

INTEGRATIVE LITERATURE REVIEW ARTICLE

MECHANICAL CONTAINMENT IN URGENCY AND EMERGENCY SERVICES
CONTENÇÃO MECÂNICA NOS SERVIÇOS DE URGÊNCIA E EMERGÊNCIA
CONTENCIÓN MECÁNICA EN SERVICIOS URGENTES Y DE EMERGENCIA

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ABSTRACT

Objective: to identify scientific evidence on the use of mechanical restraint in adult and elderly patients in urgent and emergency services. **Method:** this is a bibliographic, descriptive, integrative review of the literature, carried out in the databases: MEDLINE (via PubMed), CINAHL, SCOPUS and LILACS, in the last five years, 2014 to 2019. They were evaluated and classified the studies are based on their scientific rigor, for the classification of the Level of Evidence, using an instrument based on the Rating System for the Hierachy of Evidence for Intervention / Treatment Question. **Results:** three studies were found, in Hawaii, Canada and Australia, produced in 2014 and 2016, two articles with a quantitative approach and one qualitative article, all in English. It is reported that two dealt with the implementation of education strategies to reduce the use of restraint and one about the perception of health professionals about the use of restraint. **Conclusion:** it is concluded that educational strategies for health professionals are necessary to reduce the use of mechanical restraint, avoiding deleterious results not only for patients, but for the team. **Descriptors:** Adults; Aged; Restraint, Physical; Emergency Medical Services; Emergency Nursing; Health of the Elderly.

RESUMO

Objetivo: identificar evidências científicas sobre o uso da contenção mecânica em pacientes adultos e idosos nos serviços de urgências e emergências. **Método:** trata-se de um estudo bibliográfico, descritivo, tipo revisão integrativa da literatura, realizado nas bases de dados: MEDLINE (via PubMed), CINAHL, SCOPUS e LILACS, nos últimos cinco anos, 2014 a 2019. Avaliaram-se e classificaram-se os estudos quanto ao seu rigor científico, para a classificação do Nível de Evidência, por meio de um instrumento baseado na *Rating System for the Hierachy of Evidence for Intervention/Treatment Question*. **Resultados:** encontraram-se três estudos, no Havaí, Canadá e Austrália, produzidos em 2014 e 2016, sendo dois artigos com abordagem quantitativa e um artigo qualitativo, todos na língua inglesa. Informa-se que dois tratavam de implementação de estratégias de educação para reduzir o uso da contenção e um sobre a percepção dos profissionais de saúde sobre o uso da contenção. **Conclusão:** conclui-se que estratégias educacionais para profissionais de saúde são necessárias para reduzir o uso da contenção mecânica, evitando resultados deletérios não só para os pacientes, mas para a equipe. **Descritores:** Adultos; Idosos; Restrição Física; Serviços Médicos de Emergência; Enfermagem em Emergência; Saúde do Idoso.

RESUMEN

Objetivo: identificar evidencia científica sobre el uso de restricciones mecánicas en pacientes adultos y ancianos en servicios urgentes y de emergencia. **Método:** esta es una revisión bibliográfica, descriptiva, integradora de la literatura, realizada en las bases de datos: MEDLINE (a través de PubMed), CINAHL, SCOPUS y LILACS, en los últimos cinco años, 2014 a 2019. Fueron evaluados y clasificados los estudios en cuanto su rigor científico, para la clasificación del Nivel de Evidencia, utilizando un instrumento basado en el *Rating System for the Hierachy of Evidence for Intervention/Treatment Question*. **Resultados:** se encontraron tres estudios, en Hawai, Canadá y Australia, producidos en 2014 y 2016, dos artículos con un enfoque cuantitativo y un artículo cualitativo, todos en inglés. Se informa que dos se ocuparon de la implementación de estrategias educativas para reducir el uso de la contención y uno sobre la percepción de los profesionales de la salud sobre el uso de la contención. **Conclusión:** se concluye que las estrategias educativas para los profesionales de la salud son necesarias para reducir el uso de contención mecánica, evitando resultados nocivos no solo para los pacientes, sino también para el equipo. **Descriptores:** Adulto; Anciano; Restricción Física; Servicios Médicos de Urgencia; Enfermería de Urgencia; Salud del Anciano.

