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RELIEF OF THIRST AND XEROSTOMIA IN CRITICALLY ILL PATIENTS
NURSING INTERVENTIONS IN INTENSIVE CARE UNITS: A SCOPING REVIEW

ALÍVIO DA SEDE E XEROSTOMIA NO DOENTE CRÍTICO
INTERVENÇÕES DE ENFERMAGEM EM UNIDADES DE CUIDADOS INTENSIVOS: UMA SCOPING REVIEW

ALIVIO DE LA SED Y LA XEROSTOMÍA EN EL PACIENTE CRÍTICO
INTERVENCIONES DE ENFERMERÍA EN UNIDADES DE CUIDADOS INTENSIVOS: UNA REVISIÓN DE ALCANCE

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Abstract

Introduction: Thirst is a prevalent symptom among critically ill patients, often overlooked in clinical practice despite its significant impact on comfort and well-being. **Objective:** To map recent scientific evidence on effective nursing interventions for the relief of thirst and xerostomia in patients admitted to intensive care units. **Methods:** A scoping review was conducted following the Joanna Briggs Institute methodology. Literature searches were performed in the PubMed database and the EBSCOhost platform, including studies published between 2020 and 2024. Selection was based on predefined inclusion and exclusion criteria, resulting in the final analysis of five articles. **Results:** Interventions such as cold-water sprays, bundles including menthol mouthwash and vitamin C with combined strategies were found to be effective in relieving thirst and dry mouth. Nursing interventions were central to the identification and management of these symptoms. **Conclusion:** Evidence supports the effectiveness of non-pharmacological approaches for the relief thirst in Intensive Care Units (ICUs). Nursing professionals should promote the implementation of these strategies into clinical practice. Multicenter studies are needed to strengthen clinical guidelines.

Keywords: Intensive Care; Nursing Interventions; Thirst; Xerostomia.

Resumo

Introdução: A sede é um sintoma prevalente em doentes de cuidados intensivos, frequentemente negligenciado na prática clínica, apesar do seu impacto significativo no conforto e bem-estar. **Objetivo:** Mapear a evidência científica recente sobre as intervenções de enfermagem eficazes para o alívio da sede e xerostomia em doentes internados em unidades de cuidados intensivos. **Métodos:** Realizou-se uma *scoping review* orientada pela metodologia do Joanna Briggs Institute. A pesquisa bibliográfica foi realizada na base de dados PubMed e na plataforma EBSCOhost, considerando artigos publicados entre 2020 e 2024. A seleção foi baseada em critérios de inclusão e exclusão, resultando na análise final de cinco artigos. **Resultados:** Intervenções como *spray* de água gelada, bundles com elixir mentolado e vitamina C, e estratégias combinadas demonstraram eficácia significativa na redução da sede e da boca seca. A atuação da enfermagem revelou-se central na identificação e gestão destes sintomas. **Conclusão:** Há evidência clara da eficácia de abordagens não farmacológicas no alívio da sede em UCI. A enfermagem deve liderar a integração destas estratégias na prática clínica. São necessários estudos multicêntricos para consolidar diretrizes.

Palavras-chave: Cuidados Intensivos; Intervenções de Enfermagem; Sede; Xerostomia.

Resumen

Enquadramiento: La sed es un síntoma prevalente en los pacientes críticos, frecuentemente desatendido en la práctica clínica, a pesar de su impacto significativo en el confort y el bienestar. **Objetivo:** Mapear la evidencia científica reciente sobre las intervenciones de enfermería eficaces para el alivio de la sed y la xerostomía en pacientes ingresados en unidades de cuidados intensivos. **Método:** Se realizó una scoping review guiada por la metodología del Joanna Briggs Institute. La búsqueda bibliográfica se realizó en la base de datos PubMed y en la plataforma EBSCOhost, considerando artículos publicados entre 2020 y 2024. La selección se basó en criterios de inclusión y exclusión, resultando en el análisis final de cinco artículos. **Resultados:** Intervenciones como spray de agua fría, bundles con enjuague bucal mentolado y vitamina C, y estrategias combinadas demostraron una eficacia significativa en la reducción de la sed y la boca seca. La intervención de enfermería fue clave en la identificación y el manejo de estos síntomas. **Conclusión:** Existe evidencia clara sobre la eficacia de enfoques no farmacológicos para el alivio de la sed en unidades de cuidados intensivos. La enfermería debe liderar la integración de estas estrategias en la práctica clínica. Se requieren estudios multicéntricos para consolidar las directrices clínicas.

