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RESEARCH ARTICLE (ORIGINAL)

Nursing Assessment and Intervention in the Management of Delirium in Intensive Care: A Quantitative Study

Avaliação e Intervenção do Enfermeiro na Gestão do Delirium em Cuidados Intensivos: Estudo Quantitativo

Evaluación e Intervención Enfermera en la Gestión del Delirio en Cuidados Intensivos: Estudio Cuantitativo

Nuno Edgar Carones Esteves [1]
https://orcid.org/0000-0002-2388-924X

Henrique Joaquim da Fonseca Filipe Lopes [1]
https://orcid.org/0009-0001-2229-7488

Anabela Santos Vieira [1]
https://orcid.org/0009-0001-2898-5345

Patricia Andreia Santos Cardoso [1]
https://orcid.org/0000-0003-4740-2624

Igor Emanuel Soares-Pinto [2, 3, 4]
https://orcid.org/0000-0003-3739-2020

Carla Regina Rodrigues da Silva [5, 6, 7]
https://orcid.org/0000-0001-5147-2751

[1] São João Local Health Unit, Intensive Medicine, Porto, Portugal

[2] Portuguese Red Cross Northern School of Health, Oliveira de Azeméis, Portugal

[3] Center for Interdisciplinary Research in Health (CIIS), Universidade Católica Portuguesa, Porto, Portugal

[4] Research and Development Unit, Portuguese Red Cross Northern School of Health, Oliveira de Azeméis, Portugal

[5] Oncology Nursing Research Unit, IPO Porto Research Center (CI-IPOP), Porto, Portugal

[6] RISE@CI-IPOP (Health Research Network), Porto, Portugal

[7] Health School, Polytechnic Institute of Viana do Castelo, Viana do Castelo, Portugal

Corresponding author
Nuno Edgar Carones Esteves
E-mail: nunoesteves11@hotmail.com

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Abstract

Background: Delirium remains underdiagnosed and neglected in intensive care units (ICUs), significantly affecting the prognosis and recovery of critically ill patients.
Objectives: To assess nurses' knowledge of scales used to assess delirium in critically ill patients and to identify reasons for not using them, risk factors for delirium, and nursing interventions used.
Methodology: A quantitative, descriptive, exploratory, and cross-sectional study involving 115 nurses from an ICU. The data collection instrument was a questionnaire.
Results: It was found that 44.3% of nurses were familiar with a scale for assessing delirium in critically ill patients, with the most commonly cited scale being the Confusion Assessment Method for the Intensive Care Unit. Only 5.2% of nurses used a delirium assessment scale, and the most frequently reported nursing intervention was "Promote a quiet environment" (57.9%).
Conclusion: Although nurses often do not assess delirium or assess it inadequately, they still implement interdependent and autonomous interventions to care for critically ill patients with delirium.

Keywords: delirium; intensive care; nursing

Resumo

Enquadramento: O *delirium* ainda é subdiagnosticado e negligenciado nas Unidades de Cuidados Intensivos, condicionando significativamente o prognóstico e recuperação da Pessoa em Situação Crítica.
Objetivos: Avaliar o conhecimento dos enfermeiros sobre as escalas de avaliação do *delirium* na Pessoa em Situação Critica; identificar os motivos da sua não utilização, os fatores que concorrem para o *delirium* e intervenções de enfermagem implementadas.
Metodologia: Estudo quantitativo, descritivo, exploratório e transversal, com 115 enfermeiros de uma Unidade Cuidados Intensivos. O instrumento de recolha de dados foi um questionário.
Resultados: Verificou-se que 44,3% dos enfermeiros conhece uma escala de avaliação do *delirium* na Pessoa Situação Crítica, sendo a *Confusion Assessment Method for Intensive Care Unit* a mais referida. Apenas 5,2% dos enfermeiros aplica uma escala de avaliação de *delirium* e a intervenção de enfermagem mais apontada foi "promover ambiente tranquilo" (57,9%).
Conclusão: O *delirium* não é habitualmente avaliado ou é avaliado de forma inadequada pelos enfermeiros, no entanto, estes implementam intervenções interdependentes e autónomas no cuidado à Pessoa em Situação Crítica com *delirium*.

