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PAIN ASSESSMENT IN CRITICALLY ILL PATIENTS WITH ALTERED CONSCIOUSNESS: SCOPING REVIEW

AVALIAÇÃO DA DOR NO DOENTE CRÍTICO COM ALTERAÇÕES DE CONSCIÊNCIA: SCOPING REVIEW

EVALUACIÓN DEL DOLOR EN EL PACIENTE CRÍTICO CON ALTERACIONES DE LA CONCIENCIA: SCOPING REVIEW

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ABSTRACT

Introduction: Pain is frequently present in critically ill patients. In patients with altered consciousness in which self-reporting is not possible, pain assessment becomes challenging for nurses. It is essential to use appropriate, valid and reliable scales for these patients.

Objective: Identify the most appropriate pain assessment scales for critically ill patients with altered consciousness.

Methodology: A scoping review was carried out. The research took place in March 2024 in EBSCOhost and Google Scholar, using the descriptors Critical Care; Pain Measurement; Pain Assessment, validated in DeCS/MeSH. A total of 299 articles were found. After applying the inclusion and exclusion criteria, 13 articles were obtained.

Results: The Behavioral Pain Scale and the Critical Care Pain Observation Tool are the most widely used scales to assess pain in patients admitted to the Intensive Care Unit. These scales and the Behavioral Pain Scale-Non Intubated were developed specifically for non-communicative patients and have shown the strongest psychometric properties with the greatest evidence. They have limitations in specific populations such as trauma, burn and neurosurgical patients. Non-behavioral tools require further study.

Conclusion: BPS and CPOT are the most widely used and appropriate scales for assessing pain in critically ill patients with altered consciousness. They are validated and culturally adapted in Portugal and both are recommended by the Society of Critical Care Medicine and the American Society for Pain Management Nursing. It is crucial that nurses are able to assess pain using appropriate scales.

Keywords: Altered Consciousness; Critically Ill; Nurse; Pain Assessment; Scales.

RESUMO

Introdução: A dor está frequentemente presente no doente crítico. Em doentes com alterações de consciência em que autorrelato não é possível, a avaliação da dor torna-se desafiante para os enfermeiros. É fundamental o uso de escalas apropriadas para estes doentes, válidas e confiáveis.

Objetivo: Identificar as escalas de avaliação da dor mais adequadas para os doentes em estado crítico com alterações de consciência.

Metodologia: Foi realizada uma *Scoping Review*. A pesquisa decorreu durante o mês de março de 2024 na EBSCOhost e Google Académico, usando os descritores *Critical Care; Pain Measurement*; *Pain Assessment*, validados no DeCS/MeSH. Foram encontrados 299 artigos. Após aplicados os critérios de inclusão e exclusão obtiveram-se 13 artigos.

Resultados: As escalas comportamentais *Behavioral Pain Scale* e a *Critical Care Pain Observation Tool*, são as mais utilizadas para avaliar a dor em doentes internados no Serviço de Medicina Intensa. Estas escalas e a *Behavioral Pain Scale-Non Intubated*, foram desenvolvidas especificamente para doentes que não comunicam e mostraram as propriedades psicométricas mais fortes com maior evidência. Apresentam limitações em populações específicas como doentes vítimas de trauma, queimados e do foro neurocirúrgico. Ferramentas não comportamentais necessitam de mais estudos.

Conclusão: BPS e CPOT são as escalas mais utilizadas e adequadas para avaliar a dor em doentes críticos com alterações de consciência. Estas estão validadas e adaptadas culturalmente em Portugal e ambas são recomendadas pela *Society of Critical Care Medicine* e *American Society for Pain Managent Nursing*. É crucial que os enfermeiros sejam capazes de avaliar a dor utilizando escalas adequadas.

Palavras-chave: Avaliação da Dor; Doente crítico; Enfermeiro; Escalas; Estado de Consciência Alterado.

RESUMEN

Introducción: El dolor está frecuentemente presente en pacientes críticos. En pacientes con alteraciones de la conciencia en los que no es posible informarlos, la evaluación del dolor se convierte en un desafío para los enfermeros. Es fundamental utilizar escalas adecuadas a estos pacientes, válidas y fiables.

Objetivo: Identificar las escalas de evaluación del dolor más adecuadas para pacientes críticos con alteraciones de la conciencia.

Metodología: Se llevó a cabo una *scoping review*. La investigación se desarrolló durante el mes de marzo de 2024 en EBSCOhost y Google Académico, utilizando los descriptores *Critical Care*; *Pain Measurement*; *Pain Assessment*, validada en DeCS/MeSH. Se encontraron 299 artículos. Luego de aplicar los criterios de inclusión y exclusión se obtuvieron 13 artículos.

Resultados: La *Behavioral Pain Scale* y la *Critical Care Pain Observation Tool* son las más utilizadas para evaluar el dolor en pacientes ingresados en la unidad de cuidados intensivos. Estas escalas, y la *Behavioral Pain Scale-Non Intubated*, se desarrollaron específicamente para pacientes que no se comunican y han mostrado las propiedades psicométricas más fuertes con mayor evidencia. Presentan limitaciones en poblaciones específicas como pacientes traumatizados, quemados y neuroquirúrgicos. Las herramientas no conductuales requieren más estudios.

