REUE | Original Article

Use of physical restraints in the elderly in an Emergency Department

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BACKGROUND AND OBJECTIVE. The use of physical restraints in the elderly in Spanish hospitals has rarely been studied, especially the use in emergency departments (EDs). This study aimed to describe the use of restraint in a hospital ED.

MATERIAL AND METHODS. Prospective observational study of elderly patients under physical restraint in the ED of Hospital Universitario Severo Ochoa in Leganés in the autonomous community of Madrid. We observed and selected patients over the age of 65 years in physical restraints. Data on functional and cognitive status were extracted from the patients' charts and recorded while interviewing family and staff.

RESULTS. Restraints were used on 1.84% of those over the age of 65 years, and we analyzed data for 93 of these restrained patients. The mean age was 83 years, and 59.14% were men with a high degree of functional dependency. A history of delirium was present in 38.71%, and 34.4% had been restrained during previous hospital admissions. The most common reason for using restraints was to protect therapeutic devices (37.63%), but there was no clear indication recorded in 31.18% of the cases of restraint use. Tolerance was poor in 58% of restrained patients, and the use of sedatives increased after restraint in 67.74%. Younger patients among the elderly were restrained at 3 or more points more often ($P < .05$). Failure to record the order for restraint occurred more often in patients who had dementia or were older ($P < .05$).

CONCLUSIONS. Elderly patients are often physically restrained. Use of restraints sometimes does not follow recommendations and is under-recorded in patient charts. The inappropriate, undocumented use of restraints occurs more often in elderly patients of more advanced age and those with established cognitive deficit.

Keywords: Physical restraint. Aged. Emergency health services.

Uso de sujeciones físicas en ancianos atendidos en un servicio de urgencias hospitalarias

OBJETIVOS. Los estudios sobre sujeción física (SF) en ancianos en Spain a nivel hospitalario y, específicamente en urgencias, son muy escasos. El objetivo de este trabajo es conocer las características de esta práctica en un servicio de urgencias hospitalarias.

MATERIAL Y MÉTODO. Estudio observacional prospectivo realizado en el servicio de urgencias (SU) del Hospital Universitario Severo Ochoa, Leganés, Madrid. Se estudió durante un año una muestra de pacientes mayores de 65 años, recogiendo a pie de cama las SF aplicadas, características de los pacientes en cuanto estado funcional y cognitivo, mediante la revisión de su historia clínica y entrevista a la familia y al personal sanitario.

RESULTADOS. La frecuencia de SF en mayores de 65 años fue del 1,84%. Se incluyeron 93 pacientes, con una edad media de 83 años, 59,14% varones y con altos índices de dependencia. El 38,71% tenía antecedentes de *delirium* y 34,4% de SF en ingresos previos. El motivo más frecuente para sujetar fue la protección de los sistemas terapéuticos (37,63%); un 31,18% de casos no tenía indicaciones claras para la SF. La tolerancia a estas fue mala en el 58%, aumentándose la medicación sedante tras la SF en 67,74%. Los pacientes de menos edad se sujetan con 3 o más puntos ($p < 0,05$). Hubo falta de registros sobre aplicación de la SF sobre todo en pacientes con demencia y edades avanzadas ($p < 0,05$).

CONCLUSIONES. Existe una alta frecuencia de uso de SF en población anciana, en ocasiones no ajustada a las indicaciones recomendadas y con infra-registro en la historia clínica. Este uso más inadecuado y con menor respaldo documental es más frecuente en usuarios de edades avanzadas y con deterioro cognitivo establecido.

Palabras clave: Sujeciones físicas. Ancianos. Servicios de urgencias.

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Introduction

Emergency department (ED) visits related to behavioral disturbances are very frequent and pose a diagnostic and clinical management challenge for emergency professionals.