Palavras-chave: *delirium*; cuidados intensivos; enfermagem

Resumen

Marco contextual: El delirio sigue estando infradiagnosticado y desatendido en las unidades de cuidados intensivos, lo que afecta significativamente al pronóstico y la recuperación de los pacientes críticos.
Objetivos: Evaluar el conocimiento de los enfermeros de las escalas utilizadas para valorar el delirio en pacientes críticos; identificar las razones para no utilizarlas, los factores que contribuyen al delirio y las intervenciones de enfermería aplicadas.
Metodología: Estudio cuantitativo, descriptivo, exploratorio y transversal con 115 enfermeros de una unidad de cuidados intensivos. El instrumento de recogida de datos fue un cuestionario.
Resultados: Se observó que el 44,3% de los enfermeros conoce una escala para evaluar el delirio en el enfermo crítico, y la *Confusion Assessment Method for the Intensive Care Unit* fue la más señalada. Sólo el 5,2% de los enfermeros aplica una escala de evaluación del delirio y la intervención de enfermería más mencionada fue "promover un entorno tranquilo" (57,9%).
Conclusión: Los enfermeros no suelen evaluar el delirio o lo hacen de forma inadecuada, y, sin embargo, aplican intervenciones interdependientes y autónomas cuando atienden a enfermos críticos con delirio.

Palabras clave: delirio; cuidados intensivos; enfermería

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Introduction

Delirium in critically ill patients is still underdiagnosed in intensive care units (ICUs) and is sometimes overlooked by healthcare professionals. This significantly impacts both short-term and long-term prognosis and recovery (Stollings et al., 2021). The prevalence of delirium in critically ill patients can reach up to 80% and is linked to increased length of stay, mortality, and morbidity. It also contributes to higher direct and indirect costs, prolongs mechanical ventilation, and can lead to long--term cognitive and functional impairment (Moss et al., 2022). Assessing and monitoring delirium in critically ill patients is crucial for early detection and implementing treatment strategies to prevent severe complications. However, identifying the risk factors or causes of delirium can be challenging, and a thorough assessment is needed to identify those that are reversible. Given the importance of early identification, reliable tools should be used to detect delirium, helping to ensure the quality of care (Devlin et al., 2018).

Research highlights that the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC) are the two most reliable and validated tools for assessing and monitoring delirium in critically ill patients (Moss et al., 2022). The 2018 Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/ Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU (PADIS guidelines), developed by the Society of Critical Care Medicine, categorize risk factors into modifiable factors (blood transfusions and benzodiazepine use) and non-modifiable factors (greater age, dementia, prior coma, pre-ICU emergency surgery, and increasing severity scores). There is substantial evidence linking these factors to the occurrence of delirium (Devlin et al., 2018). Nurses play a crucial and autonomous role in both the prevention and management of delirium. Understanding the precipitating factors is essential for preventing delirium and managing it once it occurs (Prayce et al., 2018).

This study aimed to assess nurses' knowledge of scales used to assess delirium in critically ill patients and to identify reasons for not using them, risk factors for delirium, and nursing interventions used.

Background

Delirium is a common manifestation of brain dysfunction characterized by an acute, transient, and fluctuating course of confusion, with cognitive changes involving memory, perception, and attention. However, delirium remains under-researched within the scientific community (Santos et al., 2022). The COVID-19 pandemic has reduced the attention paid to this phenomenon, leading to reduced monitoring, prevention, and treatment of delirium in critically ill patients. Factors such as staff shortages, increased use of benzodiazepines, deep sedation, and restriction of visits have increased the incidence of delirium (Kotfis et al., 2022). The pharmacological management of agitated critically ill patients plays a crucial role, as it has the potential to worsen delirium. However, the use of psychotropic drugs, especially benzodiazepines, remains controversial. There is a clear need for studies to establish their efficacy and identify the most suitable medications for these situations (Stollings et al., 2021).