Conclusión: BPS y CPOT son las escalas más utilizadas y adecuadas para evaluar el dolor en

pacientes críticos con alteración de la conciencia. Estos están validados y adaptados culturalmente en Portugal y ambos están recomendados por la *Society of Critical Care Medicine* y *American Society for Pain Managent Nursing*. Es fundamental que los enfermeros puedan evaluar el dolor utilizando escalas adecuadas.
Descriptores: Alteración del Estado de Conciencia; Enfermero; Escalas; Evaluación del Dolor; Paciente Crítico.

INTRODUCTION

Pain is defined by the International Association for the Study of Pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage"[1].

Pain is a diagnosis and a focus of attention in nursing practice, described as a compromised perception of various dimensions of a person's well-being[2,3].

It is a major public health problem and has a clinical, social and economic impact, which is why it should be a priority for health professionals[4].

The American Agency for Research and Quality and the American Pain Society describe pain as the fifth vital sign[5]. Compared to other vital signs, pain in the critically ill is not considered a priority[6].

Pain control is the duty of health professionals. It is a person's right and denying or devaluing pain is an ethical error and a failure of excellence in professional practice[7]. According to Bambi *et al* (2019)[4] it is not only an ethical duty, but also a legal one.

Pain is a subjective symptom, difficult to assess and characterize, and it is important to respect the patient's own assessment when communicating[8].

In critically ill patients, life is threatened by the failure or imminent failure of one or more vital functions and their survival depends on advanced means of surveillance, monitoring and therapy[9]. Therefore, when the patient is intubated, ventilated or sedated, the pain assessment must be carried out by a qualified professional, since the patient does not communicate[8]. Nurses have a fundamental role to play and need specific knowledge in this area, with pain control being one of the most important responsibilities of nurses in the Intensive Care Unit (ICU)[3,10].

Although pain is frequent in the ICU and tools are available to measure it, the unconscious use of pain assessment scales has resulted in non-routine and impressive evaluations of this vital sign and, as a consequence, its inadequate control[11].

The presence of pain in critically ill patients is associated with worse clinical outcomes, such as increased mortality, length of stay and mechanical ventilation, and its control has a positive impact[11].

In patients with altered consciousness, self-assessment of pain is impractical as communication is compromised, which is a challenge for health professionals. It is therefore essential to use valid and reliable scales[12].

METHODOLOGY

This study is a scoping review, based on the Joanna Briggs Institute guidelines, with the aim of identifying the most appropriate pain assessment scales for critically ill patients with altered consciousness. To answer the objective, the review question was: How should pain be assessed in critically ill patients with altered consciousness? According to the PCC strategy: Population – Critically ill patient; Concept – Pain assessment; Context – Patient with altered consciousness.

Two independent searches were carried out during the month of March 2024. One on the EBSCOhost platform and the other on Google Scholar, with the following keywords: Critical Care; Pain Measurement; Pain Assessment, having been previously validated in DeCS/MeSH.

The MEDLINE ultimate and CINAHL ultimate databases were consulted on EBSCOhost and the following search strategy was outlined using a Boolean operator: (Critical care) AND (Pain measurement) AND (Pain assessment) NOT (Pediatric or child or infant or adolescent).

Articles were selected using the following inclusion criteria: Full text; Peer-reviewed; Publication date (20190101-20241231); Language: English and Portuguese; Source types: Academic Journals and exclusion criteria: Under 18 years old; Not suitable for the review question; Duplicate articles; Scale validation studies not carried out in Portugal.

Of the 91 articles in the survey, 53 were excluded after reading the title and abstract. 34 articles were analyzed in full, 21 of which did not fit the review question. Nine articles were selected for this review.

The same keywords were used in Google Scholar: Critical Care; Pain Measurement; Pain Assessment. The articles were selected using the following inclusion criteria: Specific period (2019-2024); Language: Portuguese; Review articles and the same exclusion criteria as in the previous search. In order of relevance and after reading the title, 5 articles were selected for full reading, one of which was duplicated in relation to the first search. A further 4 articles were selected for this review, having been consulted in the SciELO, B-on and Common Repository databases.

Therefore, from the two searches carried out, 13 articles were included for this scoping review, as shown in the flowchart of the record selection process according to PRISMA 2020 by Page *et al*[13] (Figure 1↗).

RESULTS

In order to make it easier to interpret the results, a summary table of the 13 selected articles has been drawn up and included in the discussion. Table 1↗ is divided into 4 categories: title of article and author; country, year, journal and type of study; objective and respective results and conclusion.

DISCUSSION

This study allowed us to identify the most appropriate pain assessment scales for critically ill patients with altered consciousness, which have been validated for Portugal.

Systematic pain assessment with valid tools is essential for pain control and is an indicator of good practice. Self-reported pain should be obtained whenever possible. It is the key to pain assessment and treatment, as it is the most reliable indicator and can be done using the Visual Analog Scale (VAS)[10,14,15,17].

Alves *et al* (2023)[11], in their study, also identified that one of the most commonly used scales for assessing pain in the ICU was the NRS (numerical pain rating scale).

