Literature review

Physical restraint as a factor associated with the occurrence of delirium in critically ill patients: integrative review

Restrição física como fator associado à ocorrência de delirium em pacientes críticos: revisão integrativa

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ABSTRACT | OBJECTIVE: To analyze scientific production on the physical restraint as a factor associated with the occurrence of delirium in critically ill patients. **METHOD:** Integrative review of articles published between 2009 and 2021. Data was collected from the PUBMED, CINAHL, LILACS, Web of Science and PsychINFO databases. Articles were included that were available in full text and in which delirium was monitored using validated instruments. **RESULTS:** Eight articles met the eligibility criteria. All studies show that there is a relationship between the use of physical restraint and the development of delirium. The frequency of delirium in patients using physical restraint ranged from 38% to 79.6%, with odds ratios ranging from 4.16 (95% CI 2.37-7.29) to 33.84 (95% CI 11.19 - 102.36). Two studies evaluated the motor spectrums of delirium, one of which found that hyperactive delirium was more common in 36.4% of cases, while the other found that hypoactive delirium was more common in 50% of cases. One study showed that the location of the restriction in the wrists was the most used (95% of patients). The included studies did not evaluate the duration of use, number and location of physical restraints and their association with the occurrence, severity, subtypes and duration of delirium. **CONCLUSION:** The results suggest that physical restraint is a factor associated with the occurrence of delirium in critically ill patients.

KEYWORDS: Delirium. Physical Restraint. Risk Factors.

RESUMO | OBJETIVO: Analisar a produção científica sobre a restrição física como fator associado à ocorrência de delirium em pacientes críticos. **MÉTODO:** Revisão integrativa com artigos publicados entre os anos de 2009 e 2021. A coleta de dados foi efetuada nas bases de dados PUBMED, CINAHL, LILACS, Web of Science e PsychINFO. Foram incluídos artigos disponíveis em texto completo e em que o delirium foi monitorizado através de instrumentos validados, sem restrição de idioma ou ano de publicação. **RESULTADOS:** Oito artigos atenderam aos critérios de elegibilidade. Todos os estudos mostram haver relação entre o uso de restrição física e o desenvolvimento do delirium. A frequência de delirium nos pacientes em uso de restrição física variou de 38% a 79,6%, com *odds ratio* variando de 4,16 (IC 95% 2,37-7,29) a 33,84 (IC 95% 11,19-102,36). Dois estudos avaliaram os espectros motores do delirium, sendo que em um deles o hiperativo teve uma maior ocorrência com 36,4%, enquanto no outro o hipoativo teve uma maior ocorrência com 50%. Um estudo evidenciou que a localização da restrição nos punhos foi a mais utilizada (95% dos pacientes). Os estudos incluídos não avaliaram a duração de uso, número e localização da restrição física e a sua associação com a ocorrência, severidade, subtipos e duração do delirium. **CONCLUSÃO:** os resultados sugerem que a restrição física se configura como fator associado à ocorrência de delirium em pacientes críticos.

PALAVRAS-CHAVE: Delirium. Restrição Física. Fatores de Risco.

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1. Introduction

Characterized as an acute and fluctuating disturbance of cognition and consciousness, delirium manifests itself through the reduced ability to direct, focus, maintain and change attention, although other cognitive and behavioral disorders, such as memory loss, hallucinations and agitation, may be observed.[1] This dysfunction appears for a short period, usually hours to a few days, with a tendency to oscillate throughout the day, worsening at dusk and at night when external stimuli of orientation decrease.[2]

Concerning short-term outcomes, delirium has been associated with higher hospital mortality and length of stay in intensive care units (ICUs), which considerably burdens health professionals and services.[1] This disorder may also result in long-term consequences, such as cognitive impairment and increased rates of ICU readmission after discharge.[3]

Delirium remains considerably underdiagnosed, despite its high prevalence in ICUs, approximately 32%.[4] A systematic review with meta-analysis, published in 2018, included 48 studies, totaling 22,343 patients admitted to the ICU. Of these, 4,550 presented delirium, with a total prevalence of 31% and a total incidence of 22%, with the hypoactive spectrum being the most prevalent (17%) and the most incident (11%), from the grouping related to patients' characteristics such as advanced age and factors such as the severity of the underlying disease and use of mechanical ventilation.[5]

Among the risk factors for the occurrence of delirium, physical restraint is an avoidable factor already recognized[6], but it is still often used in ICUs. Physical restraint is defined as any manual method or mechanical device/equipment used to restrict the patient's mobility in bed or temporarily reduce his/her ability to move limbs or whole body. Restraint of upper and lower limbs and trunk, as well as the use of gloves and collars are considered to be types of physical restraint.[7]