Cognitive function in critically ill patients with delirium is impaired and may persist after hospital discharge. The longer this dysfunction lasts, the more likely it is to persist and become irreversible (Stollings et al., 2021). Consequently, it is essential to implement interventions aimed at improving and training the cognitive performance of critically ill patients, as well as to assess the effectiveness of these strategies. Moreover, family involvement is crucial in preventing delirium in critically ill patients, proving to be particularly effective when family members participate directly in care (Li et al., 2025).

Additionally, a group of experts in intensive care medicine held a working meeting to develop the PADIS guidelines, which are widely recognized and accepted as a reference in the treatment of critically ill patients. These guidelines include a range of recommendations, including those focused on the prevention and management of delirium (Devlin et al., 2018).

Recent studies suggest, for example, incorporating home-like architecture in ICUs to create a more familiar environment for critically ill patients (Kotfis et al., 2022). In the prevention and management of delirium, nurses can implement both pharmacological and non-pharmacological interventions. While the latter are simple, they have proven to be the most effective. In contrast, pharmacological interventions remain a subject of debate, highlighting the need for further studies (Devlin et al., 2018; Kotfis et al., 2022).

Research questions

What scales do nurses use to assess delirium in critically ill patients?; What are the reasons for not using scales to assess delirium in critically ill patients?; From the nurses' perspective, what are the risk factors for delirium in critically ill patients?; What interventions do nurses implement for critically ill patients with delirium?

Methodology

This study used a quantitative, descriptive, exploratory and cross-sectional design. A quantitative approach was used to objectively measure the variables under study, allowing for the analysis of patterns and frequencies related to the phenomenon under study. The descriptive nature is aligned with the study's objectives, which focus on assessing nurses' knowledge of delirium assessment scales for critically ill patients and the factors that influence their use and management. The exploratory nature arises from the need to expand knowledge in this area, addressing gaps in the literature on nurses' interventions.

A questionnaire was developed, comprising two parts: the first part includes questions to assess sociodemographic and professional characteristics, while the second part includes questions to assess knowledge of scales used for assessing delirium in critically ill patients, the reasons for not using these scales, and the nursing interventions implemented. The questions 'Do you know any of these scales?' and 'What are the reasons for not using delirium assessment scales?' were designed in an open-ended format. For the other items, multiple-choice options and Likert-type scales were used. Data were collected through a questionnaire, which was distributed in person at an ICU of a healthcare institution in northern mainland Portugal between September and October 2022. The questionnaire was validated by two experts and pre-tested with 10 participants to identify and correct any ambiguities. Data were analyzed using IBM SPSS Statistics software, version 29.0. The sample inclusion criteria included graduate nurses and nurse specialists, regardless of their area of specialization, provided they worked in an ICU and consented to participate in the study. Nurses not directly involved in patient care were excluded. The sample was a convenience sample, selected based on the accessibility to nurses directly involved in clinical practice. This study adhered to the ethical principles for health research involving human subjects. The personal information of participants was safeguarded during questionnaire analysis, with all identifiable elements removed. Data were pseudonymized through coding to ensure anonymity. Access to the database was restricted to the researchers and any identifying elements were removed. The data will be stored for three months after publication and then securely destroyed.

Results

Characterization of the sample

The sample (N = 115) consisted predominantly of female participants (n = 82; 71.3%). The nurses' mean age was 33.71 years (SD = 6.38), ranging from 24 to 57 years. Regarding professional categories, the majority (n = 86; 74.8%) were generalist nurses. Among nurse specialists, 51.6% (n = 16) specialized in medical-surgical nursing, 35.5% (n = 11) in rehabilitation nursing, 6.5% (n = 2) in mental health and psychiatric nursing, and 3.2% (n = 1) in maternal and obstetric health nursing.