However, in the ICU many patients are unable to verbally communicate their pain and discomfort, due to critical situations such as altered consciousness, invasive mechanical ventilation (IMV) and sedation[10,14]. That said, pain should be assessed using behavioral and physiological indicators[14].

In their study, Cunha *et al* (2020)[12] identified seven pain assessment scales for patients with altered consciousness: FLACC (Face, Legs, Activity, Cry, Consolability Instrument); BPAS (Behavioral Pain Assessment Scale); BPS (Behavioral Pain Scale); NVPS (Nonverbal Adult Pain Assessment Scale); CPOT (Critical Care Pain Observation Tool); BPS-NI (Behavioral Pain Scale-non intubated); NCS (The Nociception Coma Scale). BPS received the best score and the fact that it has been translated into Portuguese suggests that it should be used immediately in these patients. The NCS, BPS-NI, NVPS and FLACC also scored well. The BPS-NI, NVPS and NCS have no published translation studies into Portuguese. The FLACC has been translated/culturally adapted and validated for the Portuguese context and used in children.

The BPS scale was validated and culturally adapted to Portuguese by Batalha *et al* (2013)[22] and selected by the Portuguese Society of Intensive Care [SPCI][17].

In addition to the VAS, CPOT and BPS, another scale was found in the studies selected by Silva *et al* (2019)[15] the ESCID (The behavioral indicators of pain scale). This scale has been shown to be valid and to have good psychometric properties in mechanically ventilated and post-surgical critically ill patients. The same authors drew up a flowchart with these four scales in order to optimize the decision-making process for each scale according to the clinical status of the critically ill patient, with the VAS and CPOT being suitable for communicative patients and the BPS, CPOT and ESCID for non-communicative patients.

There are numerous scales for assessing pain in the ICU. However, several studies have concluded that the BPS and CPOT are the most widely used and recommended for critically ill patients, being the most appropriate validated scales for assessing pain in patients unable to self-report pain[8,10,11,14,15,17].

The BPS and CPOT scales were considered by health professionals to be easy-to-use and easy-to-remember tools[8]. The use of these scales is a more practical and cheaper method and can be easily and comprehensively introduced into the health system[18].

These scales are observational and behavioral, and are indicated for critically ill patients who are sedated and/or unconscious, under IMV and/or have communication difficulties. The BPS was developed and tested in 2001 by Payen *et al* (2001) and the CPOT in 2006 by Gélinas *et al*[8,12,17,20].

These scales received the best quality scores. The CPOT was created to detect pain in critically ill patients and is used to assess pain in adult patients with and without an endotracheal tube, who are unable to communicate verbally[10,14,17]. Whereas the BPS can only be used in ventilated patients. The difference is in the assessment of indicators[14,17].

The BPS assesses indicators such as facial expression, upper limb movements and ventilator adaptation[8,14,17,21]. Each category is scored from 1-4 points and the total score from 3-12 points[15,20,21]. A score > 5 is interpreted as the presence of pain[21]. The CPOT assesses indicators such as facial expression, body movements, muscle tension and adaptation to the ventilator in patients with orotracheal intubation or vocalization in extubated patients[8,14,17,21]. The score ranges from 0-2 points in each domain and a total score of 0-8 points; a score > 2 is interpreted as the presence of pain[10,15,20,21].

Wojnar-Gruszka *et al* (2022)[16] emphasize 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), which report that the most accurate and reliable pain assessment tools for patients unable to communicate are the BPS and CPOT.

Bambi *et al* (2019)[4] through their study developed ten recommendations for good practice in the assessment of pain in patients admitted to the ICU. One of them, also following the current PADIS guidelines, recommends that nurses should use validated scales such as CPOT, BPS and BPS-NI in patients who are unable to self-report their pain.

Several studies have evaluated the psychometric properties of the BPS and CPOT, and they have been culturally adapted in several countries. The BPS is the most widely tested tool[8,12,21]. Both scales are recommended by the American Society for Pain Management Nursing (ASPMN) for assessing pain in intubated and/or unconscious patients[10,12].

Validity refers to whether the instrument measures what it is intended to measure and reliability is the ability of the pain assessment tool to provide better results in the same circumstances[14].

Pinheiro & Marques (2019)[8] and Birkedal *et al* (2020)[14] through their research concluded that BPS and CPOT have good psychometric properties, good reliability and validity in intubated and non-intubated ICU patients unable to self-report pain, and both scales should be used to assess pain in these patients.

However, CPOT is preferable due to its discriminant validation, i.e. it detects pain better, distinguishing discomfort or pain and providing better treatment. In several studies, the BPS increased its score during non-painful oral care, while the CPOT remained unchanged, as a result of changes in facial expression and upper limb movements. This increase is due to reflexes to touch and not in response to pain. Coughing and straining may also be reflexes due to the movement of the patient's endotracheal tube for hygiene. Although the BPS is easier to remember as it only has three domains and the CPOT four, the latter is more precise. BPS requires assessment of the ventilator's waveform and asynchrony, which makes

it difficult to assess the patient's face and body simultaneously. With CPOT in intubated patients, simply listening to the ventilator alarms is a useful alternative[14].