A high prevalence of use of physical restriction in critical patients is estimated, reaching up to 93% of this population.[7] Among the indications for the use of physical restraint are: patients with altered level of consciousness, avoid the risk of accidental removal of devices and consequent interruption of therapeutic processes, as well as prevention of risk of falling, change of the level of awareness and maintenance of the safety of the own patient, other patients and health professionals.[7]

The effectiveness of restraint was never demonstrated in a randomized clinical trial[8] due to ethical issues. It may actually increase the agitation and self-removal of endotracheal tubs[9,10], as well as cause other negative outcomes for patients, such as pressure and friction injuries, edema and hematoma in the immobilized limb and anxiety.[7]

Resolution n. 427 of 2012, of the Federal Council of Nursing, resolves that nursing professionals may only employ physical restraint under direct supervision of the nurse and in accordance with the protocols established by health institutions, except in cases of urgency or emergency. It is also recommended to use the restraint when it is the only possible means to prevent harm to patients or others, and should not be prolonged, nor used for disciplining, punishing or coercing or even for the convenience of the team.[11]

Therefore, we understand that its use goes beyond nursing care and involves physical, psychological, ethical and even legal issues, making it necessary for these aspects to be taken into account within critical care environments. Corroborating this thought, it should be noted that many health institutions still do not have documents to guide the safe use of physical restraint. Moreover, health professionals have an incipient knowledge about the subject, which is reflected in the inappropriate use of physical restraint in services. This generates negative impacts on patient care, and it is necessary to recognize the indications, complications and options for their safe and effective use.[7]

The analysis on the influence of the practice of physical restraint in the development of delirium reveals that, even when this practice is used judiciously to contain agitated patients, it can contribute to the onset and worsening of the condition, besides aggravating the state of agitation and confusion.[12] However, despite all the recognition that the scientific community brings about the harm of the use of physical restraint, an electronic research was carried out using the descriptors "physical restraint", "delirium" and "risk factors" in the MEDLINE/PUBMED databases, LILACS,

CINAHL, PsycINFO and Web Of Science, and specific studies were found on their association with the occurrence of delirium, as well as no literature review that summarized the available knowledge on the subject, revealing a lack of scientific productions on the subject.

In view of what has been exposed, it is perceived the need to conduct studies on the subject. In the context of intensive care, focus of this research, many patients may be agitated, confused, disoriented, situations resulting from the disease process. The adequate evaluation of these patients and the use of therapeutic resources that can avoid physical restraint should be based on institutional protocols based on scientific evidence. The knowledge of these aspects, as well as the training of the nursing team, will favor the work process of the nurse in providing care to critical patients. Thus, this research has the general objective to analyze the scientific production on the use of physical restraint as a factor associated with the occurrence of delirium in critical patients.

2. Method

This is an integrative literature review with a quantitative approach, composed of six steps.[13]

Step 1: Development of the review question

The first stage was based on the PECO[14] strategy, where: P (population) = adult patients admitted to the Intensive Care Unit, E (exposure) = physical restraint, C (control) = patients who did not use physical restraint and O (outcome) = delirium, and the research question was then elaborated: Is the use of physical restraint a factor associated with the occurrence of delirium in critical patients?

Step 2: Definition of the tools for data collection or literature research

In the second stage, an electronic search was performed on the online databases Medical Literature Analysis and Retrieval System Online (MEDLINE) accessed by PubMed, Latin American and Caribbean Health Sciences Literature (LILACS), Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO and Web of Science. For the location of articles in these databases, the following descriptors of the Medical Subject Headings (MeSH) and the Health Science Descriptors (DeCS) were used: "physical restraint", "risk factors" and "delirium", with the help of the Boolean operators "AND" and "OR". With the definition carried out and tested, the terms and keywords were adapted to each database, using as a model the search strategy developed for PubMed/Medline: ((physical restraint)) OR (risk factors)) AND (delirium). The complete search strategy is available in the Supplementary File. Subsequently, a search was carried out in the gray literature on the subject, but no study was identified. The most current survey was conducted on March 20, 2023.

The sample included original articles, with full text and in which delirium was monitored by means of instruments validated for the adult population hospitalized in intensive care units. There was no restriction of language and year of publication in order to include the maximum amount of available evidence, to reduce the risk of publication bias or linguistic bias, and to understand the evolution of knowledge, identifying possible gaps over time.

Step 3: Recruitment of studies from various sources of information

In the third step, the publications found were managed in Mendeley for the removal of duplicates. They were then exported to the free web version of Rayyan® software, allowing automatic and manual analysis of other duplicates found. With the help of this tool, two researchers (A.G.M. and M.S.B.) were able to blindly and independently carry out the evaluation in two stages: (1) reading of the title and abstract and (2) reading of the full text. At each stage, the differences were resolved by consensus between the two researchers, as recommended in the literature.