The management of these patients is complex, and in some cases, physical and chemical restraint measures are used to control behavioral disturbances that may endanger them. There are basically 2 types of individuals who are physically restrained in hospital EDs: young patients with behavioral problems due to psychiatric disorders or substance abuse, and elderly patients with behavioral disorders due to medical conditions.[1]

Physical restraint (PR) is defined as any device, material, or equipment applied to a person, attached to or near their body, which cannot be easily controlled or removed by the individual and that deliberately prevents or attempts to prevent movement and/or natural access to their own body.[2] According to recent reports, there is an almost generalized lack of standardization in the use of physical and chemical restraints in hospitals and a tendency toward excessive use.[2,3]

Due to the aging of the Spanish population and the increasing prevalence of individuals with dementia, it is common to find in the ED patients with psychomotor agitation whose immediate management falls to emergency personnel without geriatric specialization. In this context, PR is used in elderly populations despite its adverse effects[4] and sometimes without having exhausted other alternatives. In Spain, there are organizations promoting a change in the care model for institutionalized elderly individuals, seeking to reduce the use of restraints in social and health care centers.[5] In acute care hospitals, the data available regarding PR are generally limited[6] and particularly scarce concerning EDs.[7]

The objective of this study is to determine the characteristics of PR use in elderly patients seen in an ED—specifically, its frequency, the clinical profile of restrained patients, and the reasons for its application.

Material and methods

We conducted a prospective, descriptive, observational study in the ED of *Hospital Universitario Severo Ochoa* (HUSO), Leganés (Madrid) from February 18th, 2019 through January 31st, 2020. During this period, data were collected from 173 randomly selected days, when at 08:00 hours, all patients admitted to the ED (observation rooms, patients awaiting admission, and the short-stay unit) were reviewed at the bedside, and all patients of any age who presented mechanical restraints were recorded.

The study included patients older than 65 years who had PR, excluding those under psychiatric care, once informed consent was obtained from family members.

Data were collected from the health record, interviews with family members, and the on-duty health care staff. The following variables were recorded: age, sex, place of residence, reason for consultation, comorbidity (presence of more than four chronic diseases), polypharmacy (use of more than four drugs), use of psychotropic drugs, functional status (assessed using the Katz Index, which evaluates basic activities of daily living), baseline cognitive impairment (measured using the Red Cross Mental Disability Scale)[8], and history of delirium or PR during previous admissions.

Regarding PR, the reason for restraint, type of restraint used, use of alternatives, and tolerance to the procedure were recorded (Table 1). It was also noted whether nursing staff documented the use of PR in the clinical record and whether the physician prescribed it in writing in the medical orders.

For statistical analysis, variables related to the reason for PR were regrouped according to the concept of legitimacy or appropriateness into 2 categories:

– Group of "appropriate indications," which included patients restrained for reasons accepted by international and national consensus (danger to self or others, protection of therapeutic systems, or the need for mandatory rest).[2]

– Group of "inappropriate indications," which included patients restrained for agitation without circumstances of danger, risk of falling, or other justified causes (eg, family request, strange behavior, disorientation).

Quantitative variables are expressed as mean ± standard deviation and were analyzed using the Mann–Whitney U test, and qualitative variables were expressed as absolute and percentage values, and comparisons were made using Fisher's exact test. Statistical analysis was performed using RStudio Version 1.3.1093. The study was approved by the Clinical Research Ethics Committee of HUSO.

Results

Of the 9,238 patients included in the study (length of the ED stay), 6,468 (70.45%) were aged 65 years or older. PR was recorded in 197 (2.13%) patients, of whom 70.45% (120 cases) were elderly. Therefore, the frequency of PR

Table 1. Variables collected in relation to physical restraints

Reasons for restraint
• Agitation without danger: motor restlessness, disorientation, unusual behavior.
• Agitation with danger: physical aggression toward staff, self-harm, or escape attempts.
• Risk of falling.
• Protection of therapeutic systems: attempts to remove catheters, intravenous lines, ventilatory devices, etc.
Types of restraint (excluding side rails on stretchers)
• 1 point: belt or one wrist strap.
• 2 points: 2 wrist straps.
• 3 points: 2 wrist straps and a belt.
• 5 points: wrist straps, ankle straps, and a belt.
Use of alternatives to restraint
• Family accompaniment.
• Early mobilization.
• Chemical restraint.
• Removal of catheters.
• Minimization of medical instrumentation.
Tolerance to restraint
• Poor tolerance: when the restrained person expresses discomfort, struggles against the restraints, or shows early signs of injury caused by them.
• Good tolerance: when the person is calm, asleep, or indifferent to the restraints.

use in the elderly population in the ED was 1.84%. The final study sample consisted of 93 patients, excluding those with incomplete forms or missing consent. The mean age was 83.23 years, and 59.14% were men. Of these, 47.31% were between 86–100 years, 38.71% between 76–85, and 13.98% were younger than 76.

