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Strategies for thirst management in postoperative adult patients: a scoping review

Estratégias para o manejo da sede de pacientes adultos em pós-operatório: revisão de escopo

Estrategias para el manejo de la sed de pacientes adultos en posoperatorio: revisión de ámbito

Tâmara Taynah Medeiros da Silva[I]
ORCID: 0000-0002-6481-2150

Joyce Karolayne dos Santos Dantas[I]
ORCID: 0000-0002-5259-8556

Sara Cristina Matias de Araújo[I]
ORCID: 0000-0002-1564-3063

Silmara de Oliveira Silva[I]
ORCID: 0000-0002-2554-5045

Daniele Vieira Dantas[I]
ORCID: 0000-0002-0307-2424

Rodrigo Assis Neves Dantas[I]
ORCID: 0000-0002-9309-2092

[I]*Universidade Federal do Rio Grande do Norte. Natal, Rio Grande do Norte, Brazil.*

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Corresponding author:
Rodrigo Assis Neves Dantas
E-mail: rodrigoenf@yahoo.com.br

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ABSTRACT

Objectives: to map the strategies for managing thirst in postoperative adult patients. **Methods**: scoping review was conducted in October 2021 in 19 data sources: 14 databases and 5 platforms to search in the grey literature. It was prepared according to the recommendations of the Joanna Briggs Institute and the checklist of the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews. Nine selected articles were part of the final sample. **Results**: there is evidence of strategies to manage postoperative thirst using interventions such as water, ice, mentholated measures, carbohydrate and protein enriched fluid, oral hydrator, flavored gargling, cold gargling, wet gauze, 0.75% citric acid spray, and cold water. **Final Considerations**: the strategies observed may be reduced to cold and menthol use, salivary stimulants, and early introduction of fluids. The outcomes were positive in all the studies reviewed.

Descriptors: Patients; Adult; Thirst; Postoperative Period; Postoperative Care.

RESUMO

Objetivos: mapear as estratégias para o manejo da sede de pacientes adultos em pós-operatório. **Métodos:** revisão de escopo realizada em outubro de 2021, em 19 fontes de dados, sendo 14 bancos de dados e 5 plataformas para pesquisa de literatura cinzenta. Foi elaborada conforme as recomendações do Instituto Joanna Briggs e do *checklist* do *Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews*. Foram selecionados nove artigos para compor a amostra final do trabalho. **Resultados:** há evidências de estratégias para manejo da sede pós-operatória utilizando intervenções como: água, gelo, medidas mentoladas, líquido enriquecido com carboidrato e proteína, hidratante oral, gargarejo de aroma, gargarejo frio, gaze úmida, spray de ácido cítrico a 0,75% e água fria. **Considerações Finais:** as estratégias vistas podem ser resumidas em uso do frio e do mentol, estimulantes salivares e introdução precoce de líquidos. Os desfechos foram positivos em todos os estudos elucidados.

Descritores: Pacientes; Adulto; Sede; Período Pós-Operatório; Cuidados Pós-Operatórios.

RESUMEN

Objetivos: mapear estrategias para el manejo de la sed de pacientes adultos en posoperatorio. **Métodos:** revisión de ámbito realizada en octubre de 2021, en 19 fuentes de datos, siendo 14 bancos de datos y 5 plataformas para investigación de literatura gris. Fue elaborada conforme las recomendaciones del Instituto Joanna Briggs y del *checklist* del *Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews*. Fueron seleccionados nueve artículos para componer la muestra final del trabajo. **Resultados:** hay evidencias de estrategias para manejo de la sed posoperatoria utilizando intervenciones como: agua, hielo, medidas mentoladas, líquido enriquecido con carbohidrato y proteína, hidratante oral, gárgaras de olor, gárgaras frío, gasa húmeda, spray de ácido cítrico a 0,75% y agua fría. **Consideraciones Finales:** las estrategias vistas pueden ser resumidas en uso del frio y del mentol, estimulantes salivares e introducción precoz de líquidos. Los desfechos fueron positivos en todos los estudios elucidados.

