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Chemical and physical restraint of patients

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Abstract

Problem Statement: The physical and chemical restraint of patients, despite being often applied with no real scientific basis, has always been part of nursing practice in caring for the ill people.

Research Questions: What is the level of knowledge over in nursing about physically and chemically restraining?

Purpose of the Study: Evaluate the level of knowledge of nurses on physical and chemical restraint of patients.

Research Methods: The cross-sectional descriptive study was conducted by collecting data using a survey on the knowledge that physically and chemically restraining patients. To this end, a convenience sample was assessed consisting of 156 nurses aged between 24 and 57 (average being 35.11), 79.2% of which were female and 20.8% were male.

Findings: The majority (92.3%) consider the physical restraint is a way of ensuring the patient's safety. The level of knowledge reveals that the majority (53.1%) have knowledge on the physical and chemical restraint of patients, noting that 46.9% have a good level of knowledge, 6.2% a reasonable level of knowledge and 46.9% have a weak level of knowledge on the subject.

Conclusions: Given the results, there arises the concern to include training on the physical and chemical restraint of patients in the study plan, as well as implementing the training and simulated practice of restraining measures, giving future nurses the transferable skills needed in clinical practice.

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1. Introduction

Health sector is recognized, nationally and internationally, as an area of particular vulnerability, by being in direct contact with people in higher anxiety and stress situations. To these factors we can add further episodes of aggression associated with the disease and hospitalization that, by themselves, constitute imbalance factors. Bolander (1998) says that getting sick can mean a lot of changes, both physically and psychologically. The patient himself can reveal emotional crises due to triggering factors, such as a departure from his environment, contact with unknown people and invasive and painful techniques that often lead to loss of independence, of autonomy and even of his identity. These factors, acting in combination or alone, can trigger aggressive behaviours.

The World Health Organization (WHO) defines aggressiveness as “every use of physical force or power, threat or real, against oneself, another person or against a group or community that may result in or has a high probability of death, psychological harm, developmental changes or deprivation”(Santos, 2007).

Sometimes, aggression situations may be associated with behavioural changes, namely psychomotor agitation, dementia, previous trauma and other disorders, psychotic disorders including delusions, hallucinations (eg, schizophrenia), mood and personality disorders, drug, hospital and service rules rejection, socio-cultural situations, the shortage of space and even the organization of inpatient facility. In this context, since nurses are a group of professionals whose functions require greater proximity to the patient, who has behaviour problems, it is a challenge to develop assertive nursing practices that are efficient enough to ensure the customer integrity (Santos, 2007).

Tardiff (1997) conducting a comparative study on a sample of several professionals involved in health care, including psychiatry, nurses, psychologists and social workers, found that 80% of nurses were assaulted by patients at least once over their professional practice and were often present in situations of violence.

The results documented in the scientific literature justify the implementation of restraint measures for patients in risk of violence against themselves and/or others.

Physical restraint is a resource used in the body or close to an individual's body limiting their freedom of voluntary movements and preventing their independent function (Lopes, Easter, Vilarinho & Simões, 2001). The Portuguese DGS Normative Circular regulates the physical restraint in Portuguese clinical practice and it is defined as “the restriction of the sick person's movements, in situations of psychomotor agitation, confusion or aggression/violence towards himself and/or the other” and “such procedures should have the unique and exclusive purpose of ensuring that the sick person exceeds safely crisis” (Portugal, 2007). This involves the use of mechanical or manual devices to physically restrict the patient's mobility. It can be adequate to protect the patient and/or others of wounds, especially if less restrictive interventions such as environmental changes and behavioural strategies are not working. (Stuart & Laraia, 2001).

Physical restraint is also used to prevent falls; behaviours that might endanger the safety of the individual or those around him; protection of patients when used invasive treatments or life support equipment; preventing discontinuation of therapy or treatment and control of motor agitation/aggression (Lopes, Easter, Vilarinho & Simões, 2001).

Physical restraint include the following measures (Nourhashémi, 2004): - “Postural” restraint as a way to help to maintain a correct position (e.g., as part of a postural reeducation treatment); - “Active” restraint, set, most often, by a physical therapist (e.g. to prepare the vertical position after a long period in bed); - “Passive” restraint, which constitutes the use of all the means, methods, materials or garments that prevent or limit voluntary mobility capacity of the whole body or a portion thereof, having the purpose of the patient's safety.

However, there are alternatives to physical restraint which, when implemented, can reduce the contention rate. These alternatives can be grouped into four broad categories: medical and nursing approaches, environmental modification, occupational approach and socio-psychological approach. Pharmacological restraint is related to the first category and associated to medical causes. Other proposals are related to environment changes and professional attitudes that can limit the risk by protection mechanisms (Nourhashémi, 2004).