Pinheiro & Marques (2019)[8], concluded in their study that both instruments are sensitive when applied during painful procedures, with an increase in various indicators, namely facial expression in the BPS and muscle tension/stiffness, facial tension and ventilator tolerance/cough in the CPOT, as well as blood pressure in both scales.

In some studies, BPS scores increased during both painful and non-painful procedures, while CPOT scores only increased during painful procedures, making it the instrument of choice for assessing pain in patients admitted to the ICU with altered levels of consciousness[17].

Silva *et al* (2019)[15] also cite a study in which they evaluated CPOT before, during and after non-nociceptive stimuli (non-invasive blood pressure with cuff inflation and gentle touch) and nociceptive stimuli (endotracheal suction and decubitus change). In all of them there was discriminant validation with higher scores during nociceptive stimuli compared to non-nociceptive stimuli. HR (heart rate), MAP (mean arterial pressure) and BIS were also assessed simultaneously, concluding that changes in vital signs are unreliable measures for assessing pain, especially after major procedures or during a critical illness, as they may be associated with hemodynamic instability or may be side effects of therapies.

ICU nurses should not rely solely on vital signs to assess pain and should be encouraged to use a valid behavioral scale[17].

The results of the study by Nazari *et al* (2022)[20] showed that both CPOT and BPS have acceptable discriminant validity in differentiating nociceptive and non-nociceptive procedures in unconscious patients in the ICU and that nurses need to pay close attention to the non-verbal signs of pain when using CPOT and BPS to assess pain in these patients. BPS differentiates better between nociceptive and non-nociceptive procedures than CPOT.

The study carried out by Wojnar-Gruszka *et al* (2022)[16], which compared the usefulness of scales in assessing pain in patients with varying degrees of sedation, positively confirmed the use of BPS and CPOT. Both scales are equally useful for assessing pain in patients with varying degrees of analgesia or sedation, both conscious and unconscious.

Nursing procedures cause pain, regardless of the level of sedation and the combination of the BPS and CPOT can be a valuable tool for assessing pain in critically ill patients under IMV, as it provided better sensitivity compared to each of these scales separately[8,16].

BPS and CPOT are only reliable in patients with intact motor function and observable behavior[15]. They have limitations in trauma, burns and neurosurgical patients[8].

Behavioral pain assessment tools can only be used in patients capable of reacting behaviorally to stimulation. These scales are limited to sedated patients with RASS ≤ -4 (Richmood Agitation Sedation Scale) or GCS of 3 (Glasgow Coma Scale)[21]. Furthermore, they do not allow pain to be assessed in patients who cannot visibly show it, such as those with limb paralysis or craniofacial injuries. It should be assumed that they also feel pain and use other methods[16].

Several studies refer to non-behavioral tools such as pupillometry, skin conductance, analgesia/nociception index and bispectral index. However, these non-behavioral tools need further study[11,16,18,21].

Gelinas *et al* (2019)[21] in their study, which built on the work completed in the updated 2018 Society of Critical Care Medicine (SCCM) guidelines, analyzed the development, reliability and validity of nine behavioral pain assessment tools for non-communicative adult critically ill patients. BPS, BPS-NI and CPOT, which were developed specifically for this population, showed the strongest psychometric properties with the most evidence, with validation tests carried out in several countries and several languages.

Marques *et al* (2022)[17] translated and validated the CPOT into Portuguese. The Portuguese version of the CPOT proved to be valid and reliable for both conscious and unconscious IMV patients. This is an alternative to the BPS, which was the only validated scale for Portuguese patients in the ICU[17].

Cazita *et al* (2022)[19] & Modanloo *et al* (2019)[10] report from their research that nurses underestimate pain intensity and use invalid methods to assess pain in the ICU. A large percentage before and during painful procedures do not receive pain relief treatments[10]. They used numerical and visual scales or altered vital signs instead of BPS, CPOT or ESCID, which results in negligence in the face of patients who don't communicate, because even if they are sedated, they also feel pain[19].

Pain cannot be treated if it is not assessed. Nurses play a key role in pain assessment and management and are advocates for their patients to ensure that pain does not go unnoticed. They are responsible for regularly assessing pain using methods appropriate to the patient's ability to communicate, such as self-report or behavioral scales, and thus offering appropriate treatment. It is essential to promote the assessment of pain as the fifth vital sign[17,18,21].

In short, the use of validated behavioral pain assessment tools is crucial for critically ill patients who do not communicate. It is important that all professionals are trained to use these behavioral pain assessment tools indicated for ICU, so that they can interpret pain scores and acquire better pain assessment results[10,21].

Communication about pain assessment could be improved if it were addressed at shift changes, during daily multidisciplinary visits, in order to understand the methods used to obtain information about the patient's pain. Team leaders and specialist nurses are encouraged to carry out quality control of pain assessment[21].

The management of pain in critically ill patients is a concern for health professionals. Regardless of their clinical condition, pain is frequent and its correct assessment using appropriate instruments allows for better adaptation of therapeutic measures[8]. Better pain control is associated with better outcomes in ICU patients[14].