Descriptores: Pacientes; Adulto; Sed; Período Posoperatorio; Cuidados Posoperatorios.

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INTRODUCTION

Thirst can be determined as the desire or expectation to ingest water, not necessarily developed by a physiological imposition, because habits, taste, the sensation of dryness in the mouth or throat can trigger it, or even the desire to drink beverages that provide the perception of hot or cold[1-2]. So, external factors such as age, comorbidities, diet, and anxiety influence the physiological processes regulated by neural and hormonal signals that determine the frequency and intensity of thirst[1-3].

Given this concept, thirst can be activated by two distinct mechanisms. The first occurs when there is intracellular dehydration, generating elevated serum osmolarity in the blood plasma so that thirst sensation is activated to resolve the osmolarity imbalance. The second process is triggered by hypovolemia, i.e. when there is a fluid loss in the extracellular medium[1,3-5].

In perioperative patients, the prevalence of thirst can reach up to 81.6% because it is a common symptom, even exceeding pain, which causes dehydration, discomfort, and anxiety[5]. However, despite being a common complaint, health professionals often overlook thirst because it is a subjective symptom, despite being easily identified by checking dry mouth and throat, dry lips, thick saliva, sour or bitter taste in the mouth, and the patient's desire to drink water. Moreover, other factors such as anxiety, anesthetic procedure, pain, and emotional factors are important triggers of thirst in the immediate postoperative period (IPO)[5-7].

Thus, using alternative strategies to deal with the discomfort of thirst in the IPO is essential since it is a stressful and exhausting scenario for the patient. However, there is still no well-established scientific consensus on thirst management, mainly because it is considered inherent to the surgical procedure, which requires fasting, and because of the fear that excessive consumption of fluids may result in post-surgical complications[1,5,7].

Therefore, health professionals should be concerned during patient management in the IPO with the restriction of large volumes of fluids orally since there is the possibility of complications such as pulmonary aspiration due to the lowered level of consciousness and the frequency of vomiting and nausea[5,7].

In this area, it is indispensable that the multi-professional team acquires knowledge and effective strategies based on scientific evidence about the methods for postoperative thirst management, ensuring a humanized, efficient, and safe assistance[3,6-7].

So, we justify this study due to the importance of further knowledge on the practice of thirst management in the postoperative period, which is related to the care and clinical improvement of patients undergoing invasive procedures. Moreover, this subject is essential due to its limitation in the scientific field and is vital for developing future studies related to thirst management. Within this context, studies developing strategies to control thirst after surgical intervention help patient recovery and optimize hospital care provided by the health team, thus improving the assistance for the individual with this symptom.

To this end, we formulated the following research question: What scientific evidence is available in the literature on strategies for thirst management in postoperative adult patients?

A search was conducted in October 2020 to identify scoping reviews with a similar objective as this study in the sources JBI Clinical Online Network of Evidence for Care and Therapeutics (COnNECT+), Database of Abstracts of Reviews of Effects (DARE), The Cochrane Library, and International Prospective Register of Ongoing Systematic Reviews (PROSPERO). The results indicated the lack of similar reviews on this subject.

OBJECTIVES

To map the strategies for thirst management in postoperative adult patients.

METHODS

Ethical aspects

Since this is a scoping review study, it did not require Ethics Committee approval.

Type of study

That is a scoping review on thirst management of adult patients in the postoperative period. This type of review is formulated to map and classify the leading concepts of a given field of knowledge, in addition to analyzing possible gaps and errors presented in the literature[8]. We followed the JBI guidelines and the protocol recommendations established by the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist for drafting and review[9]. This review was registered in the Open Science Framework (OSF) (https://osf.io/wm69p/).

Data sources and search strategy

It was used the mnemonic Population, Concept, and Context (PCC) to formulate the research question: Population - adult patients undergoing any surgery; Concept - thirst management strategies; and Context - postoperative period.