Item internal consistency

Cronbach's alpha was used to assess the internal consistency of the items, as this was a preliminary analysis. Pearson's correlation coefficient was used to analyze the correlations among the items in the instrument. Parametric statistics were applied based on the assumption of a normal distribution (Pallant, 2020).

Descriptive statistics, including absolute and relative frequencies, mean, and standard deviation, were used to objectively summarize and interpret the data, making it possible to characterize the sample and identify relevant patterns within the study. Inferential statistics were used to identify inter-variable relationships. Pearson's correlation coefficient was applied to assess the association among items assessing delirium in critically ill patients. The Cronbach's alpha value for the eight items in the instrument was 0.568, indicating poor internal consistency (Pallant, 2020). Regarding statistically significant correlations, the following items displayed correlations ≥ 0.30 (potentially significant): 'Do I frequently assess delirium in awake patients?' (0.53); 'Do I assess delirium in sedated or non-communicative patients?' (0.49); 'Do I frequently make delirium-related records in information systems?' (0.47), and 'Do I frequently use delirium assessment scales?' (0.31). The results indicate that the internal consistency of the items in this preliminary version, designed for this study, could be improved by excluding the item 'Do I experience difficulties in using delirium assessment scales?'. Eliminating this item raises the alpha value from 0.568 to 0.662, thereby meeting the minimum criterion of $\alpha = 0.60$, which enables a more confident progression to inferential statistical analysis (Pallant, 2020).

The analysis of inter-item correlations revealed positive, moderate, and statistically significant associations. Participants who often assessed delirium in awake patients were also likely to document it in information systems (r = 0.465; n=115; $p < 0.01$). Those who assessed delirium in sedated or non-communicative patients exhibited the same tendency (r = 0.523; n = 115; $p < 0.01$). A weak but statistically significant positive correlation was observed between the perceived ease of identifying delirium diagnoses in the ICU and the frequency of its assessment in awake patients (r = 0.337; n = 115; $p < 0.01$). In addition, the assessment of delirium in awake patients showed a moderate correlation with its assessment in sedated or non-communicative patients (r = 0.514; n = 115; $p <$ 0.01). Finally, the perceived importance of delirium in care planning showed a weak but statistically significant association with the need for training in the area (r = 0.349; n = 115; $p < 0.01$), suggesting that nurses acknowledge the importance of expanding their knowledge in this area to enhance clinical practice.

A statistically significant positive association was also found between the use of delirium assessment scales and their application in awake patients (r = 0.310; n = 115; $p < 0.01$) as well as in sedated or non-communicative patients (r = 0.470; n = 115; $p < 0.01$). These findings suggest that nurses who use scales are more likely to assess delirium across different patient profiles.

Knowledge and use of delirium assessment scales in critically ill patients

Regarding knowledge of delirium assessment scales for critically ill patients, 54.8% (n = 63) of participants reported that they were unfamiliar with any of these scales. When asked if they used any delirium assessment scales in clinical practice, 92.2% (n = 106) reported they did not use any scale and only 5.2% (n = 6) reported that they did. Additionally, 2.6% (n = 3) of participants did not answer. Among those who reported using a delirium assessment scale, 16.7% (n = 1) indicated using the CAM-ICU, while 83.3% (n = 5) mentioned the

Richmond Agitation Sedation Scale (RASS), despite the latter not being specifically designed for delirium assessment in critically il patients. Of the 51 nurses who reported being familiar with a scale for assessing delirium for critically ill patients, 47 provided the name of the scale they knew. Of these, the majority, 79.2% (*n* = 38) identified CAM-ICU, while 10.4% (*n* = 5) mentioned the RASS. The most frequently reported reasons for not using delirium assessment scales were a lack of knowledge about the scales (42.6%; *n* = 49) and the unavailability of the scales in the information systems (36.5%; *n* = 42), as shown in Table 1.