CONCLUSION

In critical patient care where there is bedside monitoring, nurses are extremely important in pain control. Assessing pain in the critically ill is challenging, more complex and more difficult. Patients present communication barriers due to their clinical condition, such as changes in consciousness, endotracheal intubation and sedation. Pain is frequent in these patients and should not be devalued or disregarded. It is crucial that nurses are able to assess pain using appropriate scales.

Although these patients are unable to communicate their pain, observable indicators are the best indices. There are appropriate scales for these patients, such as behavioral pain scales.

BPS and CPOT are the most widely used and recommended scales for critically ill patients, with altered consciousness, who do not communicate, intubated or extubated, sedated or unsedated, and are the most suitable for assessing pain in patients unable to self-report pain. They have been validated and culturally adapted in Portugal. They can be used separately depending on the patient's clinical condition, or even simultaneously to ensure more accurate results. Due to the domains of each scale presented in Annex I and II, the BPS scale can only be used for ventilated patients, unlike the CPOT which can be used for intubated and extubated patients.

In addition to several studies of their psychometric properties, both scales are recommended by the Society of Critical Care Medicine and the American Society for Pain Management Nursing.

Nurses need to be trained in the use of behavioral scales, and appropriate pain assessment instruments need to be made available, regulated and routinely put into practice in nursing care. Nurses must respect pain as a vital sign. Assessing pain properly with appropriate ins-

truments allows us to treat it, offer better quality care, comfort, promote patient health and prevent complications. Controlling pain in patients with altered consciousness, due to their vulnerability, is a crucial step towards humanizing care, in line with the art of caring.

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JE: Coordination of the study, study design, collection, storage, analysis and review and discussion of the results.
AP: Study design, data analysis, review and discussion of results.
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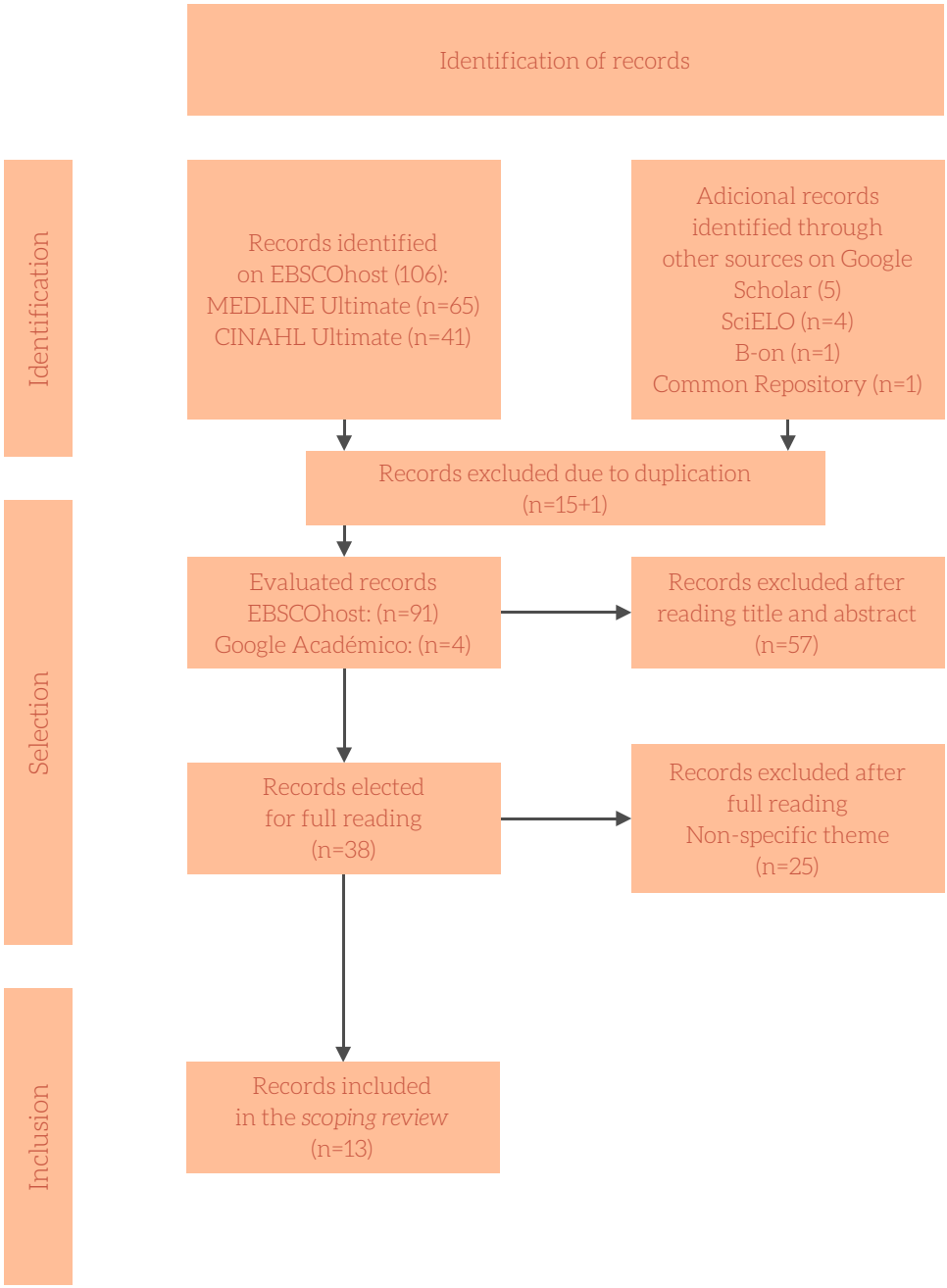

Figure 1 – Adapted from BMJ 2021 "The PRISMA 2020 statement: an updated guideline for reporting systematic reviews"[13].

