ORIGINAL ARTICLE

# Efficacy of an Ice Popsicle on Thirst Management in the Immediate Postoperative Period: A Randomized Clinical Trial

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**Purpose:** *Perioperative thirst is an intense discomfort with high incidence in the immediate postoperative period, but nonetheless, it is highly neglected in clinical practice. The purpose of this study was to evaluate the efficacy of an ice popsicle compared with water at room temperature for thirst relief in the immediate postoperative period in terms of variation in the intensity of the initial compared with the final thirst and the satiety reached after an hour of evaluation and intervention.*

**Design:** *A parallel randomized clinical trial was used.*

**Methods:** *A total of 208 patients in the immediate postoperative period were assessed for 1 hour, every 15 minutes. Thirst intensity was assessed initially and subsequently; interventions were performed according to the group: (1) control group, 10 mL of water at room temperature; and (2) experimental group, 10-mL ice popsicle.*

**Findings:** *The ice popsicle was 37.8% ($P < .01$) more effective than water regarding the intensity variation between the initial and final thirst. The thirst intensity and number of interventions were different for the two groups as from the second moment ($P < .01$). Regarding not reaching satiety after an hour of evaluation and intervention, the relative risk was 41%, the relative risk reduction was 59%, the absolute risk reduction was 31%, and the number needed to treat was 3.2.*

**Conclusion:** *Ice popsicle has greater efficacy than water at room temperature for thirst management in the immediate postoperative period.*

**Keywords:** *ice, perioperative nursing, recovery room, thirst, water.*



**SENSATIONS THAT BRING REPERCUSSIONS** of an emotional nature—such as pain, sleep, hunger, and thirst—act as a sign of an imbalance in the body, encouraging humans to adopt certain behavior to restore the balance.[1] Thirst, therefore, causes water-seeking behavior and is one of the most poignant sensations experienced by humans, possibly even compared to overcoming pain and hunger.

Despite the interrelationships between anatomical and physiological functions demonstrating how complex and important thirst regulation is for the maintenance of organic systems, it is still undervalued and undertreated in clinical practice, particularly in the perioperative period.

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Surgical teams widely identify and treat common complications, such as pain, nausea, and postoperative vomiting in the immediate postoperative period (IPP). However, staff do not intentionally assess thirst in the IPP and consequently, do not identify, register, or master management strategies. Guidelines suggesting that the patient tolerates thirst to avoid surgical complications are a persistently practiced myth.

During the perioperative period, the surgical patient is exposed to the multifactorial etiology of thirst, originating from physiological changes such as hyperosmolarity and hypovolemia. A major factor for triggering thirst is the prolonged fasting time for liquids and solids before and after surgery, although the current literature recommends shortening the NPO period to 2 hours preop for clear liquids versus the 8 hour or NPO after midnight that is often advocated. Furthermore, the use of anesthetic drugs and the persistence of the opening of the oral cavity for intubation[2] contribute to frequent,[3] high-intensity thirst.[4]

Osmotic thirst is characterized by intracellular water deficit and hypovolemia, due to volume oscillation and intravascular pressure. The integration between the activation and deactivation of specific brain regions—the lateral hypothalamus, prosencephalon, anterior and posterior cingulate cortex, terminal lamina, medial preoptic nucleus, and cerebellum[5-8]—simultaneously trigger the sensation of thirst and the motivation for water intake in the pursuit of satiety.[1]

Postabsorptive satiety occurs when gastric receptors detect a volume of fluid consumed, beginning with a decrease in secretion of the antidiuretic hormone about 5 minutes after fluid intake. Preabsorptive satiety occurs even before the restoration of blood osmolarity and is triggered by the cold temperature stimulus detected by receptors called Transient Receptor Potential Melastatin 8 (TRPM8), which are free nerve endings located in the oropharyngeal region.[9]