Aggressive or disruptive behaviour of a patient may appear in an unexpected way and, as soon as it arises, whenever it is possible, a verbal approach as a priority form of containment should be attempted. The resort to physical restraint should only be used when this approach is not effective and always aiming to avoid damage to the physical and psychological integrity of the patient as well as the people nearby (Portugal, 2007).

To determine the meaning of the patient's behaviour is the first step to achieve and, possibly, the most difficult for health professionals. So, even though the physical restraints are used ostensibly to "protect" or "help" sick people, they are seldom completely effective and visually harmful even when they are used in the short term or in an "emergency". It is necessary to take into account that physical restraint carries risks and is essential to have some criteria/rules in order to minimize them. So, we should consider the ethical principles, the clinical aspects and the individual assessment of the patient (Barros et al., 2007).

According to the joint Circular No. 08/DSPSM/DSPCS these criteria are: "A) To have a place in an isolated room or appropriate place that ensures privacy, well ventilated and with adequate temperature; B) Place the patient where it can be permanently guarded; C) Ensure that there are no dangerous objects for the patient; D) Use proper restraint strips which are designed to that purpose; E) Set the bed with side rails that allow the patient's protection, support and safety; F) Place the strips on the upper and lower limbs and the chest of the patient according to the severity of the situation. The fifth strip, to be placed on the chest, should be placed after the immobilization of the members; G) Apply protective material to prevent damage resulting from friction; H) Monitorize at intervals of not more than 15-30 minutes, signals of circulatory change and tissue perfusion that may result from compression by the respective bands; I) Prevent thromboembolic events; J) Put the patient in a supine position: with the head slightly elevated and the upper limbs positioned to allow venous access. When necessary, an alternative position can be used, namely the lateral position; L) Often change the patient positions to prevent ulcers due to immobilization; M) Communicate with the patient during his therapeutic process; N) Monitor frequently the patient's vital and analytical parameters; O) Make the periodic physical examination of the patient; P) Hydrate the patient if in prolonged sedation; Q) Reassess the need for maintenance of physical restraint during a maximum period of two hours, repeating it at least with the same frequency; R) Remove the physical containment in accordance with the effectiveness of medication and the clinical condition of the patient; S) Register, mandatorily, in the patient medical record, the reasons and characteristics of physical restraint, specifying what preceded the need of the procedure, the failure of other measures and the unexpected events (Portugal, 2007).

According to the guidelines, there are specific devices for physical restraint. However it is necessary to take some precautions so that their application does not compromise the patient's physical integrity.

Barros et al. (2007) argue that these should include the following: Wrist and ankle immobilizers – aim to reduce the movement of arms and legs. The conditions for this type of immobilization are: – cushioning the skin beneath the immobilizers to prevent skin injuries by ensuring a proper fit; – Attaching the fist strips below the patient's waist and the ankle strips below the knee; – Remove and reapply every two hours the immobilizers during the day and every four hours during the night; – Change the position of the patient at least every two hours; – Often assess the distal zones to immobilizers to ensure that there is no neurological or sensory impairment; – Use chest or waist immobilizers – aiming the prevention of falling out of the bed or chair. These devices, properly placed, allow a high degree of mobility with full movements of the arms and legs. For the use of such devices some things must be taken into account: – Assess the individual's respiratory rate hourly; – For individuals who are in a wheelchair, use an immobilizer chest and not a waist immobilizer; – Use a sturdy and comfortable chair to immobilize the individual.

The Joint Commission cit in Coburn & Mycyk (2009), provides up-to-date guidelines and standards for restraints and seclusion on their website.³ These include: (1) A physician or licensed practitioner must see and evaluate the patient within 1 hour of initiating intervention. (2) Seclusion or restraint can only be used when clinically justified and after consideration of alternative treatment options. (3) Seclusion and restraints must have time-limited orders: 4 hours for adults (older than 17 years), 2 hours for adolescents (9–17 years), 1 hour for patients younger than 9 years. (4) Patients must have continuous monitoring with periodic evaluation with the intent to discontinue intervention at the earliest possible time. (5) A face-to-face reevaluation must be performed before each renewal of initial time-limited orders. (6) Clinical leadership (ie, the medical director) must be notified after 12 hours of continuous seclusion or restraint and every 24 hours thereafter. (7) With the patient's informed consent, family should be notified promptly when seclusion or restraint is initiated. (8) Debriefing with patient and staff should be performed after intervention has been discontinued.

Alzheimer Europe (2012) advocates Ten points for zero tolerance: 1. As evidence shows, a person with a progressive cognitive impairment will be physically or chemically restrained at some point at their disorder; 2. Reasons for using restraint are myths and reality has disproved them; 3. Variability in the use of restraint: why?; 4.

Consequences of the use of restraint on the health of patients. Mobility is necessary to preserve functional autonomy; 5. Consequences of the use of restraint for professionals and for the caring organizations; 6. The use of restraint for convenience; 7. Resurgence in the use and the development of new and subtler forms of restraint; 8. The use of restraint generates ethical and legal conflicts. How much safety can be demanded? 9. Restraint-free facilities; 10. Zero tolerance is an engine of improvement. Everyone wins.