Table 1

Knowledge and use of delirium assessment scales in critically ill patients

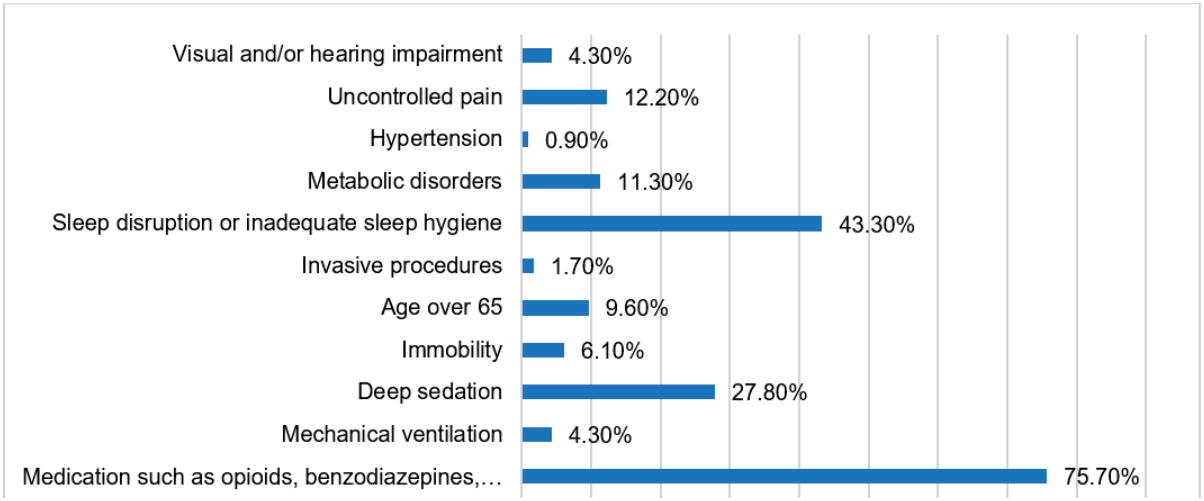
Are you familiar with any delirium assessment scales for critically ill patients?	**Yes**	**No**	**N/A**	**Do you know any of these scales?**	***n* (%)**
	***n* (%)**	***n* (%)**	***n* (%)**	CAM-ICU	38 (79.2%)
	51 (44.3%)	63 (54.8%)	1 (0.9%)	DDS	2 (4.2%)
				DRS	1 (2.1%)
				ICDSC	1 (2.1%)
				RASS	5 (10.4%)
Do you use any delirium assessment scales?	**Yes**	**No**	**N/A**	**Which scale do you use?**	***n* (%)**
	***n* (%)**	***n* (%)**	***n* (%)**	CAM-ICU	1 (16.7%)
	6 (5.2%)	106 (92.2%)	3 (2.6%)	RASS	5 (83.3%)
What are the reasons for not using delirium assessment scales?					***n* (%)**
Not familiar with the scales					49 (42.6%)
Do not recognize the importance of assessing delirium					1 (0.9%)
Lack of time					5 (4.3%)
Scales difficult to apply					11 (9.6%)
Scales unavailable in information systems					42 (36.5%)
N/A					7 (6.1%)

Note. *n* = Number; % = Percentage; N/A = No answer; CAM-ICU = Confusion Assessment Method for the Intensive Care Unit; DDS = Delirium Detection Score; DRS = Delirium Rating Scale; ICDSC = Intensive Care Delirium Screening Checklist; RASS = Richmond Agitation Sedation Scale.

Regarding risk factors for delirium, 83.5% (*n* = 96) of participants identified abstinence from substances, 75.7% (*n* = 87) cited the use of medication, and 44.3% (*n* = 51) reported interrupted sleep or inadequate sleep hygiene. The least frequently mentioned risk factors were high blood pressure and invasive procedures, which were reported by 0.9% (*n* = 1) and 1.7% (*n* = 2) of participants, respectively. This information is illustrated in Figure 1.