A total of 65.59% of patients came from home, and 34.41% from residential facilities. Functional status (Katz Index) indicated that 31.18% were independent in basic activities (Katz A), 20.43% were partially dependent (Katz B–E), and 48.39% were completely dependent. Regarding cognitive impairment, 23.66% had no baseline cognitive problems, 22.58% had mild impairment, and 53.77% had established dementia. Multimorbidity was present in 80.65%, polypharmacy in 79.57%, and psychotropic drug use in 74.19%.

The main admission diagnoses were delirium (5.38%), infectious/respiratory disease (49.46%), neurological disease (15.05%), and behavioral disorders due to dementia (8.60%).

Family interviews revealed that 34.41% reported prior restraint use during previous hospital admissions or in residential care, and 38.71% had experienced delirium in previous hospitalizations. Elderly patients from nursing homes had a history of PR in 62% of cases compared to 20% among those living at home.

The reasons for PR were agitation without danger (22.58%), agitation with danger (31.19%), therapeutic protection (37.63%), and risk of falling (8.6%). The type of restraint used was 1-point (13.98%), 2-point (69.89%), 3-point (8.60%), and > 3 points (7.53%).

Before applying restraint, family members were called to calm the patient in 7.53% of cases, antipsychotic/sedative drus were used in another 7.53%, and a functional alternative (eg, sitting in a chair, removing urinary catheter) was tried in 13.98%. In > 70%, no prior alternative measures were implemented.

PR was prescribed in writing in 38.71% of cases, while nursing documentation was found in 62.37%.

Tolerance to PR was poor in 58% of patients at the time of data collection (struggling vs the restraint or expressing discomfort). Following PR, antipsychotic/sedative medication was increased in 67.74% of the elderly patients.

Analysis of Appropriateness or Legitimacy of Restraints

A total of 68.82% of patients were restrained for indications considered appropriate for PR. Statistical analysis by age, cognitive impairment, and functional status showed that, among those restrained for inappropriate reasons, only 7.1% were aged 65–75, while the proportion of PR increased markedly with age: 50% in those aged 76–85 and 42.9% in those aged 86–100. The age group 76–85 accounted for most PR cases, showing a (non-significant) trend toward less appropriate use. No association was found between PR appropriateness and cognitive impairment.

Regarding functional status, there was a non-significant trend to restrain elderly patients without baseline functional impairment who presented behavioral alterations without danger (up to 50% of these cases were restrained for inappropriate reasons).

Clinical Profile and Type of PR

Differences were observed in the type of PR used depending on the patient's baseline clinical profile. Patients with a past medical history of dementia were rarely restrained with > 3 points (11.21%), whereas in those without baseline impairment this type of PR was used in 31.82% of cases (P = .041) (Table 2, Figure 1).

This relationship was also observed with functional status: independent patients (Katz A) presented > 3 points restraint in 30.3% of cases, whereas only 8% of functionally impaired patients required such restrictive measures. The association was even stronger when analyzed by age: the oldest patients were rarely restrained with > 2 points (P = .001).

Similarly, significant differences were found between baseline cognitive status and written medical prescription of PR: in patients with established dementia, no written documentation by the physician was found in 69% of cases, while among those without cognitive impairment, written medical orders were missing in only 36% (P = .011) (Table 2).

Discussion

This study aims to serve as an initial approach to a complex problem that is present in our daily work: the use of physical and chemical restraints to control behavioral

Table 2. Characteristics of physical restraints according to patients' cognitive and functional status