In this context, we can also refer to decision-making algorithm for physical restraint. He tells us that in face of the risk of falling it is necessary to carry out an evaluation of the situation in order to detect the reasons for the unrest and disturbance behaviour of the patient. Based on that evaluation and given the question: Is it dangerous to the patient or to the others?, we will have a positive or negative response. If the answer is negative we must treat the cause and try to use alternatives to physical restraint. If this is effective it is not necessary to use the various restraint devices; if, on the contrary, the methods used and the answer to the question referred to above is positive is essential to use physical restraint. As algorithm showed in Figure 1. (Barros et al., 2007).

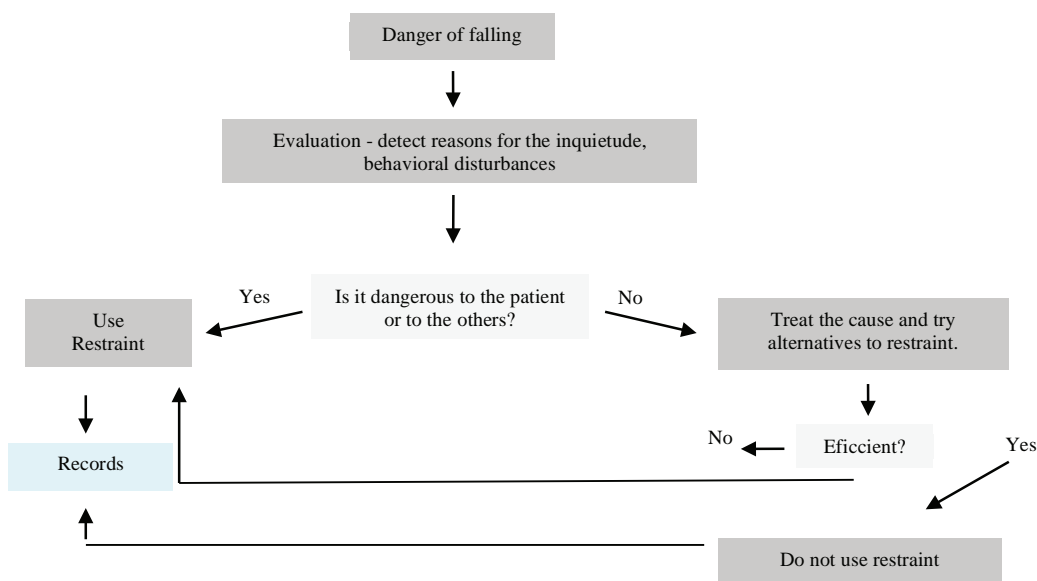


Figure 1 – Decision-making algorithm for physical restraint

Source: Barros et al. (2007, p.60)

Physical restraints will hardly be accepted by society if we consider the ethical perspective because although aiming the welfare there is disrespect towards autonomy, dignity and individualism of each person (Lopes, Easter, Vilarinho & Simões, 2001). Akansel (2007) states that most professionals prefer to immobilize patients for added security, preventing them from falling of hospital beds or prevent the displacement of medical equipment. However, he advocates that is important to develop a protocol that describes how to apply restrictions, in order to educate participants on the retention practices reducing false perceptions and misuse of physical limitations in patient care.

Restraint may also be chemical, through the use of drugs that can only be given after consultation with the doctor who will prescribe the dose, dosage and will primarily evaluate the safety of using certain drug in certain patients, since due to their condition many patients in clinical treatment medicines is complex, (Silva & Guirado, 2000).

2. Problem Statement

The physical and chemical restraint of patients, despite being often applied with no real scientific basis, has always been part of nursing practice in caring for the ill people.

3. Research Questions

What is the level of knowledge over in nursing about physically and chemically restraining?

4. Purpose of the Study

Evaluate the level of knowledge of nurses on physical and chemical restraint of patients and analyze the influence of gender, age and service years in such knowledge.

5. Research Methods

Exploratory study with transversal approach, developed in a central hospital in north central Portugal, with 156 participants with an average age of 35.11 years, with 20.8% men and 79.2% women. The service time was, on average, 11.8 years. It was used the Knowledge Questionnaire on Patient's Physical and Chemical Restraint (KQPPCR) Cunha, M. 2012(in Portuguese QCCFQD - Questionário de Conhecimento de Contenção Física e Química do Doente), whose final version included 240 dichotomous statements (true or false) to assess the knowledge of patient physical and chemical restraint. Each of the items was given a score of 1 in case of incorrect answer or 2 in case of correct answer. The sum of the score of all items is the global score knowledge that may vary between 120 and 240 points, tells us that a higher score corresponds to a better knowledge.