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How to cite this article

Carvalho ACS de, Barros PFA, DelValle R, Santana RF. Mechanical containment in urgency and emergency services. J Nurs UFPE on line. 2020;14:e245201 DOI: <https://doi.org/10.5205/1981-8963.2020.245201>

INTRODUCTION

It is known that the use of restraint is a practice historically used in hospital environments, with greater frequency in elderly patients, even in the absence of evidence of its benefit.¹ It is inferred that, although there are several types of containment, such as physical, mechanical, pharmacological or environmental, mechanical containment is the most frequently described in the literature, being defined as any method that prevents or limits the actions of a person through the use of materials or devices attached to the individual's body.¹⁻² Examples of this type of containment include: wrist or ankle immobilizers; side grids; abdominal straps; containment strips.¹⁻²

It is understood that hospitalization is a triggering factor of damage to patients, and the main factors associated with restraint are: pressure and friction injuries; immobility; circulatory problems; infections; patient discomfort; incontinence; disorientation; agitation or delirium and increased risk of extubation.^{1,3-6} The greatest aggravation of this procedure occurs due to reports in the literature of strangulation, asphyxiation or compression that resulted in death.⁷ It is added that falls are among the biggest causes of adverse events related to containment and are responsible for two out of five events related to the patient's health, this is because the contained patient is agitated in an attempt to fight the containment, which increases the risk of muscle breakdown and even rhabdomyolysis.⁴⁻⁷

It is detailed that the restraints are also common in urgent and emergency services because they care for patients in a state of confusion, with fractures that need to be immobilized. In Brazil, these services are characterized by their high complexity, guarantee at the rear of primary care units and in reducing the burden on hospitals,⁸ added to the fact that the demand for care in urgent and emergency services is high due to the disruption in the health system.

Thus, it is warned that the physical structure does not meet the demand for these services and, for this reason, patients are accommodated on stretchers and chairs that do not provide safety and comfort⁹ and therefore, contention often occurs. It is determined by the care provided in these units, which presupposes imminent risk of life (emergency) and acute, clinical or surgical process (urgency), in itself, the complexity of the service performed.⁸⁻⁹

In addition, it is noted that urgent and emergency services are not very welcoming, due to their structure, especially for the elderly patient, who currently represents the largest profile of users of health services.¹⁰ Therefore, the

system itself contributes to the triggering of delirium, which generates agitation and mental disturbance.¹⁰ It is known that the physical structure of an emergency department is inconvenient for the elderly to adapt: restricted space and shared with other people, through partitions or curtains, noise, excessive lighting to compensate for the "loss" of light natural and inappropriate height of stretchers, which impairs the patient's locomotion, which is a factor prior to falls and confusion. In this scenario, the health team is very susceptible to the practice of containment, which ends up causing physical and psychological damage, even for the professionals themselves, who experience shame and guilt.¹¹

Therefore, the search for scientific evidence for the use of mechanical restraint in urgent and emergency services is reinforced. With this, it is possible to assist in the identification of risk assessment instruments and indication of containment, in the severity monitoring, of the measures for the prevention of injuries and risk.

From this premise, there were gaps regarding the knowledge of the use of mechanical restraint, which compromises the care practice and the safety of the patient submitted to mechanical restraint. According to the articles found, despite the scarcity of studies demonstrating the prevalence of mechanical restraint in urgent and emergency services, professionals do not understand and are unaware that the use of restraint is closely related to the occurrence of serious events,¹² this demonstrates the relevance of the study for nursing practice.

OBJECTIVE

- To identify scientific evidence on the use of mechanical restraint in adult and elderly patients in urgent and emergency services.

