.39
Protect: staff/others from harm	2	(0.2)	3.7	(1.23)	3.6	(1.20)	4.0	(1.23)	.33
Provide: safety[a]	9	(1.1)	3.7	(1.25)	3.4	(1.28)	4.0	(1.15)	.43
Summary score	1	(0.1)	3.5	(0.86)	3.3	(0.81)	3.8	(0.82)	.68
Prevent: remove dressing	12	(1.4)	3.5	(1.14)	3.4	(1.12)	3.8	(1.13)	.31
Prevent: getting into danger[b]	11	(1.3)	3.5	(1.41)	3.2	(1.42)	3.9	(1.29)	.54
Protect: unsafe ambulation	18	(2.1)	3.5	(1.29)	3.2	(1.33)	3.8	(1.14)	.48
Manage agitation	1	(0.1)	3.4	(1.28)	3.2	(1.27)	3.7	(1.24)	.40
Prevent: wandering	22	(2.6)	3.1	(1.33)	2.8	(1.32)	3.4	(1.28)	.47
Provide: quiet time or rest[c]	16	(1.9)	2.8	(1.45)	2.4	(1.39)	3.4	(1.35)	.71
Prevent: bothering others	8	(0.9)	2.6	(1.34)	2.3	(1.24)	3.1	(1.35)	.59
Prevent: taking from others	9	(1.1)	2.4	(1.30)	2.1	(1.15)	2.8	(1.39)	.60
Substituting: staff observation	9	(1.1)	2.2	(1.38)	1.9	(1.20)	2.7	(1.48)	.61

Note. d = Cohen's *d*; IV = intravenous; RN = registered nurse; NA = nursing assistant; *SD* = standard deviation. For all items and the summary score, $p < .05$. [a]When judgement is impaired. [b]Dangerous places or supplies. [c]For overactive person.