6. Findings

The Analysis of the Knowledge Prevalence of Patient's Physical and Chemical Restraint was supported in the following dimensions: Patient safety; Legal and ethical practice; Scientific Knowledge and Quality of Care, whose results are presented in Tables 1, 2, 3. Here are the most significant results: - 92.9% of the participants consider physical restraint as immobilization of the patient, and 69.6% relates immobilization with the act of tying the patient; - Physical restraint is considered by 72.4% as a medical and nursing procedure. However, most admit that it can be performed by nurses (95.5%), while 59.6% of respondents state that a medical prescription is necessary. It was also found that most participants have the opinion that the physical restraint of patients (51.9%) is an autonomous act of nursing; - Regarding the chemical containment, 95.5% of participants say it should be made after medical prescription; - Most participants (92.3%) believe that physical restraint is a protective practice of patient safety, stating that it should be applied in patients at risk of falling (87.2%). 88.5% of participants stated that physical restraint promotes human dignity. In this sense, the participants consider appropriate to apply physical restraint in patients with: psychotic disorders (91.0%), disorders related to substance use (68.6%), personality disorders (59.6%) and mood disorders (55.1%); - Considering the risks of the application of physical restraint, 79.5% of enquired people believe that such an activity entails risks for the patient and nominate the development of pressure ulcers (82.1%), bruises (79.5 %) and fear (67.3%) as the most likely; - For participants the application of side rails is an important restraint factor, followed by physical restraint and bed immobilization; - In physical restraint application, the most commonly used materials are the bands, linen and cotton and most participants highlight the wrists and chest as parts of the body to immobilize; - For 94.2% of the participants the application of physical restraint should be preceded by patient approach measures and applied only if they fail. In this sense, on the patient's approach the verbal and chemical restraint is privileged (84.0%); - Most participants (69.2%) believe that physical restraint is not an indicator of healthcare quality; - It appears that all the participants considered that the practices evaluation and registration are care standards, highlighting that the assessment of skin integrity in the application of physical restraint and the assessment of vital signs and level of consciousness in the application of

chemical restraint are crucial moments of the nursing activity; - Regarding the level of knowledge that participants reveal to have on the physical and chemical restraint of patients, it was found that 46.9% had good knowledge, 6.2% had reasonable knowledge and 46.9% reveal a knowledge insufficiency.

Table 1 - Participants' knowledge of Physical and Chemical Restraint regarding Patient's Safety

Patient's Safety - Total N = 156 100,0%		Correct knowledge		Incorrect knowledge		Didn't answered	
		n	%	n	%	n	%
1 – Physical restraint involves increased risks to the patient.		124	79,5	29	18,6	3	1,9
2 – Chemical restraint presents no risk to the patient.		18	11,5	136	87,2	2	1,3
3 – Cases of death after physical restraint are common.		141	90,4	12	7,7	3	1,9
4 – Cases of death after chemical restraint are sporadic.		121	77,6	33	21,2	2	1,3
5 – Physical restraint is a protective practice of patient's security.		144	92,3	10	6,4	2	1,3
6 – Physical restraint is applied in patients at risk of falling.		136	87,2	18	11,5	2	1,3
7 – Physical restraint is a risk factor for the development of pressure ulcers.		129	82,1	24	15,4	3	1,9
8 – Physical restraint is applied in patients with:							
	Psychotic disorders	142	91,0	13	8,3	1	0,6
	Substances related disorders	107	68,6	42	26,9	7	4,5
	Personality disorders	93	59,6	55	35,2	8	5,1
	Mood disorders	86	55,1	58	37,2	12	7,7
9 – Chemical restraint is applied in patients with:							
	Psychotic disorders	146	93,6	7	4,5	3	1,9
	Substances related disorders	115	73,7	33	21,2	8	5,1
	Personality disorders	104	66,7	40	25,6	12	7,7
	Mood disorders	49	31,4	98	62,8	9	5,8
10 – During the application of physical restraint, the patient feels:							
	Revolted	146	93,6	9	5,8	1	0,6
	Frustrated	124	79,5	24	15,4	8	5,1
	Humiliated	112	71,8	35	22,4	9	5,8
	Worried	86	55,1	59	37,8	11	7,1
	Safe	19	12,2	124	79,5	13	8,3
	Motivated	139	89,1	5	3,2	12	7,7

Table 2 - Participants' knowledge of Physical and Chemical Restraint regarding Legal and Ethical Practice