These receptors are responsible for transduction of cold stimuli that propagate through electrical impulses via visceral and sensory afferent fibers from the trigeminal and glossopharyngeal nerves to the somatosensory cortex, particularly the Brodmann areas 1, 2, and 3. In this process, the cold temperature of the consumed fluid is transformed both into the inhibition of the thirst reflex and a pleasure effect, also called aliestesia, which leads to preabsorptive satiety.[9-11]

Aiming to reduce the discomfort of thirst, the use of low efficacy strategies is common in clinical practice, such as wet cotton or gauze to moisten the oral cavity, or the provision of small, nonstandardized quantities of water at room temperature. There is preliminary evidence on strategies to relieve thirst; gargling with cold water; cold sterile water sprays; oral swabs with cold sterile water; and the use of ice chips, which, due to the use of cold temperature, can have positive effects on relieving thirst and oral conditions.[3,12-17] However, these studies on cold temperature to relieve thirst have no experimental design, a limited number of participants, use small volumes of ice chips, and do not investigate the efficacy of ice on the thirst of patients recovering from surgery, during which time the thirst is frequent and intense.

The study of strategies that are both efficacious and safe to quench the thirst of surgical patients is a necessary step to address this problem in the IPP. Taking into consideration the superiority of cold to alleviate thirst, the use of an ice popsicle is proposed during recovery from anesthetics, with a view to higher efficacy of using small volumes to relieve discomfort and enable self-care in the IPP.

## Objective

The objective of this study was to evaluate the efficacy of an ice popsicle compared with water at room temperature for relieving thirst in the IPP in terms of the variation in intensity between the initial and final thirst, as well as the satiety reached after 1 hour of evaluation and intervention.

## Method

A randomized clinical trial, in parallel, with two groups: control group (CG; water at room temperature) and experimental group (EG; ice popsicle), following the steps recommended by the Consolidated Standards of Reporting Trials.[18]

The study population consisted of patients in the IPP of both sexes, undergoing elective or

urgent/emergency surgery. The inclusion criteria were aged between 18 and 65 years; having fasted for more than 8 hours; verbalizing thirst, either spontaneously or stimulated, with an intensity greater than or equal to 3 on a validated visual analog numerical scale from 0 to 10 points[14,19,20]; having received opioids or anticholinergics during surgery; having received anesthesia for a duration of more than 1 hour, and having been approved in the Safety Protocol for Thirst Management (SPTM) evaluation[21] in the IPP. Patients with restrictions on eating and swallowing were excluded.

The reference for the sample size calculation was a South Korean study,[14] based on a two-tailed hypothesis test, a standard deviation of 1.50, which considered a difference in the variation of thirst intensity between the study groups of 2.89 points on a visual analogue scale, with a test power of 90% and a 0.05 significance level, resulting in 104 participants in each group.

This research was conducted in the surgical center of a public teaching hospital, tertiary level, linked to the Unified Health System, located in Southern Brazil. The institution has 313 beds, a surgical center with seven operating rooms and a postanesthesia care unit, with an estimated thirst prevalence of 75% in adults in the IPP.[3]

The primary clinical outcome of interest was the variation between the initial and final thirst intensity. The secondary clinical outcomes were the extent of the satiety presented by the CG and EG groups during an hour of evaluation and intervention and the number of interventions required at each moment of the evaluation and intervention for each group.

A pilot test was applied with 10 patients as a result of which, adjustments were made to the instrument in relation to the categorization of anesthetic techniques for later data collection, which occurred in the period from July to December 2013 in accordance with the following procedures:

1. Preoperatively, in the preanesthetic room, all patients who met the selection criteria regarding age and fasting period were invited to participate. Those who agreed then signed the free and informed consent form.
2. In the IPP, the participants who met the other inclusion criteria were randomly allocated to the CG or EG group. The simple randomization, balanced, was generated by the GraphPad Software (GraphPad Software, Inc. La Jolla, CA) online program, with concealed allocation of participants by means of individual opaque envelopes, sealed and numbered sequentially by a researcher who was not involved in the data collection.
3. The participants were evaluated according to the SPTM[21] according to the following safety criteria: level of consciousness, presence of airway protection reflexes, and absence of nausea and vomiting.
4. Thirst intensity was measured using a range from 0 to 10 on an analog numeric rating scale.[19,20]
5. Envelopes were opened to ascertain the participant's allocation to the CG or EG. The CG group was offered 10 mL of mineral-fluoridated hipotermal water at room temperature by means of a disposable syringe. The choice was made to evaluate the usual treatment given by the nursing staff to thirsty patients, ie, room temperature water. Furthermore, the volume of 10 mL in five interventions was determined to not to exceed the recommendation of a maximum of 50 mL, to prevent risk of bronchoaspiration.
6. To ensure comparability of the composition of the strategies, for the EG group, a 10-mL ice popsicle of the same water used in the CG was offered, since cold temperature is also responsible for activating TRPM8 channels, therefore relieving thirst.
7. To avoid influences of thirst intensity on the evaluation, methodological care was taken by one researcher to carry out the evaluation of thirst intensity and the implementation of the SPTM, and another to administer the appropriate intervention.
8. Each evaluation and intervention moment consisted of noting the time; application of the SPTM; measuring the intensity of thirst on the analog numeric rating scale, and the intervention. These procedures were

repeated every 15 minutes and data collection occurred in the first hour of recovery from anesthesia.

In compliance with Resolution Number 466/12 of the National Health Council, the Ethics Committee for Research Involving Human Subjects of the State University of Londrina approved the research under opinion CAAE 16707313.5.0000.5231. This research is registered at ClinicalTrials.gov of the U.S. National Institutes of Health, with the identification number NCT02149394.

In the data analysis, the intensity of thirst was considered as a discrete quantitative variable. To analyze the correlation between the quantitative variables (demographic and clinical) and the intensity of thirst at moment M1, the Pearson correlation coefficient ($r$) was used, with a confidence interval (CI) of 95%.[22]

The Mann-Whitney test was used to compare the intensity of thirst at moment M1 with the quantitative variables (demographic and clinical). Where variables were grouped into more than two categories, the Kruskal-Wallis test was used.[22]

To compare the thirst intensity between the CG and EG over time, a linear regression model with mixed effects (random and fixed) was used.[23] The CG and EG groups were also compared in terms of the variation in the intensity of thirst (M5 less M1), using the $t$ test.[22] To compare the thirst satiety between the CG and EG groups and estimate the odds ratio, the simple logistic regression method was used.[24]

To evaluate the magnitude of the efficacy of an ice popsicle on quenching thirst during an hour of evaluation and intervention, the relative risk (RR), RR reduction, absolute risk reduction, and its magnitude based on the number needed to treat (NNT) were calculated with a CI of 95%.[25]

## Results

Of the 1,254 adult patients undergoing elective and emergency surgery who were in the IPP, 269 were selected who met the inclusion criteria. Of these, 61 were excluded, resulting in a final sample of 208 participants who were randomized into the CG, room temperature water (n = 104), and the EG, ice popsicle (n = 104; Figure 1).

There were no statistically significant differences between groups with respect to demographic and clinical variables; they were homogeneous and comparable (Table 1). Considering the mean variability of thirst intensity (M1-M5), the EG presented greater variability (5.44) compared with the CG (3.95). It was observed that the ice popsicle was 37.8% more efficacious than water at room temperature; the difference between the groups was statistically significant ($P$ value $< .01$—student $t$ test), confirming the hypothesis of the study. The variability in the mean intensity of thirst in the water group was considered the basis for this calculation (100%) and the difference in variability between the two groups (1.49) provided the efficacy percentage of the EG over the CG. The mean thirst intensity of the participants in the ice popsicle group was significantly lower than the water group at all evaluation moments from the second evaluation and intervention (after 15 minutes; $P < .01$; Table 2).

Regarding the satiation of thirst, the number of participants who considered themselves satisfied, ie, those who no longer needed intervention, was higher in the EG starting from the second evaluation and intervention (M2—after 15 minutes). The participants of the EG group demonstrated satiety earlier than the participants in the water group, and this difference was statistically significant (Table 3).