Table 1 – Presentation of results.

Title/Author	Country/Year/Magazine/ Type of study	Objective	Results/Conclusion
Behavioral Pain Scale e Critical Care Pain Observation Tool para avaliação da dor em pacientes graves intubados orotraquealmente. Revisão sistemática da literatura[8] Pinheiro & Marques.	Portugal, 2019. *Revista Brasileira de Terapia Intensiva*, 31(4). Systematic literature review.	To identify the suitability of two behavioral scales, the Behavioral Pain Scale (BPS) and the Critical Care Pain Observation Tool (CPOT), for assessing pain in non-communicative patients admitted to the ICU.	Fifteen studies were included which showed that the BPS and CPOT were two valid and reliable scales for assessing pain in critically ill patients with orotracheal intubation in the ICU. They have similar psychometric properties. Several studies have validated the BPS and CPOT for different cultures, and both instruments have proved to be valid and reliable for assessing pain in these patients. Both instruments are sensitive when applied during painful procedures. In the BPS, there was an increase in indicators such as easy expression and in the CPOT muscle tension/rigidity, easy tension and ventilator tolerance/cough. Applying the scales helps to increase the frequency of assessments and reduce the administration of analgesics and sedatives. They have limitations in specific populations such as trauma, burns and neurosurgical patients.
Comparison of two behavioural pain scales for the assessment of procedural pain: A systematic review[14] Birkedal, *et al.*	Norway, 2020. *Nursing Open*, 8. Systematic review.	To examine the measurement properties of the Critical-Care Pain Observation Tool and Behavioral Pain Scale when used to assess pain during procedures in the ICU.	Eleven studies were included. Both scales, CPOT and BPS, showed good reliability and validity, and both are a good option for assessing pain during painful procedures in ICU patients unable to self-report pain. The BPS is a suitable alternative, but due to discriminant validation, the CPOT is preferable, as it proved to be a particularly good tool, reliable and valid.

Table 1 – Presentation of results.

Title/Author	Country/Year/Magazine/ Type of study	Objective	Results/Conclusion
Avaliação da dor no paciente adulto crítico: proposta de construção de um fluxograma baseado em evidências científicas[15] Silva, *et al.*	Brazil, 2019. *Revista Enfermagem Atual In Derme*, 90(28). Integrative Review.	General: Acquire knowledge of pain assessment mechanisms and the benefit of nursing interventions, evaluating the application of scales according to the profile of adult patients admitted to the ICU. Specific: To describe the main validated scales for use with patients in the ICU and the proposal to build a flowchart for choosing the best scale according to the patient's profile.	Ten studies were included for the choice of pain assessment instruments and a flowchart was constructed in order to choose the scale according to the patient's profile. Four instruments were found to be highly reliable. The instrument best suited to assessing pain in patients who communicate is the visual analog scale (VAS). In the case of critically ill ICU patients who are unable to self-assess their pain, it is necessary to apply the CPOT and BPS scales, which are reliable only in patients with intact motor function and observable behavior. The ESCID scale (The behavioral indicators of pain scale) has two more domains than the BPS. It has been proven valid in mechanically ventilated and post-surgical critically ill patients. A high degree of correlation was observed with the BPS, concluding good psychometric properties.
Pain assessment in adult intensive care patients[4] Bambi, *et al.*	Italy, 2019. *Scenario*, 36(2). Literature review.	To provide some recommendations on good professional practice in the assessment of pain in patients admitted to the ICU.	Ten recommendations were drawn up, whose level of evidence was assessed using a tool adapted from the American Association of Critical Care Nurses. 1. Pain is one of the priorities that must be guaranteed to the patient. 2. Ensure routine pain monitoring with the most appropriate instruments. 3. Pain should be monitored and recorded at least every four hours. 4. The nurse should help the patient to communicate the presence and intensity of pain, using verbal or visual numerical scales (0-10); 5. In patients who are unable to self-report their pain , nurses should use validated scales such as CPOT, BPS and BPS-NI (Behavioral Pain Scale-non intubated); 6. Pain assessment scales for patients unable to communicate verbally should be used by properly trained health professionals. 7. In patients who are unable to report their pain independently, nurses should turn to people close to the patient to assess the presence of pain indicators. 8. Vital signs alone are not enough to detect pain. 9. Pain during diagnostic, therapeutic and care procedures in critically ill patients who are unable to speak should always be suspected and prevented. 10. After administering analgesia, whether preventative or therapeutic, the patient should be reassessed to evaluate the effectiveness of the treatment using the pain scales most appropriate to the clinical conditions.

Table 1 – Presentation of results.