For the search, the following descriptors indexed to Medical Subject Headings (MESH) and Health Sciences Descriptors (DeCS) were used: "Patients", "Adults", "Thirst", "Postoperative Period", "Postoperative Care". The keywords were: "Clients,""Thirst Relief", "Thirst Management", and "Postoperative Procedures". In addition, the Boolean operators "AND" and "OR" were used to cross-reference the descriptors, as shown in Chart 1.

Data collection took place in October 2021. The sample for this research consisted of primary studies that discuss postoperative thirst management in post-surgical patients. Fourteen data sources were used, namely: 1) Web of Science; 2) *Literatura Latino-Americana e do Caribe em Ciências da Saúde* (LILACS); 3) Elsevier Scopus; 4) Medical Literature Analysis and Retrieval System Online (MEDLINE); 5) Cumulative Index to Nursing and Allied Health Literature (CINAHL); 6) Science Direct; 7) Scientific Electronic Library Online (SciELO); 8) Cochrane Library; 9) Wiley Online Library; 10) PubMed Central (PMC); 11) *Índice Bibliográfico Español en Ciencias de La Salud* (IBECS); 12) Pan American Health Organization (PAHO); 13) Medical Literature Analysis and Retrieval System Online (WHOLIS), and 14) *Base de Dados de Enfermagem* (BDENF).

Chart 1 – Descriptors and keywords used in the search, Natal, Rio Grande do Norte, Brazil, 2021

PCC	MESH/ DeCS		Keywords
Population	*Patients* ***AND*** *Adults*	***OR***	*Clients*/Cliente
	AND		
Concept	*Thirst*	***OR***	*Thirst Relief* ***OR*** *Thirst Management*
	AND		
Context	*Postoperative Period* ***OR*** *Postoperative Care*	***OR***	*Postoperative Procedures*

Chart 2 - Search syntax in data sources, Natal, Rio Grande do Norte, Brazil, 2021

N	Data Sources	Adopted Syntax
1	Web of Science*	*TS: (Patients OR Clients AND Adults) AND TS: (Thirst OR Thirst Relief OR Thirst Management) AND TS: (Postoperative Period OR Postoperative Care OR Postoperative Procedures)*
2	LILACS†	*Patients OR Clients AND Adults AND Thirst OR Thirst Relief OR Thirst Management AND Postoperative Period OR Postoperative Care OR Postoperative Procedures*
3	Scopus‡	*(TITLE-ABS-KEY (Patients OR Clients AND Adults)) AND TITLE-ABS-KEY (Thirst OR Thirst Relief OR Thirst Management)) AND (TITLE-ABS-KEY (Postoperative Period OR Postoperative Care OR Postoperative Procedures))*
4	MEDLINE§	*("Patients" [All Fields] OR "Clients" [All Fields] AND "Adults" [All Fields]) AND ("Thirst" [All Fields] OR "Thirst Relief" [All Fields] OR "Thirst Management" [All Fields]) AND ("Postoperative Period" [All Fields] OR "Postoperative Care" [All Fields] OR "Postoperative Procedures" [All Fields])*
5	CINAHL‖	*(Patients OR Clients AND Adults) AND (Thirst OR Thirst Relief OR Thirst Management) AND (Postoperative Period OR Postoperative Care OR Postoperative Procedures)*
6	ScienceDirect¶	*(SU (Patients OR Clients AND Adults)) AND (SU (Thirst OR Thirst Relief OR Thirst Management)) AND (SU (Postoperative Period OR Postoperative Care OR Postoperative Procedures))*
7	SciELO**	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
8	Cochrane Library††	*(Patients OR Clients AND Adults)) AND (Thirst OR Thirst Relief OR Thirst Management)) AND (Postoperative Period OR Postoperative Care OR Postoperative Procedures))*
9	Wiley‡‡	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
10	PMC§§	*("Patients" [All Fields] OR "Clients" [All Fields] AND "Adults" [All Fields]) AND ("Thirst" [All Fields] OR "Thirst Relief" [All Fields] OR "Thirst Management" [All Fields]) AND ("Postoperative Period" [All Fields] OR "Postoperative Care" [All Fields] OR "Postoperative Procedures" [All Fields])*
11	IBECS‖‖	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
12	PAHO¶¶	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
13	WHOLIS***	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
14	BDENF†††	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
15	*Catálogo de Teses e Dissertações* (CAPES)‡‡‡	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
16	RCAAP§§§	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
17	DART-Europe‖‖‖	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
18	Trove of National Library of Australia ¶¶¶	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*
19	Theses Canada ****	*("Patients" OR "Clients" AND "Adults") AND ("Thirst" OR "Thirst Relief" OR "Thirst Management") AND ("Postoperative Period" OR "Postoperative Care" OR "Postoperative Procedures")*