To evaluate the efficacy of the two strategies to satiate thirst, the risk of each group not achieving this state was calculated, in addition to the ratio between the risks to obtain the RR, which resulted in 41% (0.28 to 0.60, CI 95%). The RR reduction was 59% (from 0.40 to 0.72, CI 95%), the absolute risk reduction was 31% (from 0.18 to 0.45, CI 95%), and the NNT was 3.2 (2.2 to 5.5, CI 95%). The number of interventions required to alleviate thirst was different for the two groups, with participants from the EG requiring fewer interventions, compared with the CG, from the second evaluation and intervention moment (after 15 minutes; Table 4).

## Discussion

It is known that surgical patients experience a high incidence of thirst, reaching 75%, with a high

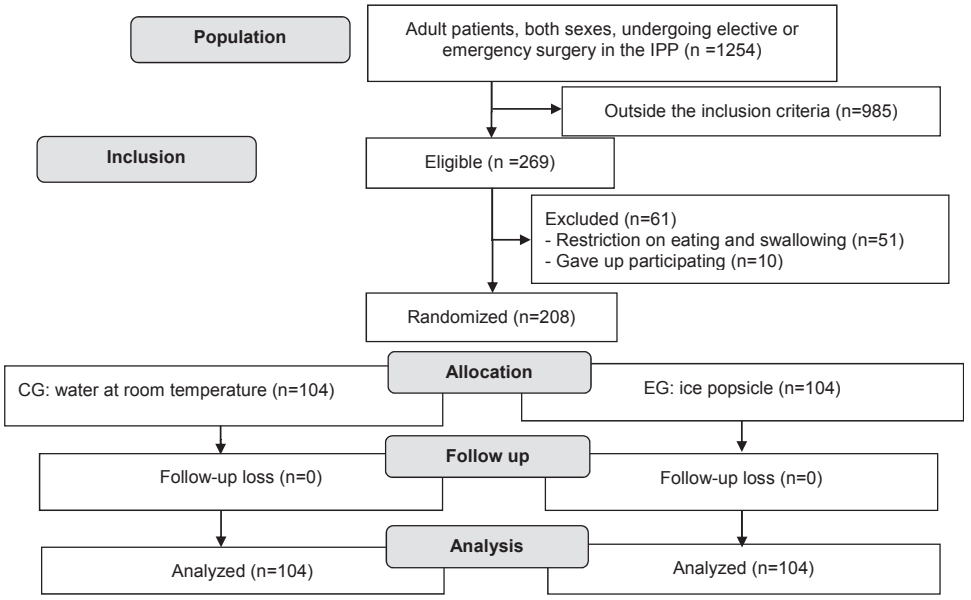


Figure 1. Diagram of sampling and randomization. IPP, immediate postoperative period; CG, control group; EG, experimental group.

mean intensity in the IPP: 6.1[3] and 8.17[15] on a visual analog numerical scale. The major contribution of this study was finding a safe and effective intervention strategy for thirst management.

The ice popsicle was 37.8% more efficacious with regard to the mean variation in thirst intensity when compared with water at room temperature. In other words, the intervention decreased on average 5 thirst intensity points on the visual analog numerical scale at the end of an hour of evaluation and intervention while in the CG, this reduction was an average of 3 points on the same scale.

Starting from the assumption that thirst is a multifactorial symptom from the perspective of the Symptom Management Theory, evaluation of the perception of reduced thirst considers the subjectivity of the symptoms and the importance of self-reporting, thus respecting the individuality of a patient's own perception and judgment of their thirst, as well as the efficacy of the intervention.[12,16]

The EG required a lower number of interventions to achieve thirst satiety when compared with the CG. This effect is favorable to surgical patients, especially in the IPP, as it satiates the thirst symptom using small volumes of liquid, increasing administration safety.

The positive effect of the ice popsicle on the time needed to reach thirst satiety (thirst intensity equal to 0) was also demonstrated, providing thirst satiety earlier than that provided by water at room temperature. At the end of 1 hour, 48 patients (46.2%) in the CG had reached thirst satiety; in the EG, the majority of participants, 81 (77.9%), had reached satiety.