Title/Author	Country/Year/Magazine/ Type of study	Objective	Results/Conclusion
Impact of Implementing the Critical Care Pain Observation Tool on Nurses' Performance in Assessing and Managing Pain in the Critically Ill Patients[10] Modanloo, *et al.*	Iran, 2019. *Indian Journal of Critical Care Medicine*, 23(4). Prospective interventional study.	To determine the impact of the implementation of the Critical Care Pain Observation Tool (CPOT) on the quantity and frequency of analgesic administration in ICU patients.	The study was carried out with a sample of 60 nurses and 240 ICU patients. The patients were intubated and had a low level of consciousness (Glasgow Coma Scale between 5-10). After the implementation of CPOT in nursing interventions, the quantity and frequency of analgesics administered increased significantly. There was an increase in the frequency of patient pain assessment per day in nursing practice after the implementation of CPOT. The application of the CPOT as an objective means of assessing pain was effective in improving the performance of ICU nurses in assessing and controlling patients' pain. The CPOT is a useful tool for assessing pain in patients admitted to the ICU and should be implemented.
Pain Assessment with the BPS and CCPOT Behavioral Pain Scales in Mechanically Ventilated Patients Requiring Analgesia and Sedation[16] Wojnar-Gruszka, *et al.*	Poland, 2022. *International Journal of Environmental Research and Public Health*, 19(10894). Observational study.	To assess pain in ICU patients undergoing mechanical ventilation using behavioral pain scales such as BPS and CPOT, including patients under deep sedation.	In 81 ICU patients under mechanical ventilation and sedated, 1,005 pain measurements were taken using the BPS and CPOT scales during various procedures. It was shown that pain signals increased significantly during patient interventions on both scales and then returned to values close to the resting period. The results of the RASS (Richmond Agitation-Sedation Scale) correlated significantly and positively with the results of the BPS and CPOT. A strong correlation was found between the results of both scales at each stage of the study. Nursing procedures are a source of pain in sedation-analyzed patients. The BPS and CPOT scales are useful tools for assessing the occurrence of pain in mechanically ventilated patients, including those under deep sedation.

Table 1 – Presentation of results.

Title/Author	Country/Year/Magazine/ Type of study	Objective	Results/Conclusion
Validation Testing of the European Portuguese Critical-Care Pain Observation Tool[17] Marques, *et al.*	Portugal, 2022. *Healthcare*, 10, (1075). Prospective, observational cohort study.	To validate the Portuguese version of the Critical-Care Pain Observation Tool (CPOT) in the adult population in critical condition in Portugal.	A sample of 110 medical and surgical ICU patients was observed at rest pre-procedure, during the nociceptive procedure and post-procedure. The scores of the Portuguese version of the CPOT increased during standard procedures compared to the rest period in conscious and unconscious patients, demonstrating discriminative validity. Criterion validity was also demonstrated, with significant associations of the CPOT with the BPS threshold as a reference standard. The Portuguese version of the CPOT seems to be a valid and reliable tool for assessing pain in mechanically ventilated patients in the ICU, whether conscious or unconscious. The CPOT is an alternative option to the BPS which, until now, has been the only validated scale for assessing pain in Portuguese patients in the ICU. The CPOT can be applied to patients in the MIS who are unable to communicate verbally or use signs, whether or not they are on mechanical ventilation.
Incidência e impactos da dor em unidades de terapia intensiva: revisão sistemática[11] Alves, *et al.*	Brazil, 2023. *BrJP*, 6(4). Systematic review of observational studies.	Map the scientific evidence on the incidence and impact of pain in critically ill patients.	With regard to the instruments used to assess pain, of the 32 studies included, they identified BPS, CPOT, ESCID, VAS, Numerical Rating Scale (NRS) and non-behavioral pain assessment tools (Pupillary Pain Index, Skin Conductance Algesimeter, Instant Analgesia/Nociception Index). The BPS and the NRS were the most commonly used to assess pain in patients admitted to the UCI. Of the 32 studies included, 46.8% (15 studies) used the BPS to assess pain in non-communicating critically ill patients. It was also observed that the CPOT was the second most used pain assessment tool for these patients with 31.2% (10 studies). Of the total number of studies included, only 2 (6.2%) used the ESCID, 3 (9.3%) the VAS and one study used three non-behavioral tools to detect pain after nociceptive stimulation in critically ill patients unable to communicate.

Table 1 – Presentation of results.