Step 4: Representation of study characteristics and data organization

With the completion of the selection of productions, there was, based on the data collection instrument, the extraction of the following data from the studies (when available): study characteristics (authors, country

where it was conducted, year of publication, design), characteristics of adult patients (ICU profile, eligibility criteria), follow-up, characteristics of the physical restraint (location, duration and number), characteristics of the delirium outcome (duration and subtypes). The level of evidence of the included studies was determined[15]: level I – meta-analyses; level II – systematic reviews; level III – randomized clinical trials; level IV – cohort and case-control studies; level V – cross-sectional studies and case reports. Then, the data were organized in a descriptive way in tables.

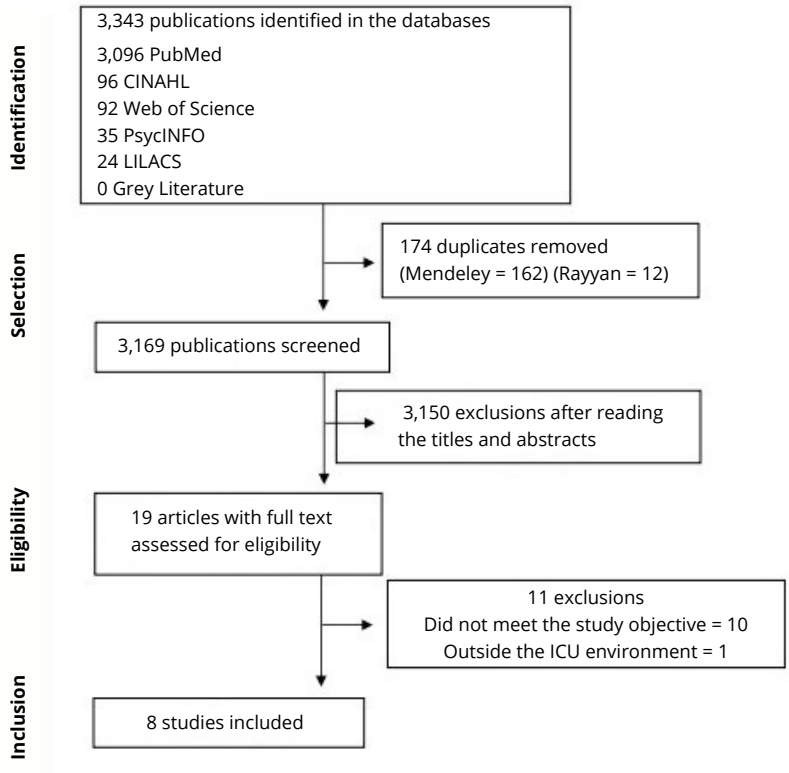
Step 5 "Analysis and interpretation of the results" and Step 6 "Public presentation or review synthesis"

The results were compared with productions about the factors related to the occurrence of delirium in critical patients and its clinical outcomes. Considering that this study did not carry out evaluation with human beings, using secondary information from databases of public access and domain, exclusively through scientific productions, it was not necessary to submit to the Research Ethics Committee, according to the Resolution of the National Health Council n. 466, of December 12, 2012[16], and its complementary resolutions. The ethical aspects were guaranteed through due citation of authorship of the included articles.

3. Results

The searches in the databases identified 3,343 articles. After excluding the duplicates and reading the titles and abstracts, 19 articles were selected for the analysis of the full text. In the end, eight articles met the eligibility criteria. Figure 1 shows the flowchart with the steps of identification and selection of studies for the integrative review.

Figure 1. Flowchart of the study selection process for the integrative review adapted from the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA)[16]



Source: the authors (2025).

Table 1 summarizes the characterization of the 8 selected studies. The articles were published between 2009 and 2021 and the design of the studies varied between prospective cohort (n = 5) and cross-sectional (n = 3). Two articles were conducted in unspecified ICUs[17,18], three in mixed (clinical-surgical) ICUs[6,19,20], while the other three were of the surgical type, cardiothoracic/general and traumatic.[21-23] The studies evaluated specific populations: patients aged ≥ 18 years[6,20,23] and score on the Glasgow scale ≥ 106, patients aged ≥ 65 years[18,22], patients who required invasive ventilator support for at least 48 hours[17] and patients admitted for mild to moderate cranioencephalic trauma.[23]

The main outcomes evaluated in these publications, related to the objective of this literature review, were: incidence or prevalence of delirium and prevalence of the use of physical restraint.