Legal and Ethical Practice - Total N = 156 100,0%		Correct knowledge		Incorrect knowledge		Didn't answered	
		n	%	n	%	n	%
11 – Physical restraint is a protective procedure of Nurses' security		72	46,2	80	51,3	4	2,6
12 – Physical restraint is a procedure to use in SOS		143	91,7	13	8,3	-	0,0
13 – Physical restraint is an act of abuse of authority.		132	84,6	22	14,1	2	1,3
14 – Physical restraint promotes human dignity.		138	88,5	15	9,6	3	1,9
15 – Physical restraint of patients is a punitive act of the patient who is uncooperative.		136	87,2	17	10,0	3	1,9
16 – Physical restraint is a practice that should be banned.		139	89,1	15	9,6	2	1,3
17 – Physical restraint of patients is an autonomous act of nursing.		74	47,4	81	51,9	1	0,0
18 – Chemical restraint administration depends on medical prescription.		149	95,5	5	3,2	2	1,3
19 – The use of physical restraint by the nurse depends on medical prescription.		93	59,6	61	39,1	2	1,3
20 – The practice of physical restraint is documented in the DGS Joint Circular.		119	76,3	30	19,2	7	4,5
21 – Physical restraint can be performed:							
	By the Nurse	149	95,5	7	4,5	-	0,0
	By the Doctor	126	80,8	24	15,4	6	3,8
	By the Operational Assistant	24	15,4	122	78,2	10	6,4
	By any Health Professional	16	10,3	124	79,5	15	9,6
22 – physical restraint is a procedure:							
	Medical and Nursing	113	72,4	40	25,6	3	1,9
	Nursing	50	32,1	94	60,3	12	7,7
	Medical	74	47,4	66	42,3	15	9,6
23 – In Portugal the physical restraint is a procedure:							
	Legal	113	85,3	12	7,7	11	7,1
	Illegal	17	10,9	113	72,4	26	16,7

Table 3 - Participants' knowledge of Physical and Chemical Restraint regarding Scientific Knowledge

Scientific Knowledge - Total N = 156 100,0%		Correct knowledge		Incorrect knowledge		Didn't answered	
		n	%	n	%	n	%
24 – Physical restraint may be applied at any age.		111	71,2	44	28,2	1	0,6
25 – Physical restraint can be applied only in adults.		118	75,6	35	22,4	3	1,9
26 – Chemical restraint should be used when the physical restraint is contraindicated.		88	56,4	66	42,3	2	1,30
27 – Chemical restraint involves more risks than physical restraint.		93	59,6	61	39,1	2	1,3
28 – Physical restraint is applied due to:							
Motor restlessness after failure of other measures.		147	94,2	6	3,8	3	1,0
Risk of falling after failure of other protective measures.		146	93,6	7	4,5	3	1,9
Aggressiveness		122	78,2	31	19,9	3	1,9
Chemical restraint failure.		95	60,9	58	37,2	3	1,9
29 – Physical restraint is against the principle of patient autonomy.		105	67,3	45	28,8	6	3,8
30– Physical restraint is an old procedure that participants only learned to apply in hospitals.		91	58,3	62	39,7	3	1,9
31– Physical restraint is used in case of compulsory hospitalization.		74	47,4	75	48,1	7	4,5
32– Physical restraint means:							
Immobilize the patient		145	92,9	11	7,1	-	0,0
Immobilize and tie the patient		109	69,9	35	22,4	12	7,7
Tie the patient		115	73,7	29	18,6	12	7,7
33 – Support measures used before the restraint are:							
Intravenous medication		113	72,4	33	21,2	10	6,4
Intravenous fluids		78	50,0	66	42,3	12	7,7
Feeding by Nasogastric intubation		35	22,4	105	67,3	16	10,3
Catheterization		33	21,2	102	65,4	21	13,5
34 – The patient restraint applies:							
Grids		149	95,5	5	3,2	2	1,3
Physical restraint		142	91,0	10	6,4	4	2,6
Bed immobilization		135	86,5	15	9,6	6	3,8
Chemical restraint		98	62,8	49	31,4	9	5,8
Isolation		30	19,2	116	74,4	10	6,4
35 – When applied, physical restraint immobilizes the following body parts:							
Wrists		133	85,3	16	10,3	7	4,5
Chest		96	61,5	55	35,3	5	3,2
Arms		85	54,5	61	39,1	10	6,4
Hands		74	47,4	69	44,2	13	8,3
Ankles		71	45,5	74	47,4	11	7,1
Legs		70	44,9	78	50,0	8	5,1
Pelvis		43	27,6	104	66,7	9	5,8
Feet		39	25,0	107	68,6	10	6,4
Knees		26	16,7	121	77,6	9	5,8
Elbow		24	15,4	120	76,9	12	7,7
Thighs		24	15,4	123	78,8	9	5,8
Head		10	6,4	135	86,5	11	7,10
36 – Physical restraint uses the following materials:							
Bandages		137	87,8	16	10,3	3	1,9
Sheets		128	82,1	26	16,7	2	1,3
Cotton		123	78,8	30	19,2	3	1,9
Adhesives		82	52,6	65	41,7	9	5,8
Restraint vests		58	37,2	86	55,1	12	7,7
Splints		44	28,2	101	64,7	11	7,1
Thongs		30	19,2	112	71,8	14	9,0