**Web of Science; †LILACS – Literatura Latino-Americana e do Caribe em Ciências da Saúde; ‡Scopus – Elsevier Scopus; §MEDLINE – Medical Literature Analysis and Retrieval System Online; ‖CINAHL – Cumulative Index of Nursing and Allied Health; ¶ScienceDirect; **SciELO – Scientific Electronic Library Online; ††Cochrane Library; ‡‡Wiley – Wiley Online Library; §§PMC – PubMed Central; ‖‖IBECS – Índice Bibliográfico Español en Ciencias de la Salud; ¶¶PAHO – Pan American Health Organization; ***WHOLIS – World Health Organization Library Information System; †††BDENF – Base de Dados de Enfermagem ‡‡‡; Catálogo de Teses e Dissertações (CAPES);§§§RCAAP – Repositórios científicos de acesso aberto de Portugal; ‖‖‖DART-Europe; ¶¶¶Trove da National Library of Australia; ****Theses Canada.*

Besides those, five platforms for grey literature research were accessed, totaling 19 data sources: 15) *Catálogo de Teses e Dissertações* (CAPES); 16) *Repositórios científicos de acesso aberto de Portugal* (RCAAP); 17) DART-Europe; 18) Trove of the National Library of Australia; and 19) Theses Canada. We considered the importance of checking all available studies on the subject. Chart 2 presents the search syntaxes used in each data source during the research.

Collection and organization of data

After determining descriptors and creating the mentioned strategy, we searched each database and repository, accessing the Virtual Health Library Portal and the journals of the Coordination for the Improvement of Higher Level Personnel (CAPES) through CAFe (Federated Academic Community) platform. This system allows availability and access to digital resources through a login used for the respective registered university.

Thus, the inclusion criteria were: studies available in the data sources that addressed the subject, accessible in their entirety, without a period and language cut-off. We excluded: opinion articles, letters to the editor, editorials, and studies that do not answer the research question and that addressed thirst management strategies in children postoperatively.

A search protocol was created to guide and organize the data collection, including the subject of the study, the research question, the objective, the country of origin, the year, the type of analysis, the data sources, the journal/source of publication, the cross-references, the inclusion, and exclusion criteria.

Aiming to gather studies for this research, we first identified publications in the data sources and performed a reverse search later. Then, we gathered publications available in the references of the publications collected in the first and second phases, which we did not compile previously.

The ClinicalKey platform, a comprehensive data source linked to Elsevier, was used for searching papers that were not available for free via CAPES or the Virtual Health Library (VHL). The platform is a virtual medical library allowing free access to books, journals, and guidelines.

Data analysis

The screening of the publications was carried out independently by two researchers. After reading titles and abstracts and if there were any discrepancies during the article selection process, a third researcher was consulted. After selecting the studies, it is worth mentioning that data extraction aimed to include relevant data to obtain the results expected in the scoping review.

Moreover, from the selected studies we obtained the following information to answer the research question: main strategies for thirst management. Subsequently, the data extracted from the included articles were organized and exhibited in tables to present a clear structure, which could correlate the information to the objectives and questions addressed in this study.