Table 1. Characterization of the studies included in the integrative review (to be continued)

Authors (Year)/ Country	Design	Scenario	Participants	Study objective	Associated factors/risk factors investigated	Outcomes investigated	Level of evidence of the study
Van Rompaey et al. (2009)[6] Not located	Prospective cohort	Mixed ICUs	Patients > 18 years old, with a minimum stay of 24 hours in the ICU, with a Glasgow Coma Scale ≥ 10	To study factors related to patient characteristics, previous pathologies, acute illness and intensive care unit environment and their contribution to the development of delirium	Patient characteristics, comorbidities, acute illness and environmental factors	Incidence of delirium	Level IV
Bryczkowski et al. (2014)[21] USA	Prospective cohort	Surgical ICU	Trauma victims, aged > 50 years, with a minimum stay of 24 hours in the ICU	To identify modifiable and non-modifiable factors that prevent delirium in an elderly trauma population admitted to a surgical ICU.	Sociodemographic, clinical and trauma-related factors	Incidence of delirium	Level IV
Limpawattana et al (2015)[18] Thailand	Prospective observational	Unspecified ICU	Thai patients ≥ 65 years old	To study the prevalence, incidence and risk factors for delirium among Thai elderly in ICU.	Patient characteristics, comorbidities, clinical and environmental factors	Incidence and prevalence of delirium	Level IV
Kwizera et al (2015)[17] Uganda	Prospective cohort	Unspecified ICUs	Patients who required mechanical ventilation for at least 48 hours	To determine the incidence, outcomes and factors associated with delirium in Ugandan ICU patients.	Patient characteristics, medical history, clinical and treatment-related factors	Incidence of delirium	Level IV
Duceppe et al (2019)[23] Canada	Prospective observational	Trauma ICU	Patients ≥ 18 years admitted for mild or moderate trauma	To assess modifiable and non-modifiable risk factors for delirium in trauma patients admitted to the ICU	Patient characteristics, medical history, clinical factors, treatment-related factors, and environmental factors	Incidence of delirium	Level IV

Table 1. Characterization of the studies included in the integrative review (conclusion)

Authors (Year)/ Country	Design	Scenario	Participants	Study objective	Associated factors/risk factors investigated	Outcomes investigated	Level of evidence of the study
Li et al (2020)[22] China	Prospective cohort	General or cardiothoracic ICU	Patients ≥ 65 years admitted to general or cardiothoracic ICU	To explore the incidence rate of delirium in elderly patients and determine associated risk factors	Patient characteristics, medical history, clinical factors, sleep quality, and treatment-related factors	Incidence of delirium	Level IV
Lago et al (2020)[20] Brazil	Prospective cohort	Mixed ICUs	Clinical, neurological and surgical patients, aged > 18 years and with an ICU stay of more than 24 hours	To detect the incidence of delirium and the factors associated with its occurrence in ICUs of a public hospital	Use of anticholinergics, sedation, mechanical ventilation, blood transfusion, opiates, physical restraint and history of alcoholism and high blood pressure	Incidence of delirium	Level IV
Kawai et al (2021)[19] Japan	Prospective observational	Mixed ICUs	Patients > 20 years	To determine the prevalence and factors associated with the use of physical restraints in ICUs in Japan.	Patient characteristics, clinical and treatment-related factors, and delirium status	Prevalence of use of physical restraint	Level IV

Source: the authors (2025).
**Evidence of Level IV: cohort and case-control studies.

Table 2 presents the main results of this integrative review. It can be seen that the frequency of delirium in patients who used physical restraint ranged from 35% to 79.6%, with odds ratios ranging from 4.16 (95% CI 2.37-7.29) to 33.84 (95% CI 11.19-102.36).

Table 2. Main results of the integrative review (to be continued)

Authors (year)	Sample by group	Characteristics of physical restraint (location, duration and number)	Characteristics of delirium (subtypes and duration)	Main Results	Validated instrument used in delirium monitoring	Follow-up
Van Rompaey et al. (2009)[6]	With delirium: 66 Without delirium: 226	Not informed	Not informed	Patients with delirium who used physical restraint: 25 (38%) Patients without delirium who used physical restraint: 4 (2%) OR (95% CI): 33.84 (11.19-102.36); p < 0.001	NEECHAM	Not informed
Bryczkowski et al (2014)[21]	With delirium: 69 Without delirium: 46	Not informed	Not informed	Days free of physical restraint: Patients with delirium: 23 days (range 22-25 days) Patients without delirium: 30 days (range 29-30 days) p < 0.001	CAM-ICU	Until discharge from the ICU or death
Limpawattana et al (2015)[18]	With delirium: 44 Without delirium: 55	Not informed	Hyperactive: 16 (36.4%) Mixed: 15 (34.1%) Hypoactive: 13 (29.5%)	Patients with delirium who used physical restraint: 25 (56.82%) Patients without delirium who used physical restraint: 3 (5.45%) Adjusted OR (95% CI): 22.81 (6.17-84.34); p < 0.001	CAM-ICU	Until the development of delirium and its resolution, death, transfer or a maximum of 28 days in the ICU
Kwizera et al (2015)[17]	Using physical restraint: 49 Without physical restraint: 109	Not informed	Not informed	Patients with delirium who used physical restraint: 39 (79.6%) Patients without delirium who used physical restraint: 10 (20.41%) p < 0.001	CAM-ICU	Until discharge from the ICU or death