Descriptores: Cuidados Intensivos; Intervenciones de Enfermería; Sed; Xerostomía.

Introduction

Patients admitted to Intensive Care Units (ICUs) often experience multiple discomforting symptoms, with thirst being recently recognized as one of the most intense and distressing due to its high prevalence and negative impact on comfort and well-being[1,2]. This condition has been associated with significant suffering, increased physiological stress, higher oxygen consumption, organ metabolic overload, and episodes of delirium, all of which negatively affects the recovery process[1].

The etiology of thirst in ICU settings is multifactorial, and may include prolonged fasting, the use of mechanical ventilation, the administration of medications such as sedatives, opioids, diuretics, fluid restriction due to clinical protocols, and dehydration due to pathological states. In addition, the presence of xerostomia contributes to the intensification of thirst and discomfort, often without a direct correlation with the oral mucosal hydration[2,3].

Despite numerous of studies reporting a high prevalence of thirst, reaching up to 70%[1,4], it continues to be frequently neglected in critical care, rarely included in the routine evaluation and intervention practices of the healthcare team[4,5,6]. The absence of specific protocols and the prioritization of interventions focused on clinical stabilization often relegate thirst to a secondary plan in the care provided[6].

In this scenario, the nursing professionals play a central role in identifying and managing thirst, as nurses are in direct and continuous contact with patients. Nurses are essential in systematically assessing discomfort, implementing simple and effective interventions, and advocating for the humanization of care[5,6].

Non-pharmacological interventions and oral care bundles have been widely studied. Furthermore, specific assessment tools have been used to better quantify the discomfort reported by patients and guide clinical interventions. However, despite available evidence, significant gaps remain in the standardization of approaches, frequency of application, and selection of assessment tools[7].

This scoping review aims to map scientific evidence on nursing interventions used to relieve thirst, their effectiveness, and frequency of application, as well as the main knowledge gaps, with the goal of contributing to improving clinical practice and promoting comfort for critically ill patients.

Methodology

To carry out this scoping literature review, following the methodology proposed by the Joanna Briggs Institute, a research question was developed based on the PCC model (population, concept, and context). The population was defined as individuals in critical situations within ICU settings, the concept was nursing interventions, and the context was the ICU[8].

Thus, the formulated research question was: "What nursing interventions promote the relief of thirst in critically ill patients?"

A scientific search was conducted using the EBSCOhost research database and PubMed. The descriptors used were "thirst or thirst management" in the abstract, "intensive care unit or critical illness" throughout the text, and "nurs* or comfort care" throughout the text. All descriptors were validated in Medical Subject Headings (MeSH) and Health Sciences Descriptors (DeCS), with the Boolean operator "AND" used between descriptors. Inclusion criteria included articles in English published within the last five years.

A total of 47 articles were retrieved from PubMed and 41 from EBSCOhost. After reading titles, excluding articles without full text, and removing duplicates, 14 articles were selected for abstract review. From these, 11 were read in full, and the study analysis process ended with 5 articles included. An additional article from other literature sources was also included in this review, as illustrated by the Flow Diagram[8] shown in Figure 1.