RESULTS

The initial data survey obtained 5,138 publications. After excluding duplicate studies, 5,115 publications were analyzed by reading the title and abstract. Of these: 114 in Web of Science; 18 in LILACS; 81 in Scopus; 180 in MEDLINE; 65 in CINAHL; 106 in Science Direct; 09 in SciELO; 117 in Cochrane Library; 1309 in Wiley Online Library; 1258 in PubMed; 1828 in IBECS; 10 in BDENF; 7 in the Catalogue of Theses and Dissertations; 10 in RCAAP; and 3 in Trove from the National Library of Australia. Furthermore, there were no results in PAHO, WHOLIS, DART-Europe, and Theses Canada. Of the 5,115 publications, 5,074 could not be retrieved.

After reading titles and abstracts, 41 studies were selected; 33 were excluded for not addressing the subject and not corresponding to the research question. Thus, the selection resulted in 8 articles. In addition, it was used a reverse search, including another study, resulting in nine articles in the final sample. After reading in their entirety, we included those nine studies to elaborate the article, as shown in Figure 1.

As highlighted in Chart 3, the studies were published recently: one in 2012[10], one in 2015[11], one in 2017[12], one in 2018[13], one in 2019[14], two in 2020[15-16], and two in 2021[17-18]. The studies were predominantly conducted in Brazil, with four studies[10,13-15]; South Korea, with two[11-12]; China, with two[16-17] and, finally, Turkey[18] with one study.

Chart 4 synthesizes the information to answer the research question: strategies for thirst management, study population, description of the intervention, the scale used to measure thirst, and the main outcomes observed in the research.

DISCUSSION

Thirst should be identified and appropriately treated, especially in surgical patients, to provide comfort and pain relief because that sensation has relevant repercussions on patient satisfaction and may negatively impact anesthetic recovery, particularly in the immediate postoperative period (IPO). Studies have shown that thirst is highly prevalent in the IPO, presenting a rate of 43.1% to 89.6%[5].

In this context, given that thirst is considered one of the most significant stressors for patients in the IPO[19], the absence of questioning by the multidisciplinary team in the perioperative period about the signs and symptoms of thirst inherent to the patient compromises the promotion of safe assistance, which emphasizes the importance of previous knowledge about management and preventive strategies for relief of the patient's thirst[20].

Among the factors contributing to the high intensity of thirst in surgical patients are emotional aspects such as anxiety present since the preoperative period. Consequently, there is a decrease in salivary flow and dryness of the oral cavity, adding to the onset of thirst. Moreover, osmotic and volemic imbalances related to the surgical procedure make surgical patients a group with a higher risk of developing thirst. This condition is, therefore, manifested by intense thirst when the patient recovers from anesthesia[19].

Based on the studies, the primary interventions were the ingestion of fluid in the oral cavity associated with low temperature[1,5], menthol[7], salivary stimulation[5-6,10], and early introduction of fluid[4-6].

From this perspective, such interventions attenuate thirst by pre-absorptive satiety. The latter happens independently of water absorption from the gastrointestinal tract, quenching thirst through anticipatory mechanisms such as thermoreceptors, swallowing, and gastric distension. In this approach, small