METHOD

It is a bibliographic, descriptive study, type integrative literature review, which was based on the following steps: elaboration of the guiding question of the research; sample selection using the inclusion and exclusion criteria; data collect; data analysis; interpretation and discussion of results; presentation of the integrative review and synthesis of knowledge.¹³

The study was guided by the following question: "What is the scientific evidence for the use of mechanical restraint in adults and the elderly hospitalized in urgent and emergency services?"

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA Statement) methodology was used to conduct the review,¹⁴ which was used as a basis for reporting systematic reviews of other types of research, particularly evaluations of interventions.

For the search and selection of studies, the following databases were consulted: Medical Literature Analysis and Retrieval System Online (MEDLINE via PubMed), Latin American and Caribbean Literature in Health Sciences (LILACS), Cumulative Index to Nursing and Allied Health Literature (CINAHL) and SCOPUS, via Capes Journal Portal.

The operationalization of this research began with consultation with the descriptors in Health Sciences (DeCS), through the Virtual Health

Library (VHL), the Medical Subject Headings (MeSH), from the National Library and the title CINAHL. Controlled descriptors in English and Portuguese were used: Adults/Adult; Elderly/Aged; Physical Restriction/Physical Restraint; Emergency Medical Services/Emergency Medical Services and Emergency Nursing / Nursing Emergency. The variations of each base were respected and some changes in the search strategies at CINAHL and SCOPUS were carried out according to figure 1.

Databases	Search strategy
MEDLINE (Via PubMed)	((Aged[MeSHTerms] OR (Aged, 80 and Over[MeSHTerms]) OR (Adult[MeSHTerms])) AND ((Restraint, Physical[MeSHTerms]) AND ((Emergency Service[MeSHTerms] OR (Emergency Medical Service[MeSHTerms]) OR (EmergencyNursing[MeSHTerms]))).
LILACS	((Aged[MeSHTerms] OR (Aged, 80 and Over[MeSHTerms]) OR (Adult[MeSHTerms])) AND ((Restraint, Physical[MeSHTerms]) AND ((Emergency Service[MeSHTerms] OR (Emergency Medical Service[MeSHTerms]) OR (EmergencyNursing[MeSHTerms]))).
CINAHL	((MH "Adult") OR (MH "Aged") OR (MH "Aged, 80 and Over") OR (MH "Aged, Hospitalized")) AND ((MH "Restraint, Physical") AND ((MH "Emergency Service") OR (MH "Emergency Medical Services") OR (MH "EmergencyNursing"))).
SCOPUS	INDEXTERMS("Aged" OR "Aged, 80 and Over" OR "Adult") AND INDEXTERMS("Restraint, Physical") AND INDEXTERMS("Emergency Medical Service" OR "EmergencyNursing")

Figure 1. Search strategies in databases. Niterói (RJ), Brazil, 2019.

Baseline studies were sought from July to November 2019. The following were used as filters: the time frame of the last five years (2014 to 2019) and the languages Portuguese, English and Spanish. The aim was to justify the time frame established to gather recent studies on the theme, allowing to guide the current reality of urgency and emergency services in Brazil and in the world.

The inclusion criteria were: original studies and articles available in full. Articles that were not related to adults and the elderly and articles that were related to psychiatric emergency services were excluded. Editorials, letters to the editor, dissertations, theses, case studies / experience reports, research protocols and review articles were also excluded.

The search in the databases resulted, through the application of the search strategies, in 693 articles, being: 184 in CINAHL; 45 at LILACS; 205 in SCOPUS and 259 articles in MEDLINE (Via PubMed). It is highlighted that, when excluding duplicate articles (235), 458 articles remained. 436 articles were excluded after reading the titles and abstracts for citing types of containment other than mechanical containment and for referring to health units other than urgent and emergency services, leaving 22 articles that were submitted to full reading. Of these, 19 articles were excluded, by applying the exclusion criteria, leaving three articles for the final sample of the study (Figure 2).