Adequacy of PR and functional status			
Functional situation	Adequate PR (N = 14) n (%)	Inadequate PR (N = 58) n (%)	*P*
Independent	7 (50)	20 (34.48)	.03
Partially dependent	1 (7.14)	15 (25.86)	
Highly dependent	67 (42.86)	23 (39.66	
Type of restraint and baseline cognitive impairment			
Restraint	Sin deterioro (N = 22) n (%)	Con deterioro (N = 71) n (%)	*P*
High restraint (≥ 3 points)	7 (31.82)	8 (11.27)	.041
Low restraint (≤ 2 points)	15 (68.18)	63 (88.73)	
Medical Prescription of pr and functional status			
Prescription	Without deterioration (N = 22) n (%)	With deterioration (N = 71) n (%)	*P*
No	8 (36.36)	49 (69)	.011
Yes	14 (63.64)	22 (31)	
Medical prescription of pr and functional status			
Prescription	Independent (N = 33) n (%)	Partially dependent (N = 23) n (%)	Highly dependent (N = 37) n (%)	*P*
No	15 (36.36)	16 (69.57)	26 (70.27)	.076
Yes	188 (36.36)	7 (30.43)	11 (29.73)	
Type of restraint and baseline cognitive deterioration				

PR: Physical Restraints.

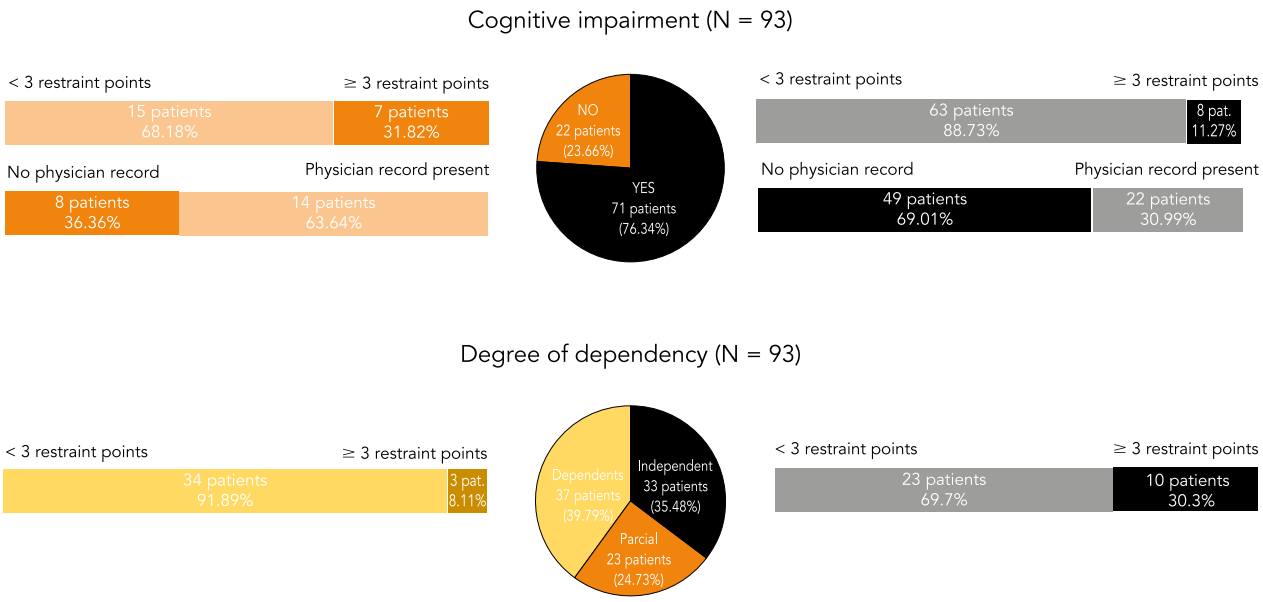

Figure 1. Clinical profile and type of restraint.

disturbances in elderly patients in EDs. Despite its significant ethical implications,[9] it remains an under-studied and even uncomfortable subject to address—agitated elderly patients continue to be restrained, even though no one feels comfortable with this measure.

Spain is undergoing a major paradigm shift in the care of older adults in the social and health care setting; however, in hospitals there is still a lack of knowledge, insufficient training, and an absence of protocols to modify long-established habits in the acute management of the confused and agitated elderly patient.[10]

The first step toward this change is to understand the real situation in our hospital units. In the specific case of EDs, there are few prevalence studies on the use of PR. Studies from other countries estimate a prevalence of physical restraint use in EDs of approximately 0.5–0.8%.[1,11]

Although our prevalence is higher than that reported in other publications, a key strength of our study is that the frequency of PR was determined through direct bedside observation rather than relying solely on nursing documentation.[1,11] We verified that not all PRs are documented—a finding also described in other studies—and this likely reflects the persisting view that restraint is a harmless measure that does not require documentation.[12]

Other explanations for the high incidence rate of PR may include a lack of staff training, leading to a tendency toward overuse compared with other neighboring countries,[13,14] and an older patient population with prolonged ED stays in facilities not well adapted to highly vulnerable individuals.