Figure 1

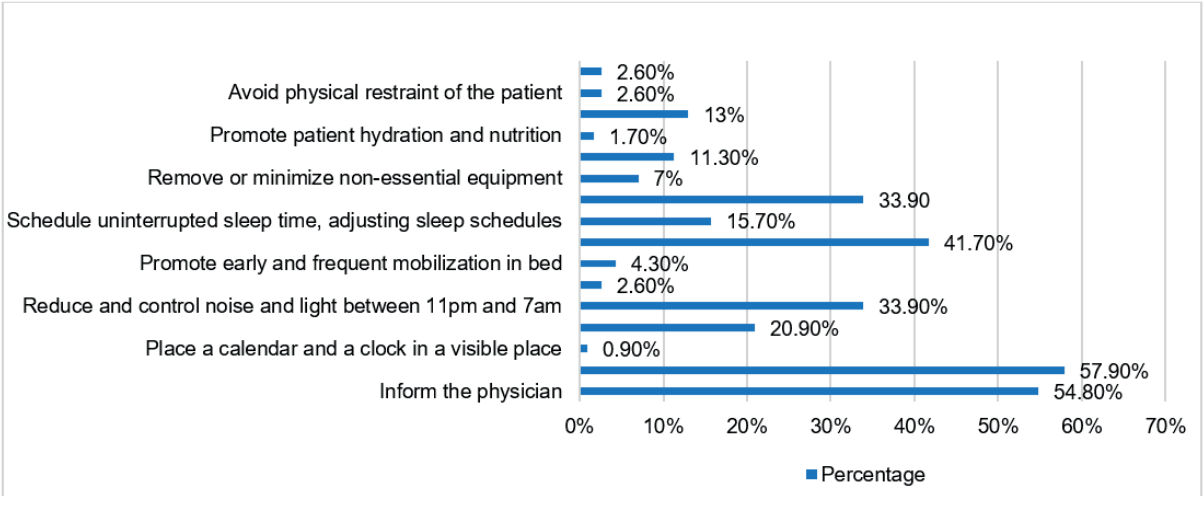
Risk factors for delirium in critically ill patients



The most common nursing interventions for critically ill patients with delirium included: 'inform the physician' (*n* = 53; 54.8%), 'promote a quite environment' (*n* = 56; 57.90%), 'promote sleep and eliminate all factors interfering with it' (*n* = 48; 41.7%), 'reduce and control noise and light between 11 p.m. and 7 a.m.', and 'use patient reorientation techniques' (*n* = 39; 33.9%). The least frequently mentioned strategies were 'promote patient hydration and nutrition' (*n* = 2; 1.7%) and 'place a calendar and a clock in a visible place' (*n* = 1; 0.9%; (Figure 2).

Figure 2

Most common nursing interventions in critically ill patients with delirium



Regarding the question 'Nurses can easily diagnose delirium in an ICU patient', 44.3% (*n* = 51) *agreed*, while 0.9% (*n* = 1) *totally disagreed*.

With respect to the documentation of delirium in nursing records, 60% (*n* = 69) of participants reported that it is not often recorded, 39.1% (*n* = 45) *disagreed*, and 20.9% (*n* = 24) *totally disagreed*. Additionally, 59.6% (*n* = 68) of participants reported that assessing delirium is important and emphasized its relevance for planning nursing care. The majority of participants (60%; *n* = 69) *totally agreed* with the need for training related to delirium in critically ill patients. Additionally, 72.2% (*n* = 83) reported difficulties in using delirium assessment scales, with 36.5% (*n* = 42) *totally agreeing* and 35.7% (*n* = 41) *agreeing*. When participants were asked about assessing delirium in awake versus sedated or non-communicative patients, the findings revealed that delirium is assessed more frequently in awake patients. Specifically,

33% (*n* = 38) of participants *agreed* that they frequently assess delirium in awake patients, whereas 35.7% (*n* = 41) *disagreed* with assessing delirium in sedated or non-communicative patients.