Table 2. Main results of the integrative review (conclusion)

Authors (year)	Sample by group	Characteristics of physical restraint (location, duration and number)	Characteristics of delirium (subtypes and duration)	Main Results	Validated instrument used in delirium monitoring	Follow-up
Duceppe et al (2019)[23]	With delirium: 58 Without delirium: 92	Not informed	Not informed	Adjusted HR (95% CI): 2.13 (1.07-4.24) p = 0.032	CAM-ICU	Until resolution of delirium, discharge from the ICU or death
Li et al (2020)[22]	With delirium: 76 Without delirium: 39	Not informed	Hypoactive: 38 (50%) Mixed: 29 (38.2%) Hyperactive: 9 (11.8%)	Patients with delirium who used physical restraint: 35 (46.1%) Patients without delirium who used physical restraint: 1 (2.6%) OR (95% CI): 13.04 (1.57-107.94) p = 0.017	CAM-ICU	Not informed
Lago et al (2020)[20]	With delirium: 20 Without delirium: 39	Not informed	Not informed	Patients with delirium who used physical restraint: 15 (75%) Patients without delirium who used physical restraint: 14 (35.9%) RR (95% CI): 3.10 (1.30-7.43)	CAM-ICU	Until discharge from the ICU
Kawai et al (2021)[19]	Using physical restraint: 259 Without physical restraint: 528	Location of restriction: wrist (95%), glove-type (9.7%) and lower limbs (1.2%)	Not informed	Patients with delirium who used physical restraint: 95 (36.8%) Patients with delirium who did not use physical restraint: 40 (7.6%) OR (95% CI): 4.16 (2.37-7.29) p < 0.001	CAM-ICU ICDSC	Not informed

Source: the authors (2025).
CAM-ICU: Confusion Assessment Method for the Intensive Care Unit; HR: Hazard Ratio; CI: confidence interval; ICDSC: The Intensive Care Delirium Screening Checklist; NEECHAM: Neelon and Champagne Confusion Scale; OD: Odds Ratio; RR: Relative Risk.

The Bryczkowski[21] study was the only one that did not present the frequency of delirium per group of patients (with and without physical restraint), reporting the overall incidence of delirium in the sample (61%), then evaluating the number of days free of restraint in the groups with and without delirium, finding a lower number of days free of physical restraint in patients who had delirium ($p < 0.001$), thus revealing that the greater the number of days in use of physical restraint, the greater the possibility of developing delirium.

Only two studies included evaluated the motor spectra of delirium, and in one of them, the hyperactive had a higher occurrence with 36.4% of cases[17], while in the other, the hypoactive had a higher occurrence with 50% of cases.[22] However, these results focused on the overall number of patients who developed delirium, along with other associated factors that were investigated. There was no description of the percentage of delirium spectra exclusively in patients who made use of physical restraint.

Regarding the characteristics of physical restraint employed in patients, the study by Kawai[19] was the only one that presented this information, showing that the location of the physical restraint on the wrists was the most used. Moreover, none of the included studies evaluated duration of use, number and location of physical restraint and its association with occurrence, severity and duration of delirium.

Most articles (n=7) used the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)[17-22] as a tool for monitoring delirium, and one of them associated CAM-ICU with The Intensive Care Delirium Screening Checst.[19] Only one article used the Neelon and Champagne Confusion Scale tool – NEECHAM.[6]

4. Discussion

The results found in the eight articles included in this integrative review suggest that the use of physical restraint is a factor associated with the occurrence of delirium in critical patients. It is important to note that, among the studies included, only one aimed exclusively at assessing whether physical restraint was a factor associated with the occurrence of delirium.[19] All the others included physical restraint within other variables that were also investigated as possible associated factors.

Furthermore, although a wide electronic search was carried out in large databases, there were no articles evaluating whether the use of physical restraint influenced the duration of delirium, as well as whether the days of the restraint use raised the severity of delirium and whether any subtype of delirium was more common in patients who were restrained.

A cohort study revealed that delirium was considered persistent in patients who were restrained.[24] The literature shows that patients who have been in delirium for a longer period are at greater risk of long-term cognitive dysfunction and higher mortality.[25] Concerning the subtypes of delirium, hypoactive is the most common in ICUs and the most deleterious in long-term[26], which reveals the scientific impact of recognizing whether there is an association between restriction use and the manifestation of this motor spectrum. Therefore, it becomes relevant to develop more studies that evaluate the variables duration of delirium and subtypes of delirium.