In our study, 70.45% of patients admitted to the ED were older than 65 years, with high rates of comorbidity, polypharmacy, and functional impairment. Added to these clinical characteristics are environmental factors inherent to ED operation—noise, bright lighting, long waiting times before admission—which amplify behavioral problems and may explain our elevated PR rate.

The typical profile of a restrained elderly patient in the ED is a male > 80 years with comorbidities, polypharmacy, and cognitive and functional impairment, admitted for an infectious episode and restrained with wrist straps to protect intravenous lines and prevent their removal.

More than 30% of our sample had a past medical history of delirium or PR in previous admissions, a fact that could be extremely valuable for the initial assessment of elderly ED patients. Asking family members about this history could help identify high-risk patients and intervene early at the first signs of restlessness or suspicion—an approach shown to be effective in numerous studies on delirium in geriatric populations.[15]

The most common indication for PR in the ED (almost 40% of cases) was therapeutic protection—to safeguard venous lines, catheters, or ventilatory devices. Some studies have shown that reducing the use of invasive devices in hospitalized elderly patients can lower the incidence of delirium and, consequently, the need for PR.[16]

However, it is striking that in up to one-third of cases, the reasons for restraint did not align with accepted indications (what we defined as restraint legitimacy or appropriateness). In some cases, restraint was applied due to disorientation or mild psychomotor agitation without danger. This often occurred in older patients (the group with the highest number of restraints in our series), but also among those without baseline functional impairment, where the sudden onset of cognitive or behavioral symptoms might alarm ED staff, leading to early restraint use. Here too, staff training could reduce the need for PR by promoting better-tolerated alternatives for the elderly, such as family presence, early mobilization, minimizing invasive procedures, or expediting ward admission.[17]

The type of restraint also varied according to the clinical profile: younger patients without baseline cognitive or

functional decline who presented with delirium were more often subjected to ≥ 3 restraint points. This could reflect greater agitation intensity, unexpected behavior, or higher physical strength.

Finally, of note, the frequent lack of documentation regarding PR in our study. This omission was more common among patients with greater functional decline and older age. It appears that this more vulnerable subgroup is seen as requiring less "justification" for implementing poorly tolerated measures such as PR.

A total of 58% of patients struggled against restraint or verbally expressed discomfort, and 67% required an increase in sedative medication afterward—suggesting that the proportion of poorly tolerated restraints may be much higher. Considering the well-documented physical and psychological side effects of PR in multiple studies,[18] this lack of documentation is surprising and may reflect a hospital culture that views restraint as both harmless and inevitable in elderly care.

In our series, among patients older than 85 years, "soft restraints" were frequently used for the wrists (less rigid and easier to release). The use of this term likely contributes to the perception that they are harmless and tolerable, which may explain why nursing staff often initiate them independently in cases of agitation or risk to ongoing treatments.

A study assessing perceptions of mechanical restraints among 785 Spanish nurses found that, although more than half reported lacking adequate knowledge and training, they still considered restraint necessary in clinical practice[18]. This widespread mindset may explain the significant gap between the scarce documentation of PR in elderly patients and the more systematic recording of restraint in young psychiatric patients.[19-21]

As for the limitations of our study, first, it was a single-center study with a small sample size, reflecting the low prevalence of these events in Spanish EDs.[22] Second, the investigators were ED staff rather than external researchers, which may have influenced data collection—at least for patients they themselves managed with PR. Nevertheless, this work should be considered hypothesis-generating and a starting point for future training initiatives by the Spanish Society of Emergency Medicine (SEMES), as has occurred in similar international societies.[23]

Conclusions

There is a high frequency of PR use among elderly patients in Spanish EDs vs neighboring countries. This practice is often not systematically documented in health records and sometimes does not conform to recommended indications. Such inappropriate use, with limited documentation, is more common among older adults with established cognitive impairment.

Improving health care staff training is essential to better manage PR in elderly patients treated in emergency settings,[24,25] since many restraints do not address patients' needs but rather those of staff and institutional organization.[26-28]

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