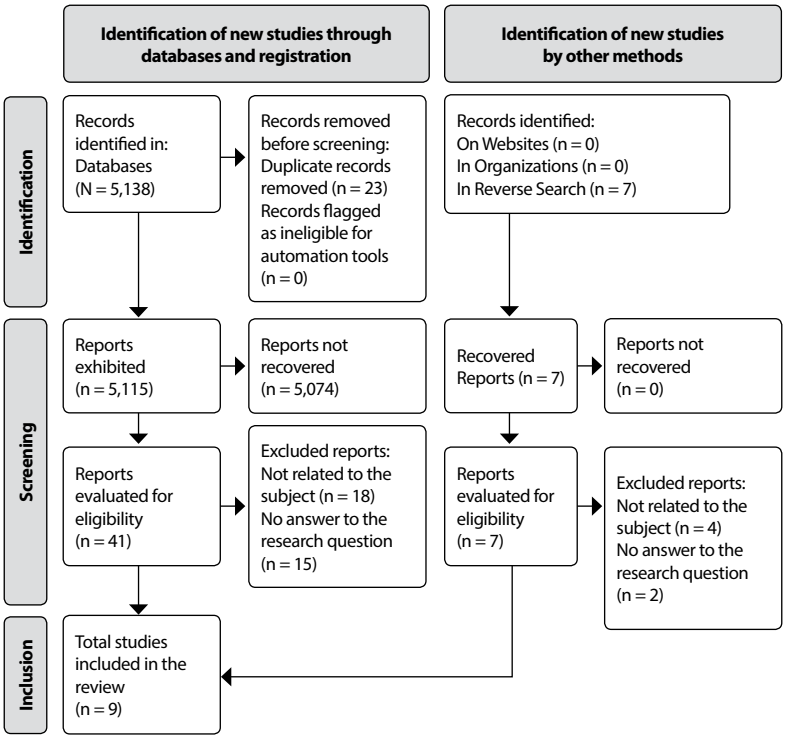

Figure 1 – Flow chart according to PRISMA-ScR guidelines (adapted), Natal, Rio Grande do Norte, Brazil, 2021

volumes effectively reduce thirst and do not require regulating plasma osmolarity[7,20-21].

In four sample studies, the authors tested low-temperature-based strategies in many ways, such as ice chips and cold water, frozen gauze, and menthol. The results of low-temperature activity were significant not only when compared to no thirst-reducing actions but also in other strategies such as water at room temperature[1,5].

This distinction in the increased efficacy of cold compared to room temperature methodologies derives from the presence of receptors and thermoregulators (Transient Receptor Potential Cation Channel Subfamily M [TRPM8]) in the trigeminal and glossopharyngeal nerves present in the mucosa of the mouth, triggering sensations of touch and temperature oscillations[6,21-22]. The activation of this innervation stimulates an area of the cerebral cortex responsible for thirst satiation; therefore, it is possible to activate TRPM8 with the decrease of oral temperature without the need to ingest fluids, generating the sensation of refreshment and satiety[10,15,23-24].

Chart 3 – Description of the studies included in the scoping review, Natal, Rio Grande do Norte, Brazil, 2021

ID*	Country	Year	Type of study	Data Source	Publication
E1[10]	Brazil	2012	Experimental	SciELO	*Acta Paulista de Enfermagem*
E2[11]	South Korea	2015	Quasi-experimental	Reverse Search	Journal of Korean Academy of Fundamentals of Nursing
E3[12]	South Korea	2017	Quasi-experimental	Web of Science	Holistic Nursing Pratice
E4[13]	Brazil	2018	Controlled Clinical	Scopus	Journal of PeriAnesthesia Nursing
E5[14]	Brazil	2019	Controlled Clinical Trial	Cochrane	*Revista Brasileira de Enfermagem*
E6[15]	Brazil	2020	Controlled Clinical Trial	LILACS	*Revista do Colégio Brasileiro de Cirurgiões*
E7[16]	China	2020	Retrospective	PMC	Science Reports
E8[17]	China	2021	Controlled Clinical Trial	Scopus	Journal of PeriAnesthesia Nursing
E9[18]	Turkey	2021	Controlled Clinical Trial o	SciELO	Brazilian Journal of Anesthesiology

Chart 4 – Overview of strategies in postoperative thirst management and the main outcomes obtained in studies included in the scoping review, Natal, Rio Grande do Norte, Brazil, 2021

ID*	Thirst Management Strategy	Population	Intervention	Scales	Main Outcomes
E1	Water & Ice	90 patients in the IPO	Ingestion of 2 ml doses of water at room temperature and 2 ml ice packs	Visual scale adapted to measure thirst	The mean initial thirst intensity was 5.1 for the water group and 6.1 for the ice group. The Ice group had a final thirst intensity of 1.51 versus 2.33 from the Water group.
E2	Gauze with saline solution and gauze with water	56 postoperative patients.	Before the gauze is applied and 15, 30 and 45 minutes after the application.	Visual analog scale adapted for thirst.	The two interventions were effective in reducing thirst, saliva acidity and improving patients' oral condition.