In the fifth and final moment of evaluation and intervention (after 1 hour), the CG presented a 53% risk of not achieving thirst satiety, which signified approximately twice the risk presented by the EG, which was 22%. The CG presented a risk of 59% (more than half) of not reaching thirst satiety after an hour of evaluation and intervention while the ice popsicle reduced by more than half the participant's risk of not being satiated after an hour of assessment and intervention.

Excluding the risks inherent in water at room temperature, the ice popsicle presented an absolute benefit of 31% to promote thirst satiety; after an hour of evaluation and intervention, ie, for each participant who had their thirst quenched with an ice popsicle, there were three patients whose thirst had not been satisfied with water at room temperature. This NNT $< 4$ indicates an efficient cost/benefit relationship presented by the ice popsicle.

**Table 1. Correlation of Demographic and Clinical Variables, With Initial Thirst Intensity, According to the Ice Popsicle and Water Groups; Londrina, PR, Brazil, 2014**

| Variables; n = 104 | Ice Popsicle EG (Mean ± Standard Deviation) | Water at Room Temperature CG (Mean ± Standard Deviation) | Mean Thirst Intensity EG and CG | *P* Value |
|---|---|---|---|---|
| Age | 39.3 ± 13.9 | 36.4 ± 12.6 | | .02* |
| Sex, n (%) | | | | .09† |
| Female | 60 (57.7) | 67 (64.4) | 6.8 | |
| Male | 44 (42.3) | 37 (35.6) | 6.0 | |
| American Society of Anesthesiologists (ASA), n (%) | | | | .13‡ |
| I | 54 (51.9) | 57 (54.8) | 6.5 | |
| II | 43 (41.3) | 38 (36.5) | 6.4 | |
| III | 7 (6.7) | 9 (8.7) | 7.6 | |
| Anesthesia (min) | 134.8 ± 69.2 | 122.1 ± 70.2 | | .56* |
| Anesthetic technique, n (%) | | | | .88‡ |
| Balanced general | 24 (23.2) | 27 (25.9) | 6.6 | |
| Combined general | 19 (18.2) | 10 (9.7) | 6.4 | |
| Sedation | 10 (9.6) | 11 (10.6) | 6.3 | |
| Blocks | 51 (49.0) | 56 (53.8) | 6.5 | |
| Intubation (min) | 68.5 ± 93.8 | 56.8 ± 92.2 | | .64* |
| Opioids, n (%) | | | | |
| Fentanyl | | | | .81† |
| Yes | 66 (63.5) | 61 (58.7) | 6.5 | |
| No | 38 (36.5) | 43 (41.3) | 6.5 | |
| Morphine | | | | .68† |
| Yes | 65 (62.5) | 63 (60.6) | 6.6 | |
| No | 39 (37.5) | 41 (39.4) | 6.4 | |
| Anticholinergics, n (%) | | | | |
| Atropine | | | | .57† |
| Yes | 25 (24.0) | 23 (22.1) | 6.3 | |
| No | 79 (76.0) | 81 (77.9) | 6.6 | |
| Procedure (min) | 103.2 ± 60.4 | 93.1 ± 62.2 | | .83* |
| Recovery (min) | 129.9 ± 51.8 | 141.3 ± 66.6 | | .06* |
| Fasting liquids (min) | 956.1 ± 220.2 | 1,008.2 ± 394.9 | | .53* |
| Fasting solids (min) | 1,012.1 ± 260.9 | 1,075.4 ± 459.6 | | .69* |
| Spontaneous complaining of thirst, n (%) | | | | .08† |
| Yes | 14 (13.5) | 19 (18.3) | 7.3 | |
| No | 90 (86.5) | 85 (81.7) | 6.4 | |
| Thirst initiation, n (%) | | | | .09† |
| Preoperative | 59 (56.7) | 62 (59.6) | 6.8 | |
| Postoperative | 45 (43.3) | 42 (40.4) | 6.1 | |

EG, experimental group; CG, control group.
*Pearson's correlation coefficient (*r*).
†Mann-Whitney.
‡Kruskal-Wallis.