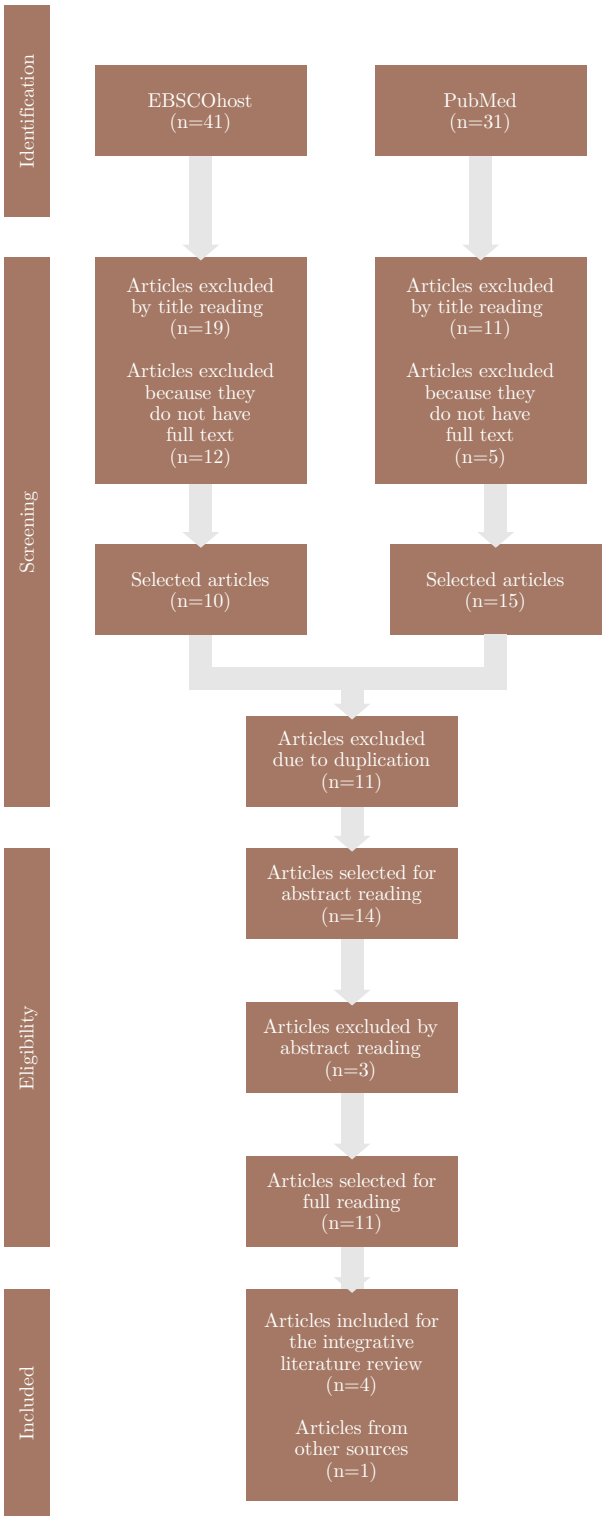

Figure 1: Flow diagram.

Results

A data extraction table was created for the selected studies, including the title, the author, year of publication and the country of origin, study type, the objectives, results, and conclusions of the studies.

Table 1: Summary of selected studies.