The relationship of physical restriction characteristics (location and days in use) with delirium occurrence also needs to be better investigated. It is known that physical restraint is used on a large scale in hospital institutions, mainly within ICUs, with a prevalence of 93.3%.[27] Most professionals use the restraint as a justification to prevent patients from removing invasive devices, as well as an attempt to restrain them when they are agitated. Nevertheless, restraint increases the psychomotor agitation and aggressiveness due to its interference with cognitive functions.[27]

Only the location on the wrist and hands was reported in a manuscript that found a strong relationship between the use of restraint and the occurrence of delirium in critical patients. However, a direct relationship with the location of the restraint has not been established. A publication that aimed to characterize the physical restriction of patients

admitted to ICUs showed that the location in the upper limbs was the most prevalent.[28] Corroborating this finding, about 28% of the patients contained were restrained in the wrists in a study that investigated the prevalence of restraint in the hospital environment.[27] Therefore, it is necessary to identify whether there is a positive association with the occurrence of delirium.

By keeping the patient confined to bed, physical restraint compromises mobilization, a key element for the restoration of physical function and for the reduction of time in the ICU. Recent studies highlight early mobilization as an effective therapeutic strategy, not only to promote the improvement of functional capacity, but also to favor the interaction of the patient with the environment, functioning as a sensory-motor stimulation.[26,29] In addition, there is evidence that this intervention can reduce both the incidence and duration of delirium episodes, reinforcing its importance in clinical practice. There is a need to balance patient safety with the promotion of practices that encourage mobility, highlighting early mobilization as an approach to optimize recovery and minimize complications such as delirium in critical care environments.[26]

The Federal Council of Nursing, through Resolution n. 427 of 2012, determines that nursing professionals may only employ the restraint in urgency and emergency situations and in accordance with the protocols established in the health institution. Moreover, the restraint should be used only when it is the only alternative capable of preventing harm to the patient or others involved in the process, and never in a punitive manner or for the convenience of the team.[11] Nevertheless, it is possible to see that in practice this resolution is not followed in its entirety. This finding can be explained by the lack of knowledge of many professionals about the legal guidelines that involve the use of physical restraint, as well as the lack of local guidance through protocols by institutions, contributing in this way to an unsafe practice.[30]

Some studies conducted with nurses, in order to understand the factors that lead to the use of restraint, show that, generally speaking, the justification is to promote the safety of the patient and the health team.[30] Thus, it is understood that these professionals see it as a therapeutic measure, when in fact there is no scientific evidence about its benefit. This reiterates that the use of restraints in the intensive care environment needs to be carefully evaluated, as well as carried out only through informed indications, with a team trained and capable of performing an effective monitoring.[6]

It is essential to highlight that, among the studies analyzed, only one had as its exclusive focus the evaluation of physical restraint as a factor associated with the occurrence of delirium.[19] The other studies considered the physical restraint within a broader set of variables, which were also investigated as potential associated factors. This multifactorial approach may make it difficult to clearly identify the role of physical restraint in the development of delirium, emphasizing the need for more targeted and specific research to better understand this relationship. Thus, more studies focused on physical restraint can contribute to the understanding of its direct and indirect effects on the occurrence of delirium, allowing more effective interventions in clinical practice.

This review presents as limitations the fact that there may have been an underdiagnosis of delirium in the included articles, since in some of them the tool for monitoring this dysfunction was applied only once a day, while indicating its application once per shift or whenever there is an acute change or fluctuation in the mental state of the patient. Furthermore, it was not possible to evaluate the association of physical restraint and number of days in use with duration, severity and delirium subtypes. Finally, the reduced number of studies found stands out due to the scarcity of productions focused on the theme.

On the other hand, this scientific production presents innovative results in identifying trends, gaps and possible biases in existing studies in understanding the relationship between physical restraint and delirium in critical patients. Thus, the research provides subsidies for the review of clinical protocols, encouraging safer and more humanized approaches in the management of these patients. In addition, the research contributes to the development of alternative strategies to physical restraint, such as multidisciplinary interventions aimed at preventing delirium, and studies with more robust methodologies, promoting more evidence-based and qualified assistance.

5. Conclusion

The results of this integrative review suggest a positive association between the use of physical restraint and the occurrence of delirium. Physical restraint continues to be used on a large scale in ICUs in several countries, including Brazil, but there is a lack of studies aimed at evaluating specifically its use as a risk factor for the occurrence of delirium.