Title/Author	Country/Year/Magazine/ Type of study	Objective	Results/Conclusion
Instrumentos de avaliação da dor em pessoas com alteração da consciência: uma revisão sistemática[12] Cunha, *et al*.	Portugal, 2020. *Suplemento digital Rev ROL Enferm*, 43(1). Systematic review.	To analyze the potential clinical use of available scales for pain assessment in patients with altered consciousness.	Nine studies were analyzed and seven pain assessment scales were found. • FLACC: Face, Legs, Activity, Cry, Consolability Instrument • BPAS: Behavioral Pain Assessment Scale • BPS: Behavioral Pain Scale • NVPS: Nonverbal Adult Pain Assessment Scale • CPOT: Critical Care Pain Observation Tool • BPS-NI: Behavioral Pain Scale-non intubated • NCS: The Nociception Coma Scale The BPS scale received the best score, the NCS scale, although the most recent of the instruments, came second. Similarly, the BPS-NI, NVPS and FLACC scales also scored well. The BPS-NI, NVPS and NCS have not been translated into Portuguese. The FLACC has been translated/culturally adapted and validated for the Portuguese context and used in children. Since this scale has been translated into Portuguese, the BPS suggests that it be used immediately.
Escalas para a avaliação da dor na unidade de terapia intensiva. Revisão sistemática[18] Hora & Alves.	Brazil, 2020. *BrJP*, 3(3). Systematic review.	To map data on the psychometric characteristics of pain assessment scales in the ICU.	58 studies were included, 28 of which had cross-cultural adaptations from various countries. In Brazil, five validation studies of scales to assess pain in ICU were identified, and two instruments, the BPS and CPOT, were validated. Of these articles, most showed adequate psychometric quality for the BPS, making it reliable and valid. As for the CPOT, only one validation study was found which confirmed the reliability of this instrument for use in clinical practice. No significant differences were found between the pain assessment properties of the two scales, showing good validity indices. Therefore, the decision between which scale to use should take into account ease of application and familiarity of the team.

Table 1 – Presentation of results.

Title/Author	Country/Year/Magazine/ Type of study	Objective	Results/Conclusion
Avaliação e controle da dor pelos enfermeiros intensivistas na terapia intensiva: uma revisão de escopo[19] Cazita, *et al.*	Brazil, 2022. *Scire Salutis*, vol. 12, no. 2. Scoping review.	To identify the intervention of nurses in the assessment and control of pain in ICU patients.	Nine articles were selected, concluding that nurses do not have sufficient theoretical knowledge to assess and control pain, since they mainly use pain assessment instruments such as numerical and visual scales, changes in vital signs, and do not use appropriate scales such as BPS, CPOT and ESCID, which results from negligence towards patients who do not communicate, even sedated have pain and need an assessment using their own scales.
Diagnostic Values of the Critical Care Pain Observation Tool and the Behavioral Pain Scale for Pain Assessment among Unconscious Patients: A Comparative Study[20] Nazari, *et al.*	Iran, 2022 *Indian Journal of Critical Care Medicine*, Vol. 6 Ed. 4. Cross-sectional study.	To compare the diagnostic value of CPOT and BPS for assessing pain in unconscious patients.	45 unconscious patients admitted to the ICU for surgery, trauma and medical problems were evaluated. The discriminant validity of the CPOT and BPS was assessed by comparing their scores during nociceptive and non-nociceptive procedures. The results showed a statistically significant difference between the mean scores of both CPOT and BPS during nociceptive and non-nociceptive procedures, confirming the acceptable discriminant validity of the instruments. However, BPS differentiates better between nociceptive and non-nociceptive procedures than CPOT. Nurses also need to pay close attention to non-verbal signs of pain when using CPOT and BPS to assess pain in unconscious patients.
A Psychometric Analysis Update of Behavioral Pain Assessment Tools for Noncommunicative, Critically Ill Adults[21] Gélinas, *et al.*	Canada, 2019. *AACN Advanced Critical Care*, vol. 3, no. 4. Systematic review.	To analyze the development and psychometric properties (reliability and validity) of behavioral pain assessment tools for non-communicative adult critically ill patients.	A total of 106 articles were analyzed, including nine tools. The BPS, BPS-NI and CPOT, which were developed specifically for this population, have shown the strongest psychometric properties with the most evidence, with validation tests carried out in several countries and several languages. Their use is feasible and has positively influenced pain management practices and patient outcomes. Other tools may be good alternatives, but further research into them is needed. It is important that all professionals are trained to use these behavioral pain assessment tools indicated for ICU, so that they can interpret pain scores and acquire better pain assessment results. The use of validated behavioral pain assessment tools is crucial for critically ill patients who do not communicate.

Indicator	Item	Score
Facial expression	Relaxed	1
	Partially tightened = brow lowering	2
	Fully tightened = eyelid closing	3
	Grimacing	4
Upper limb	No movement	1
	Partially bent	2
	Fully bent with finger flexion	3
	Permanently retracted	4
Compliance with ventilation	Tolerates ventilation	1
	Coughing but tolerating ventilation most of the time	2
	Fighting ventilator	3
	Unable to control ventilation	4

Total score: 3 — 12

Minimal pain — Maximum pain

Annex I – Behavioral Pain Scale.
Source: Pinheiro & Marques (2019)[8].

Indicator	Item	Score
Facial expression	Relaxed	0
	Tense	1
	Grimacing	2
Body movements	Absence of movements	0
	Protection	1
	Restlessness	2
Muscle tension	Relaxed	0
	Tense or rigid	1
	Very tense or rigid	2
Compliance with the ventilator (intubated patients)/vocalization (extubated patients)	Tolerating ventilator or movement/talking on a normal tone or no sound	0
	Coughing but tolerating ventilator/sighing, moaning	1
	Fighting ventilator/crying out, sobbing	2

IOT – intubação orotraqueal.

Total score: 0 — 8

No pain — Maximum pain

Annex II – Critical Care Pain Observation Tool.
Source: Pinheiro & Marques (2019)[8].