To be continued

Chart 4 (concluded)

ID*	Thirst Management Strategy	Population	Intervention	Scales	Main Outcomes
E3	Flavored gargling with peppermint and lemon, cold gargling, and wet gauze	70 post-spine surgery patients.	Ingestion of 60 ml flavored gargling solution used 3 times for 15 to 20 seconds.	Visual analog scale.	The degree of thirst in the study group using aromatic gargling was lower than in the control group that received cold gargling or wet gauze.
E4	Ice popsicle	208 patients in the postoperative period	Application of 10 ml of water at room temperature and 10 ml of ice popsicle	Visual analog scale	Ice popsicle was 37.8% more effective than water in terms of the variation in intensity between initial and final thirst.
E5	Mentholated measures (popsicle & lip moisturizer)	120 patients submitted to bariatric surgery.	Mentholated (1 ml popsicle with ultrafiltered water and 0.05% menthol and lip moisturizer with 1% menthol) and non-mentholated measures were used.	Numerical verbal scale.	There was a significant decrease ($p < 0.05$) in intensity, hydration, dryness, and taste in the oral cavity between the three evaluation/intervention periods.
E6	Fluid enriched with carbohydrate and protein.	80 patients submitted to gynecological surgery.	200 ml of a solution of distilled water, four drops of red dye and two drops of sucrose-based sweetener and 200 ml of a solution rich in carbohydrate (89%) and whey protein (11%), four hours before surgery.	Visual analog scale Facial pain scale	The intervention group showed less thirst compared to the control group (3.63×0.85).
E7	Ice, water, or oral hydrator.	1,211 patients admitted to the post-anesthesia recovery room (PARR).	Administration of 10 ml ice cube of distilled water, distilled water at room temperature (10 ml) or oral hydrator.	Visual analog scale.	Ice cubes had an estimated thirst intensity reduction of 0.93 points, followed by water at room temperature and oral hydrator.
E8	0.75% citric acid spray & cold water spray	112 patients intubated during surgery	Citric acid (0.75 g) solubilized in purified water (99.25 ml) was consumed to make up a volume of 100 ml and filled into a 30 ml transparent bottle of thin spray.	Numerical range from 0 (no thirst) to 10 (excessive thirst)	After five minutes, the thirst intensity score of the 0.75% citric acid spray group decreased from 5.57 to 3.09. The thirst intensity score of the cold-water spray group decreased from 5.29 to 3.73.
E9	Preoperative high-carbohydrate beverage	82 patients submitted to arthroscopic surgery	Use of 400 ml of grain-free sour cherry juice for the intervention group; no beverage was distributed to the control group.	Brief Fatigue Inventory	The mean thirst score in the first postoperative hour was 4.70 ± 1.59 in the intervention group and 6.36 ± 2.07 in the control group.

**ID – Identification.*

That way, the use of low temperature proved effective in the clinical practice of thirst management because it allows the implementation of effective and safe strategies by demonstrating the practicality and low financial cost of that application in postoperative patients[1,5].

Among the strategies involving the administration of menthol, the mentholated popsicle was highlighted for its significant effectiveness. That can be explained by the combination of strategies that stimulate the anticipatory mechanisms that promote satiety, dispensing ingestion, and high volumes, which provides more safety to the professional in the clinical practice[12].

In this context, randomized clinical trials demonstrated improvement of surgical experience among elderly patients in the Anesthetic Recovery Room (ARS), based on significant attenuation of thirst and its manifestations by administration of 20 ml mentholated popsicle[13]. There was a statistically significant decrease in thirst intensity ($p < 0.001$) and discomfort ($p < 0.001$) of elderly surgical patients in the immediate postoperative period, after 20 minutes of enjoying the mentholated popsicle, when compared to the intensity and discomfort of thirst of the elderly who received the usual care[25].