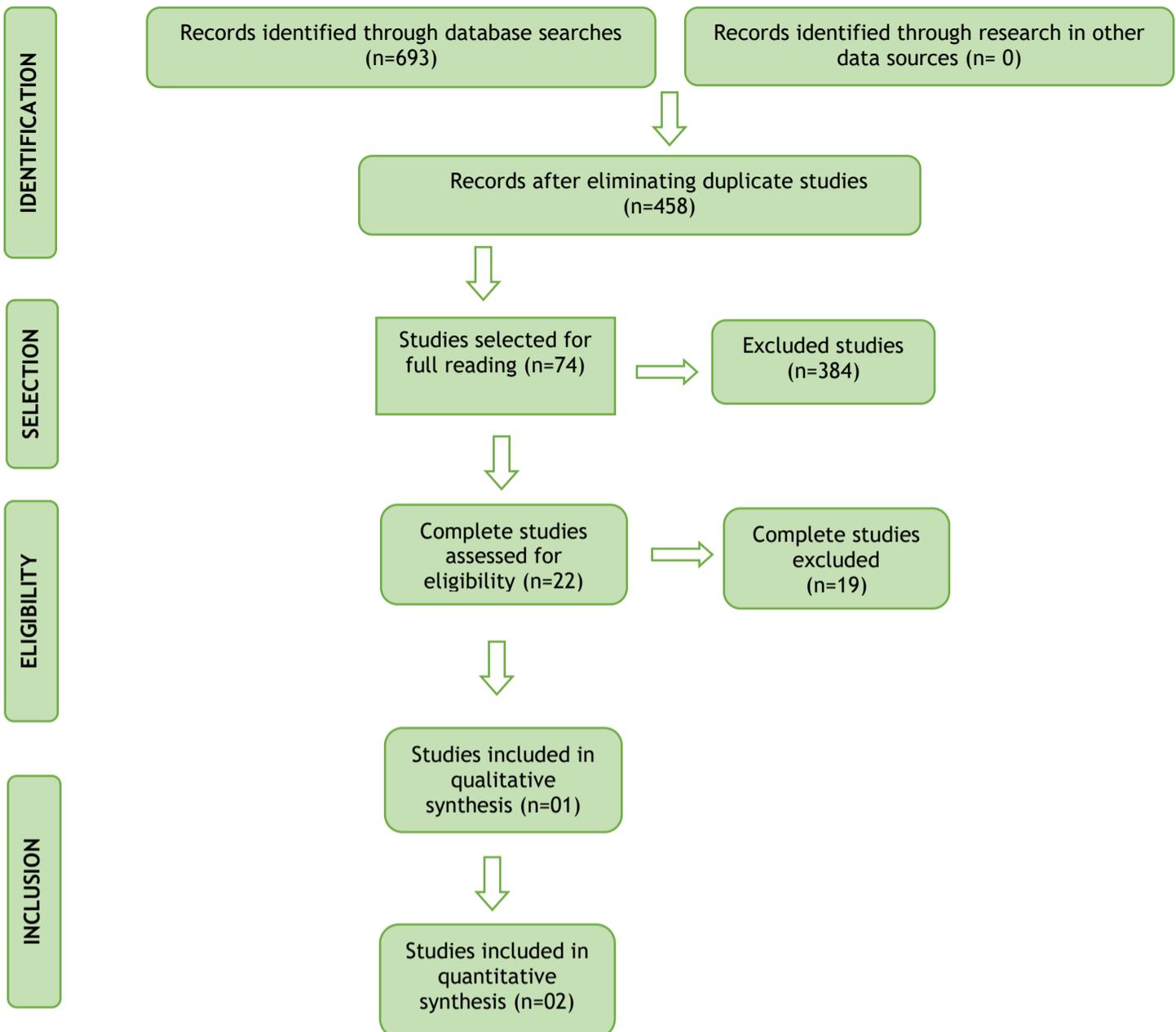


Figure 2. Flowchart of study selection adapted from Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2009). Niterói (RJ), Brazil, 2019.

Through the process of selection and identification of articles, the inclusion and exclusion criteria were obeyed. It is revealed that, by reading the title and abstract, articles that were duplicated in the databases were also excluded. After this stage, the articles were read in full.