Table 4 – Participants' knowledge regarding the Quality of Care

Quality of Care - Total N = 156 100,0%		Correct knowledge		Incorrect knowledge		Didn't answered	
		n	%	n	%	n	%
37 – The practice of physical restraint is an indicator of nursing care quality.		48	30,8	108	69,2	-	0,0
38 – Physical restraint should be the last resource in the patient approach, focusing on the verbal and chemical restraint first.		131	84,0	22	14,1	3	1,9
39 – The restraint is applied in patients with:							
Intravenous devices		96	61,5	55	35,3	5	3,2
Chest tubes		81	51,9	64	41,0	11	7,1

	Indwelling catheters	69	44,2	75	48,1	12	7,7
40	Physical restraint of patients is a way of managing human resources.	131	84,2	23	14,7	2	1,3
41	Physical restraint is the best way to immobilize the patient..	112	71,8	38	24,4	6	3,8
42	Physical restraint of patients reduces the hours of nursing care at every turn.	138	88,5	16	10,3	2	1,3
43	The number of patients falling in the ward where you work decreased after the practice of physical restraint.	107	68,6	42	26,9	7	4,5
44	The number of patients falling in the ward where you work decreased after the practice of chemical restraint.	99	63,5	50	32,1	7	4,5
45	Physical restraint is an example of good nursing practices.	120	76,9	33	21,2	3	1,9
46	Physical restraint is applicable on all wards	81	51,9	71	45,5	4	2,6
47	Some of the adverse events / complications arising during the physical restraint period are:						
	Bruising	124	79,5	28	17,9	4	2,6
	Fear	105	67,3	42	26,9	9	5,8
	Insecurity	87	55,8	58	37,2	11	7,1
	Trauma	86	55,1	62	39,7	8	5,1
	Feeling of impotence	83	53,2	65	41,7	8	5,1
	Consciousness changes	62	39,7	83	53,2	11	7,1
	Scars	61	39,1	86	55,1	9	5,8
	Dehydration	61	39,1	89	57,1	6	3,8
	Cardio Vascular Accident	48	30,8	100	64,1	8	5,1
	Respiratory depression	45	28,8	102	65,4	9	5,8
	Extrapyramidal Symptoms	37	23,7	110	70,5	9	5,8
	Seizures	35	22,4	113	72,4	8	5,1
48	After the physical restraint the following parameters should be evaluated and recorded periodically:						
	Cutaneous integrity	156	100,0	-	0,0	-	0,0
	Symptoms of circulation	151	96,8	1	0,6	4	2,6
	(arms and legs) Pulse	151	96,8	1	0,6	4	2,6
	Temperature	145	92,9	5	3,2	6	3,8
	Vital Signs	142	91,0	12	7,7	2	1,3
	State of Consciousness	127	81,4	29	18,6	-	0,0
49	After the chemical restraint the following parameters should be evaluated and recorded periodically:						
	Vital Signs	156	100,0	-	0,0	-	0,0
	State of Consciousness	153	98,1	-	0,0	3	1,9
	Cutaneous integrity	102	65,4	49	31,0	5	3,2
	Symptoms of circulation	104	66,7	43	27,0	9	5,8
	(arms and legs) Pulse	98	62,8	47	30,1	11	7,1
	Temperature	97	62,2	50	32,1	9	5,8
	Colour						

6.1. Knowledge level on Physical and Chemical Restraint

Participants showed reasonable knowledge of physical and chemical restraint of patients, with the mean values ranging from a minimum of 144 and a maximum of 176 (Mean = $160.37 \pm SD = 7.51$). The analysis of the results, regarding the dimensions, shows that: - *Patient Safety*, the scores ranged between 23 and 36 (mean = $27 \pm SD = 2.30$). Whereas the basic scores ranged between 21 and 42, it appears that participants demonstrate insufficient knowledge; - *Legal and Ethical Practice*, the scores ranged between 21 and 31 (mean = $25 \pm SD = 1.75$). Considering that the basic scores ranged between 19 and 38, it is assumed that participants have scarce knowledge; - *Scientific Knowledge*, the scores ranged between 49 and 69 (mean = $60 \pm SD = 4.22$). Appreciating the basis scores ranging between 44 and 88, it is understood that the participants showed a good knowledge; - *Quality of Care* the scores ranged between 38 and 59 answers (mean = $48 \pm SD = 4.82$). Assessing the basic scores, ranging between 36 and 72, it is believed that the participants reveal reasonable knowledge.