Discussion

Delirium is highly prevalent among critically ill patients, with an estimated incidence of up to 87% (Bohart et al., 2019). However, according to Souza et al. (2018), it remains underdiagnosed due to insufficient knowledge among healthcare professionals and low adherence to monitoring and documentation practices. The results of this study corroborate this, revealing that more than 90% of nurses do not use any delirium assessment scale, which inevitably hampers effective diagnosis. These aspects were identified in one of the few studies conducted in Portugal, where only 4.5% of 111 patients admitted to medical and surgical acute care units and diagnosed with acute confusion/delirium were confirmed to have a delirium diagnosis (Silva et al., 2011). The RASS was the most frequently used tool by nurses to assess delirium (80%). However, it does not independently allow for delirium diagnosis and serves as the initial step in the CAM-ICU assessment process. The CAM-ICU is a validated scale with high sensitivity and specificity for assessing delirium in critically ill patients in the ICU, as previously mentioned (Rasheed et al., 2018). Despite the importance of diagnosing and managing delirium, more than 90% of nurses do not use delirium assessment scales. Delirium is seldom the primary reason for ICU admission, but it develops during hospitalization. The lack of diagnosis by nurses can prolong it, whereas early identification and risk factor management contribute to reducing morbidity and mortality (Vyveganathan et al., 2019).

A descriptive survey applied to nurses and physicians across 74 Chinese hospitals found that although 81% of professionals (56.6% physicians and 18.65% nurses) assessed delirium in the ICU, only 31.6% used a reliable and valid tool like the CAM-ICU (Xing et al., 2017). These findings further reinforce the results of this study. Although healthcare professionals recognize the importance of diagnosing delirium, limited data is available on nurses' current assessment practices, qualifications, or the potential knowledge barriers they encounter. Birge and Aydin (2017) highlighted that education combined with training, systematic use of delirium assessment tools, identification of risk factors, and improvement of preventive interventions are effective measures for the prevention and management of delirium. Additionally, they found that training increases nurses' recognition of the importance of implementing non-pharmacological interventions in their clinical practice. The findings of Birge and Aydin (2017) align with those of this study, which identified the primary reasons for not using delirium assessment scales as the lack of knowledge about these tools and their absence from the information systems in use. These results are also consistent with the qualitative study by Santos et al. (2022), which highlighted professionals' lack of knowledge, challenges in patient cooperation, and inadequate training in applying the CAM-ICU as key factors. Overall, these findings highlight the need for enhanced education and training for healthcare professionals caring for critically ill patients with delirium, as reported by around 60% of nurses in this study. Educational modalities such as case-based small-group learning and simulation-based learning should be implemented to strengthen nurses' competencies in caring for critically ill patients with delirium (Roh, 2021). Nurses document approximately 60 to 90% of the signs and symptoms of delirium, placing them in a privileged position to observe patient behavior and collect data to inform care planning (Moreira, 2019). Recognizing risk factors for delirium – such as age over 65, use of predisposing medications, mechanical ventilation, lack of natural light, noise, and prolonged invasive procedures - is crucial. Identifying these factors enables targeted interventions on modifiable factors, thereby reducing the impact of delirium. Several authors emphasize the pivotal role of nurses in early identification and intervention in modifiable risk factors to prevent delirium and reduce associated morbidity and mortality (Devlin et al., 2018; Vyveganathan et al., 2019). The ICU environment poses significant challenges in the care of critically ill patients with delirium due to constant interventions, loud noise, lack of natural light, and limited temporal orientation, all of which interfere with restorative sleep. These challenges are consistent with those outlined in the systematic review by Yang et al. (2020), who identified them as barriers to the implementation of strategies to minimize delirium.