A patient in the IPP can therefore benefit from the positive effects of the ice popsicle, which acts both to reduce average thirst intensity and provide earlier thirst satiety, with a lower number of interventions. This could be attributed to the superiority of the ice popsicle on the action of the oropharyngeal receptors (TRPM8): sensitive to cold temperature, responding to the preabsorptive satiety.[9,26,27] As these receptors have a direct connection with areas of the brain which

**Table 2. Mean Thirst Intensity in the Water and Ice Popsicle Groups According to the Evaluation and Intervention Moments; Londrina, PR, Brazil, 2014**

| | Water | | Ice Popsicle | | | |
|---|---|---|---|---|---|---|
| Thirst Intensity | Mean | Standard Deviation | Mean | Standard Deviation | *P* Value* | *P* Value† |
| M1 | 6.70 | 2.29 | 6.30 | 2.09 | .25 | — |
| M2 | 5.01 | 3.07 | 3.26 | 2.69 | < .01‡ | − < .01‡ |
| M3 | 3.78 | 3.32 | 1.98 | 2.52 | < .01‡ | − < .01‡ |
| M4 | 3.27 | 3.27 | 1.40 | 2.17 | < .01‡ | − < .01‡ |
| M5 | 2.76 | 3.28 | 0.87 | 2.01 | < .01‡ | − < .01‡ |

*Bilateral Mann-Whitney test (H1: Water ≠ Ice).
†Unilateral Mann-Whitney test (H1: Water > Ice).
‡Significant difference ($P < .05$).

control thirst and are located in the cingulate cortex, preabsorptive satiety occurs earlier than postabsorptive and does not need to reach osmotic equilibrium to be effective.

The ice popsicle concentrates on some advantages of cold temperature: being detected in the oral cavity, it produces feelings of pleasure, agreeableness and reward, also called the hedonic process or aliestesia,[9] moisturizing the oropharyngeal region. It also allows for satiety with small volumes of liquid, once it has been demonstrated that a maximum gastric volume of 50 mL is safe for reducing the risk of bronchoaspiration, common in patients in the perioperative period.[28]

Other studies that have evaluated thirst alleviation strategies not only present designs of quasiexperimental research with small samples, but also do not allow for precise effect estimates and thus have less power to detect a real positive effect of cold temperature to promote thirst satiety. This preliminary evidence does not allow generalization for patients in the IPP, does not address important features of the ice, such as the ideal size of the block, and also does not propose alternatives to increase the autonomy and comfort of the surgical patient, contrary to what occurs with ice popsicles.[3,12-16]

Thus, in addition to its proven efficacy to safely provide thirst satiety, the ice popsicle strategy meets the assumptions of the Symptoms Management Theory, as it enables the reduction of the symptom and its signs—such as dry mouth and parched lips—minimizing the consequent negative results, including anxiety, anguish, and distress.[12,16]

**Table 3. Satiety of Thirst in the Water and Ice Popsicle Groups According to Evaluation and Intervention Moments; Londrina, PR, Brazil, 2014**

| Group | Yes N (%) | No N (%) | OR (ref = 0) | CI (95%) | | *P* Value* |
|---|---|---|---|---|---|---|
| Cessation at M2 | | | | | | |
| Water | 14 (13.5) | 90 (86.5) | 1.00 | — | | — |
| Ice popsicle | 26 (25.0) | 78 (75.0) | 2.14 | 1.05 | 4.39 | .04 |
| Cessation at M3 | | | | | | |
| Water | 31 (29.8) | 73 (70.2) | 1.00 | — | | — |
| Ice popsicle | 50 (48.1) | 54 (51.9) | 2.18 | 1.23 | 3.85 | < .01 |
| Cessation at M4 | | | | | | |
| Water | 37 (35.6) | 67 (64.4) | 1.00 | — | | — |
| Ice popsicle | 62 (59.6) | 42 (40.4) | 2.67 | 1.53 | 4.68 | < .01 |
| Cessation at M5 | | | | | | |
| Water | 48 (46.2) | 56 (53.8) | 1.00 | — | | — |
| Ice popsicle | 81 (77.9) | 23 (22.1) | 4.11 | 2.15 | 7.51 | < .01 |

OR, odds ratio; CI, confidence interval.
*Simple logistic regression.