Furthermore, studies have addressed strategies for salivary stimulation, emphasizing the ice popsicle and the benefit of ice and gargling with iced water. Their effectiveness is explained by stimulating the parotid and submandibular glands to produce more saliva and trigger increased humidification of the oral cavity[5-6,10].

The ice popsicle promotes satisfactory sensations of refreshment and pleasantness, allowing increased salivary stimulation and lip hydration[7]. A randomized clinical trial in Brazil used the ice popsicle in patients in the anesthesia recovery room three times, at a 15-minute interval. The intervention allowed a reduction in the intensity and attenuation of manifestations of thirst; however, it showed minimal statistical difference in the secretion of vasopressin, an antidiuretic hormone that conserves water in the body[7].

The application of ice and gargling with iced water relieves thirst in the postoperative period, and these are effective and low-cost measures compared to other techniques employed when patients are conscious and have preserved protective

reflexes. We also noticed an improvement in the oral mucosa, saliva, and tongue condition in individuals who utilized ice in the postoperative period[1,17,20].

Another important measure to mitigate the effects of fasting is the early introduction of fluids. One of the extensive preoperative and particularly postoperative care myths is the need for absolute fasting, several times for an undetermined period that may vary from 8 to 37 hours, depending on the institution[1,13-14,20]. This prolonged fasting increases the production of stomach acid and further decreases the hydrogen potential (pH), leading to the risk of complications such as broncho aspiration, in addition to subjective discomforts such as hunger and thirst[8,20,23]. Consequently, the early introduction of fluids in the immediate postoperative period (IPO) was one of the strategies that proved positive, valid, and efficient, significantly reducing thirst[4,10,15].

So, to mitigate the patient's thirst in the IPO, nurses play a crucial role in care management and patient safety. Recognizing the symptom, understanding the physiology, and identifying strategies to manage thirst are important actions of the nursing team, which influence the perception and evaluation of this team regarding institutional cultures that transmit the routine of absolute and indiscriminately maintenance of fasting without the possibility of interrupting it under any circumstances[26].

Moreover, despite few reports, unpleasant episodes may occur during thirst management in the IPO due to prolonged fasting, which is related to nausea, vomiting, anxiety, pain, cold, and lack of comfort[22-23]. According to a quantitative study conducted in Brazil, nausea and vomiting in the IPO are events whose level of complications reaches 20% to 30% of cases, which are associated with consequences such as extended hospital stay, hospital expenses, and delay in patient recovery[20].

In conclusion, this scoping review allowed worldwide to map the current studies on the subject, providing professionals working in this field with an initial understanding of managing postoperative thirst, an issue that has received attention in recent years. Studies such as this can help and support the development of well-structured protocols that guide professionals in the measurement and proper intervention for surgical patients and stimulate further research in this field.

Study limitations

As limitations, we noted a few articles addressing strategies for managing thirst in postoperative adult patients. Therefore, new investigations and studies on this relevant subject are required for a more comprehensive overview.

Contributions to the fields of Nursing, Health, or Public Policy

This study contributes significantly to the health field, especially nursing, by addressing scientific evidence on strategies for managing thirst in adult postoperative patients. It presents the necessary information to the nursing team to implement measures that mitigate thirst, such as participating in continuing education in institutions to discuss protocols, training, interventions, and handbooks of proper practices to alleviate the frequent discomfort in the postoperative period and avoid possible complications.

FINAL CONSIDERATIONS

The main strategies discussed in the research were mentholated popsicles, ice popsicles, only ice, and gargling with iced water, which means using cold and menthol, salivary stimulants, and early introduction of fluids. It is noteworthy that the outcomes were positive in all studies, with few reports of complications related to the interventions for thirst management. Most studies were conducted in the last three years, demonstrating the need for protocols and further research on the subject, supporting the teams' approach and interventions with the patient.

In conclusion, nowadays, this subject has been emerging as an interest to researchers. However, there is still little scientific investment to identify and solve this discomfort in the postoperative period, which makes progress and maturity of more research related to the subject fundamental.

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