Title, Autho, Year, Country	Study Type	Objectives	Results	Conclusions
The Effect of ice-cold water sprays following the model for symptom management on postoperative thirst in patients admitted to intensive care unit: A randomized controlled study. Lian, R. *et al*, 2024[9]. China.	Randomized clinical trial.	To study the effect of spraying with cold water on post- operative thirst. To establish a tool to mitigate thirst in patients in intensive care.	The experimental group had lower thirst levels than the control group. The experimental group had higher oral comfort levels. The time spent by the nursing professionals was lower for the experimental group compared to the control group.	The spraying of cold water is effective in relieving thirst, promoting oral comfort, and reducing the time spent by the nursing professionals.
Effects of cold spray on thirst, frequency oral care, and pain of general surgery intensive care unit patients. Gungor S., *et al*, 2024[10]. Turkey.	Randomized clinical trial.	To investigate the effects of cold intra-oral spray on thirst, oral care frequency, and pain at the incision site in abdominal surgery patients.	From the application of cold water spray in the patient´s mouth 3 times per hour. It was verified that the severity of thirst was significantly lower in the experimental group, and tht the control group had a greater need for oral care.	The controlled application of cold water spray to intensive care patients during the recovery phase reduces their experience of thirst as well as the frequency of the need for oral care.
Impact of oral care on thirst perception and dry mouth assessments in intensive care patients: An observational study. Doi, S. *et al*, 2021[11]. Japan.	Observational study.	To investigate the impact of oral care (tooth brushing with water followed by cleaning with cotton swabs) on the perception of thirst and assessment of xerostomia.	In this study, oral care only relieved the perception of thirst in the first hour after the care.	Oral care does not have sustained effect over time in relieving thirst.
Symptom management to alleviate thirst and dry mouth in critically ill patients: A randomised controlled trial. Zhang, W. *et al*, 2020[12]. China.	Controlled randomized clinical trial.	To demonstrate the effectiveness of a bundle of interventions to relieve thirst and dry mouth in critically ill patients.	After applying the bundle of interventions which included vitamin C sprays, mouthwash with peppermint water, and lip balm, a greater decrease in the intensity of thirst and dry mouth was observed.	The bundle of interventions used in the study proved to be a promising approach in relieving the intensity of thirst and dry mouth.
Effectiveness of a Intervention Bundle on Thirst Intensity and Dry Mouth among Patients Admitted in Intensive Care Units. Shikha, G. *et al*, 2020[13]. India.	Experimental design with pre- and post-test and control group.	To investigate and compare the intensity of thirst and dry mouth before and after the application of an intervention bundle (mouth humidification with cold water and cold water spray) in experimental and control groups. To determine the relationship between the intensity of thirst and dry mouth with various variables, in both the experimental and control groups.	The application of the bundle was effective in reducing the intensity of thirst and dry mouth.	The application of the bundle is an intervention that is effective for reducing the intensity of thirst and dry mouth, and should be an integral part of nursing care for people in critical situations.

Discussion

The studies reviewed provide evidence of several effective nursing interventions for relieving thirst and xerostomia in ICU patients. Although each study presents distinct approaches, all emphasize the importance of non-pharmacological, safe, and easily applicable strategies aimed at improving the comfort and well-being of critically ill patients.

In light of the study by Lian *et al*[9], which assessed the effect of oral ice-cold water spray (0° C) following tracheal extubation, patients in the experimental group (who received the cold water) exhibited significantly lower thirst levels and greater oral comfort compared to the control group. The intensity of thirst was assessed using a numerical scale, demonstrating that the stimulation caused by the cold water activates sensory receptors and stimulates salivary glands to increase oral fluid production, thus improving comfort and hydration levels. Additionally, the nursing intervention time was shorter in the experimental group compared to the control group, highlighting the effectiveness and feasibility of this measure in ICU routines.

Similar results were observed in the study by Gungor *et al*[10], who investigated the regular application of cold intra-oral sprays (4° C) in abdominal surgery patients. In this study, patients with thirst levels equal to or greater than 3 on a scale of 0 to 10 received hourly oral sprays, covering the entire oral mucosa. The control group, on the other hand, only had mouth moistening with room temperature water every eight hours or when requested. The results showed a significant reduction in thirst in the experimental group, as well as a reduced need for additional oral care. This was by Intensive Care Oral Care Frequency Assessment Scale. As in the first study, spraying cold water proved to be a simple and safe measure with a positive impact on comfort and daily nursing practice.

The observational study by Doi *et al*[11] examined the effectiveness of conventional oral care, specifically tooth brushing and cleaning of the oral cavity with water, in alleviating thirst and xerostomia. Thirst perception was assessed using a numerical scale, while oral hydration was measured using the Moisture Checker for Mucus and the Revised Oral Assessment Guide.

Results showed a slight reduction in thirst intensity following oral care however this relief was only temporary, lasting approximately one hour. Regarding oral hydration, no significant changes were observed post-intervention when compared to pre-intervention values. This finding is particularly relevant as, despite patients reporting an average thirst score of 6 on the numerical scale, no correlation was found with the values obtained using the assessment tools, suggesting that thirst and xerostomia are distinct experiences and not necessarily interdependent.

Additionally, the study observed that only a small minority of patients spontaneously verbalized thirst, which reinforces the need for proactive and systematic assessment by nursing staff. The authors concluded that although conventional oral care is essential for comfort and hygiene, it is insufficient as a standalone intervention for sustained thirst management, requiring the implementation of specific strategies and regular reassessment to ensure more effective and lasting thirst control in critically ill patients.