In order to deepen the study of the *Nurses' Knowledge*, it was applied the formula presented by Pestana & Gageiro (2005) for the creation of groups: (Mean $\pm SD$ 00:25), resulting the following classification: Good knowledge \leq average - 0.25 SD; Reasonable knowledge $>$ average - 0.25 SD and $<$ mean + 0.25 SD; Weak knowledge \geq mean \pm 0.25 SD. These groupings revealed that the majority (53.1%) has knowledge of the physical and chemical restraint of patients, and that 46.9% had good knowledge and 6.2% reasonable knowledge. However, a significant group of participants scored weak knowledge (46.9%). Analysis by gender revealed that 41.7% of men have good knowledge, 4.2% reasonable knowledge and 54.2% had weak knowledge. In turn, 49.1% of women have good knowledge, 7.0% reasonable knowledge and 43.9% weaker knowledge. Although not statistically significant,

the nurses showed generally a better knowledge

The results of ANOVA revealed that participants in the group of 37-40 score on average with better knowledge (Mean = 163.08), and in turn the 41-57 group are those who punctuate with lower scores (Mean = 157.90). The differences are not statistically significant ($F = 1.43$, $p = 0.23$), so it is inferred that they are independent of age, since globally do not change substantially over the life cycle. Regarding the level of knowledge in terms of Dimensions and Age Group it was observed that the participants scored with better knowledge in the following dimensions: - Patient Safety - Age group of 29-32 years, - Legal and ethical practice - Age group of 24- 28 and 33-36 years; - Scientific knowledge - Age group of 41-57 years; - Quality of care - Age group of 29-32 years. On the other hand, the results show that participants express insufficient knowledge in the Legal and Ethical Practice dimension - Age Groups of 29-32, 37-40 and 41-57 years.

The analysis of the association between Age and Knowledge - global score ($r = -0.031$; $p = 0.395$) and dimensions (Patient Safety $r = -0.097$ $p = 0.131$; and Legal and Ethical Practice $r = 0.165$ $p = 0.051$; Scientific Knowledge $r = -0.090$ $p = 0.188$ and Quality of Care $r = -0.025$ $p = 0.399$) was performed using Pearson's correlation test, and it was noted that the association was not statistically significant.

Variations in the Knowledge level according to the length of service (ANOVA) revealed that those who belong to the group of 13-16 score on average with better knowledge (Mean = 164.86), and in turn the group 5-9 are the ones that show lower scores (Mean = 157.07). The differences are not statistically significant ($F = 1.83$; $p = 0.13$).

With regard to the level of Knowledge in relation to the *Dimensions* it is noted that participants with service time between 10 and 12 years demonstrate insufficient knowledge in the dimensions *Patient's safety*, Legal and Ethical Practice and Quality Care. In turn, the junior participants with service of 1-4 years have worse Knowledge in the dimension Scientific Knowledge. Differences in scores are not statistically significant, and it is considered again that knowledge does not change significantly over the participants' career.

The correlation matrix of Pearson's Correlation, referring to the analysis of the association between the Length of service and knowledge of the participants – overall score ($r = -0.051$; $p = 0.333$) and dimensions (Patient Safety $r = -0.055$ $p = 0.262$; Legal and Ethical Practice $r = 0.186$ $p = 0.032$; $r = -0.053$ Scientific Knowledge $p = 0.300$ and Quality of Care $r = -0.043$ $p = 0.331$) showed that the correlations are not significant. As for the difference of the level of knowledge the correlation is only statistically significant in the dimension Legal and Ethical Practice (chi square = 0.31; $p = 0.04$), and the level of knowledge in other dimensions is not associated with length of service.

7. Conclusion

Participants' knowledge regarding the patient's safety: Most participants (92.3%) believe that physical restraint is a protective practice of patient's safety. By analyzing the nursing practices, Alzheimer Europe (2012) found that age, risk of loss, disorientation and functional dependence are the main characteristics of people with restraint. It was found that the results of this study match the authors' ones because most participants consider appropriate to apply physical restraint in patients: - with psychotic disorders (91.0%) - with disorders related to substances (68.6); - with personality disorders (59.6%) - with mood disorders (55.1%).

Lopes et al. (2001) concluded that physical restraint is used for the prevention of falls, behaviours that may put at risk the safety of the individual or those around him, protecting patients when used invasive treatments or life-support equipment, preventing therapy or treatment interruption and control of motor agitation / aggression. We found that 87.2% of participants stated that physical restraint should be used in patients at risk of falling. These results are similar to those of Akansel (2007) when he says that most participants prefer to immobilize patients for added security, preventing them from falling out of hospital beds or prevent the displacement of medical equipment.

On the other hand, 79.5% found that physical restraint carries risks for the patient and 82.1% shows to have correct knowledge identifying it as one of the potential risks for developing pressure ulcers. Barros et al. (2007) and Coburn & Mycyk (2009), say that it is essential to apply some criteria / rules in order to minimize them.