The studies were selected and analyzed in detail, to ensure the validity of the review, focusing on the adequacy of the methodology employed.

Studies were evaluated and classified according to their scientific rigor, for the classification of the Level of Evidence (LE), using an instrument based on the Rating System for the Hierarchy of Evidence for Intervention / Treatment Question.¹⁵

The studies found in two moments were analyzed: first, the sample was characterized through a simple description and filling in the data collection instrument; in the second moment, the articles included in the study were read and data were organized, which facilitated the understanding of the information and / or evidence cited in the articles. It is explained that, as it is a bibliographic research and does not

involve human beings, there was no request for approval by the Research Ethics Committee.

RESULTS

For the extraction of data from the articles, a data collection instrument was developed that presents the general overview of the publications selected for analysis, highlighting the characterization according to order, authors, year of publication and country, objectives, method, Level of Evidence (LE), main findings and conclusion (Table 1).

In relation to the characteristics of the studies, the articles selected for international review in Hawaii⁴ were produced, Canada,¹⁶ and Australia.¹⁷ The publications were made in the following years: 2014 (n = 02) and 2016 (n = 01).

The following studies were found: Observational study⁴ (n = 01), Qualitative, Descriptive and Exploratory Study¹⁷ (n = 01) and Randomized Quasi-Experimental Study¹⁶ (n=01). Thus, studies were classified according to the levels of evidence, such as: an article with LE 2, an article with LE 4 and, finally, an article with LE 5.

It was observed that two of the articles found refer to education strategies to reduce the use of restraint and only one of them talks about the perception of health professionals about the use of restraint. It is noted that all selected articles point to the risks and effects of using mechanical restraint and its deleterious consequences - both for the patient and for the health team member.

It was found that, among the studies, only one proposed to identify the prevalence of manual containment in urgent and emergency services.¹⁵

The use of educational strategies in service stands out^{8,15} with positive result for reducing the use of mechanical restraint in urgent and emergency services. It is revealed that, among the strategies used to reduce the containment procedure in these scenarios, there are: use of non-coercive treatment to involve the patient and gain their trust and clarification and involvement of nursing professionals on the variety of available alternatives that do not containment.⁴

In the study carried out with Australian nurses, the perception of such professionals towards the use of restraint in emergency care health equipment was explored and the team itself

recorded a lack of training.¹⁷ Despite the frequent use of restraint, the Nursing team recorded knowledge of the physical and psychological effects of the use of restraint not only suffered by patients, but also by the team itself.¹⁷

It is described that the interventions used in the selected studies were essentially educational. The health team was trained and made aware of the need to reduce mechanical containment, considering the damage caused by this. At the conclusion of the three studies, a significant reduction in the practice of containment was observed after the interventions performed, with emphasis on the observational study, which exposed the team to alternatives to the use of containment, with didactic simulations and dramatizations - all in the sense of raising awareness professionals, promoting cultural change, fostering new strategies.

It is noteworthy that the educational interventions used were applied to the entire body of the professional health team and not only Nursing, a fact that contributed to the awareness of a larger group of professionals involved in providing patient care.

Author	Year	Country	Type of study
Cole.	2014	Hawaii	Observational study
Enns, Rhentulla, Ewa, Fruetel, Holroyd-Leduc.	2014	Canada	Randomized quasi-experimental study
Chapman, Ogle, Martin, Rahman, McKenna, Barnfield.	2016	Australia	Qualitative, descriptive and exploratory study

Figure 3. Results found in studies according to the author, year of publication, country and type of study. Niterói (RJ), Brazil, 2015/2016.

DISCUSSION

It is pointed out that the main finding of the study was the existence of studies that problematize the use of mechanical restraint in urgent and emergency services. Despite the reduced number of articles found, after analyzing its contents, data showing the effectiveness of educational intervention programs to reduce contention. Both dedicated themselves to training health professionals to reduce the practice of containment, whether for adults,⁸ whether with reference to the elderly.¹⁵ It was proposed, by the Australian study, to explore the perception of nurses about the use of restraint in emergency services, demonstrating relevance by the detailed richness of the experience of professionals in these sectors in the face of restraints.¹⁶

Few studies have been produced on mechanical containment in urgent and emergency services and most were related to urgent and psychiatric emergency services, demonstrating that the issue has been widely debated in this specialty, however, it needs extensive questioning in the hospital setting.