In view of the results found in this research, it is verified that the use of physical restraint should be used by nursing carefully, based on an individualized evaluation, considering its potential risks and benefits, as well as ensuring that it is employed for the shortest time possible, using complementary strategies to minimize its negative impacts. Therefore, it can contribute to the reduction of delirium occurrence and consequently to the improvement of prognosis and clinical outcomes of patients admitted to Intensive Care Units.

Moreover, more studies should be conducted investigating the perception of health professionals about the use of physical restraint, as well as studies on safe and effective alternatives. In addition, investigations on the impacts of physical restraint on clinical outcomes may contribute to improving care practices and promoting the safety of critical patients.

Authors' contributions

The authors declared to have made substantial contributions to the work in terms of research conception or design; data acquisition, analysis or interpretation for the work; and writing or critical review of relevant intellectual content. All authors approved the final version to be published and agreed to take public responsibility for all aspects of the study.

Competing interests

No financial, legal or political conflict involving third parties (government, companies and private foundations, etc.) has been declared for any aspect of the submitted work (including but not limited to grants and funding, participation in advisory board, study design, manuscript preparation, statistical analysis, etc.).

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References

1. Sena TL, Massote B de B, Cótica LFA, Carvalho LASM de, Cunha TMF. Delirium - uma revisão abrangente sobre a epidemiologia, etiologia, fatores de risco, diagnóstico, estratégias de prevenção e manejo. Braz. J. Hea. Rev. 2024;7(4):e71698. https://doi.org/10.34119/bjhrv7n4-195

2. American Psychiatric Association. Manual diagnóstico e estatístico de transtornos mentais: DSM-5-TR. Porto Alegre: Artmed; 2023.

3. Pinheiro FGMS, Santos ES, Barreto DC, Weiss C, Oliveira JC, Vaez AC, et al. Prevalência e fatores de risco associados ao delirium em unidade de terapia intensiva. Acta Paul Enferm. 2022;35:eAPE00646. https://doi.org/10.37689/acta-ape/2022AO006466

4. Salluh JIF, Wang H, Schneider EB, Nagaraja N, Yenokyan G, Damluji A, et al. Outcome of delirium in critically ill patients: systematic review and meta-analysis. BMJ. 2015;350:h2538. https://doi.org/10.1136/bmj.h2538

5. Krewulak KD, Stelfox HT, Leigh JP, Ely EW, Fiest K. Incidence and Prevalence of Delirium Subtypes in an Adult ICU: A Systematic Review and Meta-Analysis. Critical Care Medicine. 2018;46(12):2029-2035. https://doi.org/10.1097/ccm.0000000000003402

6. Van Rompaey B, Elseviers MM, Schuurmans MJ, Shortridge BLM, Truijen S, Bossaert L. Risk factors for delirium in intensive care patients: a prospective cohort study. Crit Care. 2009;13(3):R77. https://doi.org/10.1186/cc7892

7. Santos GF, Oliveira EG, Souza RCS. Good practices for physical restraint in intensive care units: integrative review. Rev Bras Enferm. 2021;74(3):e20201166. https://doi.org/10.1590/0034-7167-2020-1166

8. Luk, E, Sneyers, B, Rose, L. Predictors of physical restraint use in Canadian intensive care units. Crit Care. 2014;18:R46. https://doi.org/10.1186/cc13789

9. Van DKAW, Peelen LM, Raijmakers RJ, Vroegop RL, Bakker DF, Tekatli H, et al. Use of physical restraints in Dutch intensive care units: a prospective multicenter study. Am J Crit Care. 2015;24(6):488-95. https://doi.org/10.4037/ajcc2015348

10. Souza LMS. Mechanical restraint in the hospital environment: a cross-sectional study. [Internet]. Niterói: Escola de Enfermagem da Universidade Federal Fluminense; 2018. Available from: https://app.uff.br/riuff/handle/1/7240

11. Resolução COFEN nº 427/2012, de 08 de maio de 2012. Dispõe sobre a sistematização da assistência de Enfermagem e a implementação do processo de Enfermagem em ambientes públicos ou privados, em que ocorre o cuidado profissional de Enfermagem. [Internet]. COFEN. 2012. Available from: https://www.legisweb.com.br/legislacao/?id=241122

12. Devlin JW, Skrobik Y, Gélinas C, Needham DM, Slooter AJC, Pandharipande PP, et al. Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU. Crit Care Med. 2018;46(9):825-873. https://doi.org/10.1097/ccm.0000000000003299

13. Sousa MNA, Bezerra ALD, Egypto IAS. Trilhando o caminho do conhecimento: o método de revisão integrativa para análise e síntese da literatura científica. OLEL. 2023, 21(10):18448-83. https://doi.org/10.55905/oelv21n10-212

14. Ministério da Saúde (Brasil). Diretrizes metodológicas: Elaboração de Revisão Sistemática e Metanálise de estudos observacionais comparativos sobre fatores de risco e prognóstico. [Internet]. Brasília: MS; 2014. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/diretrizes_metodologicas_fatores_risco_prognostico.pdf