Participants' knowledge regarding legal and ethical practice: Physical restraints will hardly be accepted by society if we consider an ethical perspective. Sometimes, as we seek wellness, we completely disrespect the autonomy, dignity and individualism of each, increasing the patient suffering (Lopes et al. 2001). The application of physical restraint should take into account ethical principles, clinical aspects and the patient's individual evaluation

(Barros et al, 2007;. & Mycyk Coburn, 2009; Portugal, 2007). In our study, 76.3% of the participants stated that had knowledge of DGS Circular in Portugal and 88.5% of participants stated that the physical restraint promotes human dignity, which is potentially controversial in conceptual terms but may be explained if we consider that the participants apply the restraint properly to promote the patient's well-being. The results also indicate that 72.4% of participants consider that physical restraint is a medical and nursing procedure and 95.5% advocate that chemical restraint should be performed after medical prescription, a result that agrees with the recommendations in the literature (& Guirado Silva, 2000).

Participants' knowledge regarding the scientific knowledge dimension: For Lopes, et al. (2001), physical restraint is a resource used in the body or near the individual's body, limiting the freedom of voluntary movement and preventing its independent function. Most participants only considered physical restraint as the immobilization of the patient, 69.6% relating immobilizing to the act of tying the patient, denoting insufficient scientific knowledge.

For the physical restraint of the patient, appropriate designed strips must be used (Portugal 2007). In contrast, participants report that the materials most used for this purpose are bandages, sheets and cotton, which may be explained by the absence of specific materials for this purpose. In line with the scientific literature, participants argue that the use of side rails is an important restraint factor, followed by physical restraint and bed immobilization (Portugal 2007).

Considering the parts of the body to immobilize, the participants highlight the wrists and chest, and the literature reports that the placement of the strips should take into account the importance of the situation and that the 5th strip (chest) should only be placed after the immobilization of the arms and legs.

Alternatives to physical restraint are grouped into four broad categories: medical and nursing approaches, environmental modification, occupational approach and sociopsychological approach (Nourhashémi, 2004). Whenever possible, a verbal approach should be attempted and only resort to other means of physical restraint when it is not effective (Portugal, 2007). Most participants (94.2%) revealed that physical restraint should apply when all the other measures fail.

Participants' knowledge regarding the Quality Care dimension: Nurses are professionals whose duties require a closer relationship with the patient, leading to the need to develop assertive practices that are efficient enough to ensure the patient's integrity, (Santos et al. 2007). Most participants (69.2%) expressed that physical restraint is not an indicator of quality of care, and we concluded that when it is applied, they use first alternative procedures, with the aim of providing proper care. However, 76.9% of the participants considered physical restraint as a good health practice, if necessary to safeguard their safety and not only regarding patients at risk of falling.

Most participants (84.0%) have preference to verbal and chemical restraint approaches instead of physical restraint, a result that goes in line with Nourhashémi (2004), who says that there are alternatives to physical restraint and that, when they are implemented, they can reduce the rate of restraint. However, 71.8% of the participants believe that physical restraint is the best way to immobilize the patient, reflecting a divergent view of the above.

Regarding the complications / adverse events resulting from physical restraint, most participants considered that bruises (79.5%) and fear (67.3%) are the more frequent ones. On this subject, Barros et al. (2007) and Portugal (2007) propose as preventive measures for these events: evaluation of the patient general condition, body position switching and the use of protective equipment.

The evaluation and registration practices are criteria for quality care. All participants consider crucial and pertinent to assess the skin integrity in the application of physical restraint and the assessment of vital signs and level of consciousness in the application of chemical restraint. This fact agrees with the Joint Circular N°08/DSPCM/DSPCS (Portugal, 2007), since it also includes other measures to be applied in managing the implementation of these restraint measures. As a way of resolving this issue, Akansel (2007) suggests the creation of a protocol that describes how to apply restraints in order to educate professionals on restraint practices, thus reducing false perceptions and misuse in the patient's care. It is of paramount importance to include in the plan of graduate courses theoretical content and simulated practice on the restraint of patients. The encouraging of professional continuous training and the constant updating and research in this area are strategies to be implemented in the future.

Participants report that the curricula of the attended courses did not include content on the restraint of patients (59.6%), saying to have acquired this knowledge in hospital practice (58.3%). As most significant conclusions we

point out that 46.9% of professionals have good knowledge, 6.2% reasonable knowledge and 46.9% reveal insufficient knowledge.

Since the application of restraint is still a frequent and daily practice in hospitals, health centers, nursing homes and other health institutions, in order to better understand and explain this problem, the following questions remain unanswered: *What is the best decision maker algorithm for the application of restraint measures? When to apply the physical restraint at the expense of chemical restraint and vice versa?* Therefore, it is considered relevant to study this issue from other analytical angles, in order to contribute with new knowledge that support new practices, strengthening the quality of health care and honor nursing as a caring profession and area.

In order to minimize the dangers and complications of physical or chemical restraints to patients, it is indicated a specialized training for professionals. It is desirable to invest in scientific and pedagogical models training, establishment, implementation and adherence to protocol of good practices, careful attention to documentation and good common sense.

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To the students 18° CLE of Superior School of Health of the Polytechnic Institute of Viseu

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