**Table 4. Distribution of Participants According to the Need for Intervention at the Evaluation and Intervention Moments; Londrina, PR, Brazil, 2014**

| | Water | | Ice Popsicle | | | |
|---|---|---|---|---|---|---|
| **Moments** | **Yes N (%)** | **No N (%)** | **Yes N (%)** | **No N (%)** | ***P* Value*** | ***P* Value†** |
| M1 | 104 (100.0) | 0 (0.0) | 104 (100.0) | 0 (0.0) | — | — |
| M2 | 87 (83.7) | 17 (16.3) | 68 (65.4) | 36 (34.6) | < .01‡ | < .01‡ |
| M3 | 73 (70.2) | 31 (29.8) | 44 (42.3) | 60 (57.7) | < .01‡ | < .01‡ |
| M4 | 63 (60.6) | 41 (39.4) | 42 (40.4) | 62 (59.6) | < .01‡ | < .01‡ |
| M5 | 52 (50.0) | 52 (50.0) | 23 (22.1) | 81 (77.9) | < .01‡ | < .01‡ |

*Bilateral Mann-Whitney test (H1: Water ≠ Ice).
†Unilateral Mann-Whitney test (H1: Water > Ice).
‡Significant difference ($P < .05$).

Effectively managing the symptoms of thirst requires identification, measurement, safety evaluation, and treatment. This study presents a simple and viable alternative, with positive effects on surgical patient care during the anesthetic recovery phase.

Considering the evidence that mentholated substances have satisfactory action in the physiological processes of thirst satiety,[9] we suggest further research to verify the association of these substances, with the possibility of increasing the efficacy and reducing the time to reach thirst satiety.

It was not feasible to monitor and evaluate the effect of environmental temperature and humidity on the presence of thirst, and we understand that this could be considered a limitation of the present study, speculating on oscillations in thirst intensity according to climatic variations. Fluid balance was not a variable considered in the study, which may be a limitation. However, the baseline premise evaluated was related to patients' subjective perception of thirst regardless of their fluid imbalance. It has been demonstrated that visual analogical scales present correlation with levels of osmolarity and antidiuretic hormone.[2]

In addition to its proven efficacy in promoting thirst satiety, the ice popsicle is also effective for presenting an absolute benefit of 31% to promote thirst satiety, an NNT of 3.2 and efficient at reducing the negative and unexpected impacts such as bronchoaspiration, as it is a strategy in which small volumes are administered. The innovation presented by the ice popsicle—simple and easy to use in practice—yet still efficient in the IPP, presenting good acceptance, as it enables the patient control over the cold and autonomy to dose at the moment they want the ice, providing freshness, relief, improvement of oral conditions, and comfort during the anesthetic recovery period.

## Conclusion

The ice popsicle demonstrated efficacy of 37.8% ($P < .01$—student *t* test) compared with the variation in the mean thirst intensity, when compared with water at room temperature. The efficacy of the ice popsicle for reducing the intensity of thirst and the need for interventions was also proven through the provision of faster satiety than water at room temperature, using lower volumes, increasing the safety of surgical patients by reducing the risk of bronchoaspiration.

The results provide clinical and scientific support, presenting a strong level of evidence for an innovative strategy for thirst management in the IPP, which provides comfort and safety to surgical patients and offers them control and autonomy in their own care during the anesthetic recovery period.

The intentional evaluation of thirst in the IPP and the use of simple and effective relief strategies can reduce the suffering of patients with this symptom. Despite the high incidence and discomfort, thirst is erroneously seen as a necessary price to be paid during the life-sustaining perioperative process. This study proposes an alternative to this prolonged and unnecessary suffering.

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