It is revealed, through the use of mechanical restraint in urgent and emergency services, a practice commonly used in order to contain and calm agitated patients, however, the evidence supports that the reduction in the use of

restrictions, in general, decreases psychological damage and for both patients and staff.⁴

Such findings are seen in the current literature, which already points out harmful effects of the use of restraint, such as: sensation of terror; humiliation; asphyxiation; thrombosis, among others, including death.¹⁶ It was also mentioned that its practice is considered a risk factor for increased length of hospital stay and is associated with incontinence, worsening delirium, pressure ulcers, among other deleterious effects.¹⁶⁻⁸

In the selected studies, risks and damage from mechanical containment were identified, however, none of them identified instruments that assess the risk early, the severity and injury monitoring.

Death reports are found in the literature due to the use of mechanical restraint related to severe falls or strangulation in an attempt to escape the restraint. Therefore, mechanical restraint should be used as a last resort, after unsuccessful attempts to improve behavior.^{13,19-21}

It should be noted that, with regard to mechanical containment, a study²² found 22 cases of deaths that occurred exclusively through the use of restraint at the autopsy at the Monique Institute of Forensic Medicine. It was treated, in a study carried out in 2016,¹⁷ of the perception of emergency nurses about the use of restraint and a

study identified severe consequences such as death and, still, the lack of specific training for health professionals.

They were brought, in this way, by the studies,^{8,15,19} negative outcomes in relation to patient comfort and adverse events caused by the use of mechanical restraint. In this sense, it is recommended that strategies be implemented to assess the need for containment and the technical and professional training of the health team to assess the risks and benefits of indicating mechanical containment. It is understood that this is evidence that there is a reduction in the use of restraint after the intervention, as well as an improvement in the quality of care provided to patients.^{8,15-21}

It is determined by the Regional Nursing Council (COFEN), in Brazil, from Resolution No. 427/2012, that the use of mechanical restraint is authorized only in urgent and emergency situations.⁵ It should be noted that, in emergency care equipment, there are specific situations in which mechanical restraint is adopted by the team, for example, in episodes of agitation and neurological trauma.⁵ It is detailed, however, that what makes mechanical containment an undesired procedure is its indiscriminate and/or continuous use.

It is added that another ethical-professional factor essential to the use of restraints is the concern with the record in the medical record that contains the time, type, reason, time of onset, consent of the patient and family and the team involved. It occurs, often, due to the obscurity of the containment practice, underreporting, which can lead to deviation in the statistical surveys regarding its occurrence in medical records.¹⁹

Mechanical restraint is allowed only under the direct supervision of a professional nurse, and cannot be extended beyond a strictly necessary period, however, it is commonly observed that mechanical restraint remains even after the necessary time has elapsed.⁵ The use of this procedure indefinitely can cause even lethal damage to patients.⁵

It is inferred, therefore, that the simple observance of COFEN guidelines regarding the need to monitor patients in hourly containment, in order to assess the need to maintain containment, would already reduce the number of patients contained, because the criteria exceptional for their use would be reassessed every hour.^{5,16-7} International literature has also pointed to the use of mechanical restraint as a last resort, and should be used for the management of violent or self-destructive behavior.⁴

It is known that the entry of patients with behavioral changes in urgent and emergency services is constant²⁰⁻³ and the cause of the patient's admission is not always related to their behavior, however, studies have shown that teams

are not prepared to deal with agitation situations and sometimes stated that invasive or restrictive interventions are necessary or even, which are the only option.²³

Therefore, there is a need for continuous assessment of challenging behaviors, non-invasive interventions, communication, orientation to reality and assessment of the cause of the agitation. Remember that patients with neuropsychiatric symptoms, sometimes with dementia, are frequent in emergency and urgency units, therefore, the need for training professionals to understand and identify symptoms and how to deal with them.¹⁶