15. Montagna E, Zaia V, Laporta GZ. Adoption of protocols to improve quality of medical research. einstein (São Paulo). 2019;18:eED5316. https://doi.org/10.31744/einstein_journal/2020ED5316

16. Conselho Nacional de Saúde (Brasil). Resolução nº 466, de 12 de dezembro de 2012. Available from: https://bvsms.saude.gov.br/bvs/saudelegis/cns/2013/res0466_12_12_2012.html

17. Kwizera A, Nakibuuka J, Ssemogerere L, Sendikadiwa C, Obua D, Kizito S, et al. Incidence and Risk Factors for Delirium among Mechanically Ventilated Patients in an African Intensive Care Setting: An Observational Multicenter Study. Crit Care Res Pract. 2015;2015(1):491780. https://doi.org/10.1155/2015/491780

18. Limpawattana P, Panitchote A, Tangvoraphonkchai K, Suebsoh N, Eamma W, Chanthonglarng B, et al. Delirium in critical care: a study of incidence, prevalence, and associated factors in the tertiary care hospital of older Thai adults. Aging Ment Health. 2016;20(1):74-80. https://doi.org/10.1080/13607863.2015.1035695

19. Kawai Y, Hamamoto M, Miura A, Yamaguchi M, Masuda Y, Iwata M, et al. Prevalence of and factors associated with physical restraint use in the intensive care unit: a multicenter prospective observational study in Japan. Intern Emerg Med. 2022;17(1):37-42. https://doi.org/10.1007/s11739-021-02737-5

20. Lago MS, Faustino TN, Mercês MC, Silva DS, Cruz Pessoa LS, Santos Oliveira MT. Delirium e fatores associados em unidades de terapia intensiva: estudo piloto de coorte. Rev Enf Contemp. 2020;9(1):16-23. https://doi.org/10.17267/2317-3378rec.v9i1.2501

21. Bryczkowski SB, Lopreiato MC, Yonclas PP, Sacca JJ, Mosenthal AC. Risk factors for delirium in older trauma patients admitted to the surgical intensive care unit. J Trauma Acute Care Surg. 2014;77(6):944-51. https://doi.org/10.1097/ta.0000000000000427

22. Li X, Zhang L, Gong F, Ai Y. Incidence and Risk Factors for Delirium in Older Patients Following Intensive Care Unit Admission: A Prospective Observational Study. J Nurs Res. 2020;28(4):e101. https://doi.org/10.1097/jnr.0000000000000384

23. Duceppe MA, Williamson DR, Elliott A, Para M, Poirier MC, Delisle MS, et al. Modifiable Risk Factors for Delirium in Critically Ill Trauma Patients: A Multicenter Prospective Study. J Intensive Care Med. 2019;34(4):330-336. https://doi.org/10.1177/0885066617698646

24. Pisani MA, Murphy TE, Araujo KL, Van Ness PH. Factors associated with persistent delirium after intensive care unit admission in an older medical patient population. J Crit Care. 2010;25(3):540.e1-7. https://doi.org/10.1016/j.jcrc.2010.02.009

25. Barcellos RA, Zanon A, Castilhos TC, Candaten AE, Báo ACP. Prevalence of delirium in adult intensive therapy. RSD. 2020;9(8):e165985431. https://doi.org/10.33448/rsd-v9i8.5431

26. Marra A, Ely EW, Pandharipande PP, Patel MB. The ABCDEF Bundle in Critical Care. Crit Care Clin. 2017;33(2):225-243. https://doi.org/10.1016/j.ccc.2016.12.005

27. Souza LMS, Santana RF, Capeletto CSG, Menezes AK, Delvalle R. Factors associated with mechanical restraint in the hospital environment: a cross-sectional study. Rev esc enferm USP. 2019;53:e03473. https://doi.org/10.1590/s1980-220x2018007303473

28. Silva KC, Paes MC, Brusamarello T. Caracterização da restrição física de pacientes em unidades de cuidados intensivos de hospital geral. Enferm. Foco. 2020;11(4):167-173. https://doi.org/10.21675/2357-707X.2020.v11.n3.3239

29. Santos AC, Santos LRM, Nascimento SSM. Repercussão e benefícios da mobilização precoce em pacientes críticos restritos ao leito. Revista JRG. 2021;4(8):59-66. https://doi.org/10.5281/zenodo.4568404

30. Dannette AM, Teresa Panchisin, Maureen A. Seckel; Reducing Use of Restraints in Intensive Care Units: A Quality Improvement Project. Crit Care Nurse. 2018;38(4):e8–e16. https://doi.org/10.4037/ccn2018211