Nursing interventions can be either autonomous or interdependent; however, given the complexity of delirium, a multidisciplinary approach is essential. Among the autonomous interventions to minimize the incidence and prevalence of delirium, 57.9% of nurses mentioned 'promote a quiet environment', while 41.7% highlighted 'promote sleep and eliminate all factors interfering with sleep'. These interventions complement each other and align with the recommendations of Prayce et al. (2018), who emphasize that managing the physical space is a shared responsibility of nurses, given that the typical ICU environment promotes the development of delirium. Ensuring a calm and well-lit environment is therefore essential. Another autonomous nursing intervention, reported by 33.9% of nurses, was the 'use patient reorientation techniques'. These techniques can focus on spatiotemporal orientation, helping patients in recognizing the day, location (ward and hospital), their clinical condition, and the professionals caring for them.

Therefore, measures such as frequent orientation in time and space, sensory stimulation, environmental management to support restorative sleep, and removal of devices are critical to prevent delirium. Devlin et al. (2018) emphasize that the prevention and resolution of delirium occurs mainly through non-pharmacological interventions.

There is a widespread belief among healthcare professionals that scales are unnecessary for identifying delirium (Morandi et al., 2017). Some of the main barriers to

applying the CAM-ICU include patients with tracheal intubation, communication difficulties, the complexity of the scale, the clinical inability regarding positive results, and the lack of experience in using the scale with sedated patients (Sinvani et al., 2021). The difficulty in assessing delirium in sedated patients reinforces the results of this study, as nurses reported that they often assess delirium in awake patients, where diagnosis is facilitated by easier data collection. Nurses who most frequently document delirium in information systems are also those who assess it most frequently. Through surveillance and monitoring, nurses can identify areas of instability and anticipate potential complications. By intentionally collecting data to support diagnostic activities, nurses can diagnose delirium, identify modifiable risk factors, and prescribe, evaluate, and document autonomous interventions (Devlin et al., 2018). The main limitations of this study include its sample size, which limits the generalizability of the results, and the fact that it was conducted in a specific care setting.

Conclusion

This study found that most nurses lacked knowledge of delirium assessment scales for critically ill patients and did not use them in their clinical practice. Conversely, other nurses reported assessing delirium but used inadequate scales. The main reasons for not using these scales were unfamiliarity with them and their absence from information systems. This study also revealed that nurses who assess delirium are more likely to do so in awake patients than in sedated patients and to implement autonomous and interdependent interventions that can prevent or control delirium. However, the intervention should be preceded by a rigorous and systematic data collection process using scales validated for this purpose, which will provide accuracy to the diagnostic process and lead to the implementation of effective nursing interventions. This care planning process should be documented by nurses to facilitate the creation and extraction of nursing indicators related to delirium. This study also demonstrated that nurses who acknowledge the importance of assessing delirium in critically ill patients are those who identify the need for training in this area. This study should be replicated in other ICUs with larger sample sizes to gain a broader understanding and enhance the validity of these findings.

Author contributions

Conceptualization: Esteves, N. E., Lopes, H. J., Vieira, A. S., Cardoso, P. A., Silva, C. R. R.
Data curation: Esteves, N. E., Lopes, H. J., Vieira, A. S., Silva, C. R.
Formal analysis: Esteves, N. E., Lopes, H. J., Vieira, A. S., Soares-Pinto, I. E., Silva, C. R. R.
Investigation: Esteves, N. E., Lopes, H. J., Vieira, A. S., Silva, C. R. R.
Methodology: Esteves, N. E., Lopes, H. J., Vieira, A. S., Silva, C. R. R.
Project administration: Esteves, N. E., Lopes, H. J., Vieira, A. S., Cardoso, P. A., Silva, C. R.
Resources: Esteves, N. E., Lopes, H. J., Vieira, A. S.; Cardoso, P. A.
Software: Esteves, N. E., Lopes, H. J., Vieira, A. S.
Supervision: Cardoso, P. A., Soares-Pinto, I. E., Silva, C. R.
Validation: Cardoso, P. A., Soares-Pinto, I. E., Silva, C. R.
Writing – original draft: Esteves, N. E., Lopes, H. J., Vieira, A. S., Silva, C. R.
Writing – review & editing: Esteves, N. E., Lopes, H. J., Vieira, A. S., Soares-Pinto, I. E., Silva, C. R.

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