Challenging behaviors are directly linked to the patient's communication difficulties.¹⁹ It would provide, by understanding this challenge on the part of the Nursing team, trained in mental health, greater communication between professionals and patients, avoiding the unnecessary use of restraint which, in addition to distancing the understanding of the message that patient intends to transmit - essential to the care process, it has negative effects on the well-being of the patient and the health team.¹⁸⁻²⁴

Among other factors, strategies for the elimination of the use of restraint should be based on the premise of person-centered care, affective welcoming, listening and, regarding inappropriate behaviors, it is suggested that the team carefully examine all the possibilities that would be motivating them.²⁴

Strategies were observed in the studies to reduce the use of mechanical restraint in urgent and emergency services based on the formation of a "Rapid Response Team" and permanent education in order to reduce restraint in these scenarios.²² Through education, the change in care paradigms is brought about, promoting critical reflection of the situations experienced, however, the quantification of damages, associated factors and prevalence is necessary for the planning of care for patients submitted to these conditions.^{18,25}

It is also considered that the negative psychological and physical effects generated from the use of restraint do not only affect patients, as mentioned by the Australian study. In this sense, it appears that there is a study on the increase in physical and verbal violence of patients and companions in the emergency department, which shows an increase in the use of restraint in the sector.²³ From the perspective of safety, it is considered that, for professionals in this sector, dealing with patients with mental disorders and agitation causes fear. In addition, health professionals face a duality when they contain a patient: they understand that there is no alternative to containment, but they feel they are affecting their moral and ethical values.²⁶

It is pointed out, therefore, that the alternative to be used to reduce the use of mechanical restraint in these scenarios is the use of educational strategies that aim to make professionals aware of the use of mechanical restraint as the final method to contain a patient, with understanding of your risks and benefits.^{8,15,19} It is believed that the most important thing is to transmit to health professionals, specifically those in nursing, that the following precautions should be adopted to reduce harm, in case there is no alternative but to contain the patient: strict monitoring of the patient (every one hour); checking vital signs and monitoring skin and circulation conditions in the places and limbs contained.^{5,15,19}

It is believed that the adoption of cautious measures before the procedure is performed - and even the professional's interaction with the patient - and, in the event that there is no alternative, while the patient is in mechanical restraint, care is required. Nursing to ensure that time is not exceeded, causing harm to patients.^{18-9,22,26}

CONCLUSION

The study shows, with scientific evidence, that the use of mechanical restraint in urgent and emergency services can cause damage and adverse events to the patient, compromising the safety of the patient and the health team. The scientific findings point to the need to implement training for health professionals to encourage the use of containment as a last resort, and the team must identify alternative ways.

Thus, this study has an impact to promote a change in the nursing care practice, through the dissemination of the culture of non-containment, providing a pre-assessment of needs, risks and benefits of the use of containment, individually, centered on each patient. It is therefore necessary to make professionals aware that the restraints used in the Urgencies and Emergencies scenario should be exceptions and used only after assessing the risks and benefits due to the irreversible damage caused to patients.

It is suggested to carry out studies that verify the prevalence and the reason for the use of restraint in different scenarios in the health area, as well as studies that propose the training of health professionals in Brazil, since the studies found, all did not allow the mapping of the Brazilian reality of urgent and emergency services regarding the use of mechanical restraint, a factor that determined a limitation of this study.

CONTRIBUTIONS

All authors contributed equally in the design of the research project, collection, analysis and discussion of the data, as well as in the writing

and critical review of the content with intellectual contribution, and in the approval of the final version of the study.

CONFLICT OF INTERESTS

Nothing to declares.

AKNOWLEDGEMENTS

We are grateful in memory of Arianna Kassiadou Menezes, eternal teacher, who inspired and inspires the authors to study and take to the world the culture of care centered on the elderly and free from restraint. We are forever grateful to her.

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Submission: 2020/04/26

Accepted: 2020/06/30

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