In relation to combined interventions in the form of bundles, the studies by Zhang *et al*[12] and Shikha *et al*[13] assessed their impact on relieving thirst and xerostomia in ICU patients. In Zhang *et al*'s study, the interventions included oral spray with vitamin C, menthol mouthwash, and the application of lip balm, repeated regularly over three consecutive days. The control group received placebo interventions only. This bundle demonstrated a significant reduction in thirst and xerostomia intensity, with a cumulative effect over the three days, proving to be an effective and promising strategy for managing oral comfort in critically ill patients. Similarly, Shikha *et al*'s[13] study applied a bundle of interventions consisting of oral cavity humidification with spatulas soaked in cold sterile water and spray application of sterile ice-cold water, administered in regular sessions. The control group did not receive any intervention. As with previous studies, a significant and progressive reduction in thirst and xerostomia was observed in the experimental group, while symptoms worsened in the control group over time.

Converging findings from both studies demonstrate that structured intervention bundles, when applied systematically, provide longer-lasting relief and greater comfort than isolated interventions.

In summary, all five studies analyzed provide consistent results: cold-based interventions, whether alone or integrated into a bundle, significantly reduce the intensity of thirst and xerostomia in ICU patients. These measures are low-cost, safe, and easily integrated into nursing practice, allowing for simultaneous improvements in comfort, efficiency, and humanization of care. In contrast, conventional oral care provides only temporary relief, highlighting the need for specific strategies that ensure longer-lasting thirst relief.

The results from this review are supported by various authors who corroborate the effectiveness of non-pharmacological sensory interventions, particularly the combination of cold and menthol, as an effective strategy for alleviating thirst in critically ill patients[2,7]. It is also recognized that thirst is a common and moderate to severe symptom, particularly in the first days of hospitalization, but it remains undervalued in clinical practice. It is evident that oral care is often only performed when the patient expresses thirst, rather than being part of a preventive and scheduled practice, which reduces its effectiveness and limits the patient's well-being. This observation underscores the need for a more structured and proactive nursing approach that prioritizes regular assessment and the systematic implementation of comfort measures[6].

Regarding the assessment of thirst and xerostomia, the importance of standardized instruments to support clinical practice becomes evident. The tools used in the included studies — Intensive Care Oral Care Frequency Assessment Scale, Moisture Checker for Mucus, and Revised Oral Assessment Guide — proved useful in objectively quantifying mucosal hydration and monitoring the frequency of oral care. The systematic incorporation of these scales into nursing practice could improve early symptom identification, care planning, and the assessment of intervention effectiveness.

Conclusion

Thirst is a highly prevalent symptom in patients admitted to intensive care units, often overlooked due to the multitude of technical interventions required by the critical care context. The lack of specific protocols and the absence of systematic assessment contribute to this symptom being undervalued in clinical practice.

This scoping review identified several effective non-pharmacological nursing interventions for relieving thirst and xerostomia. Notably, these include cold or ice-cold water spray directly onto the oral mucosa, the application of menthol mouthwashes, vitamin C sprays, lip hydration, and the combination of these measures in structured oral care bundles. Simple strategies have proven safe, feasible, and easily integrated into routine care, while bundles have shown more consistent and long-lasting results, especially when applied systematically over several days.

Nursing, due to its central role in critical care, plays a determining role in the early identification of thirst, regular application of interventions, and monitoring of their effects. Clinical practice should include daily assessment of risk factors, observation of the oral mucosa, definition of care frequency, and consideration of discomfort reported by the patient, thereby promoting a more individualized and proactive approach.

There is a clear need to develop institutional protocols that integrate thirst assessment and management into the nursing care plan, as well as to encourage future research that explores the impact of these interventions in different contexts and populations. Consolidating these practices will contribute to more humanized care, focused on the comfort and dignity of critically ill patients.

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AC: Study coordination, study design, data collection, storage and analysis, review and discussion of results.
MM: Study design and coordination, data analysis, review and discussion of results.
All authors have read and agreed with the published version of the manuscript.

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