



Evaluation of the action time of the ice popsicle on thirst in the postoperative period

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ABSTRACT

Aim: Assess the action time of a single ice popsicle on the intensity and discomfort of thirst in the immediate postoperative period. **Method:** This is a quantitative, quasi-experimental, pre- and post-test study, with a non-probabilistic sample of 63 adult patients in the immediate postoperative period. The 10 milliliter ice popsicle was administered to patients approved in the Safety Protocol for Thirst Management (SPTM), who were questioned every 10 minutes until completing 40 minutes about the intensity and discomfort of thirst, according to the visual numerical scale and the Perioperative Thirst Discomfort Scale. **Results:** The average intensity of thirst was 8.54, and the discomfort 6.76. After 10 minutes of popsicle administration, the average decreased to 4.92 and 3.71, respectively. There was a significant difference in the intensity and discomfort of thirst at different times ($p < 0.05$) up to 30 minutes. **Conclusions:** The administration of a single 10 milliliter ice popsicle is sufficient to significantly reduce the intensity and discomfort of the surgical patient's thirst for 30 minutes. These findings require a reflection on the practices performed in the Post Anesthesia Care Unit, prioritizing the effective and humanized care of the surgical patient.

Descriptors: Thirst; Recovery Room; Ice; Nursing Care; Perioperative Nursing

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INTRODUCTION

The perioperative period is marked by changes in the clinical and physical condition of patients, as well as the experience of different stimuli and discomforts that can negatively interfere in their recovery⁽¹⁾. The discomfort caused by thirst has been the object of study in the scope of nursing care, either on its prevalence and intensity, or on the creation of strategies for its proper management⁽²⁻³⁾.

The genesis of thirst is directly related to homeostatic stimuli (increase in electrolytes, variations in blood pressure and concentration, water intake and increase in angiotensin II concentration) and non-homeostatic stimuli (hydration habits, learning and preferences of liquid intake, dry mouth, and gastric emptying)⁽⁴⁾. Prolonged periods of fasting in surgical patients, still so common in practice, and the confluence of other factors, such as bleeding, anxiety and intraoperative drug use, result in the presence and intensity of thirst⁽³⁾.

With prevalence ranging from 77.1%⁽⁵⁾ to 89%⁽⁶⁾ in the immediate postoperative period (IPO) in adults, thirst stands out as a discomfort not only of high

prevalence, but also of high suffering. Both the intensity measured by numerical visual scales (0-10) and the discomfort evaluated by the Perioperative Thirst Discomfort Scale (PTDS)⁽⁷⁾ indicate the high intensity and suffering caused by thirst.

Pre-absorptive satiety, i.e., that which occurs quickly before the gastrointestinal tract absorbs the fluid, is achieved or reached using mechanisms such as the activation of thermoreceptors in the oral cavity. Recently mapped, the Transient Receptor Potential Melastatin 8 (TRPM 8)⁽⁸⁾ are thermochemical receptors present in structures of the gastrointestinal tract, especially in the nerve endings of trigeminal and glossopharyngeal nerves. When in contact with cold or mentholated substances, they activate a complex neurohormonal system, promoting thirst quenching with small volumes⁽⁹⁾.

Studies point out that cold strategies are effective for the relief of thirst In the pre as well as postoperative periods. They include mentholated chewing gums, lip creams, and ice popsicles⁽⁹⁾.

The clinical experience obtained by the Study and Research Group on thirst of

the State University of Londrina has demonstrated that the administration of 10 ml ice popsicles during the IPO reduces the intensity of thirst, improving the experience and satisfaction of the patient during his recovery from anesthesia⁽¹⁰⁾.

Usually the patient can receive up to five repetitions of ice popsicle every 15 minutes, until they have total relief from discomfort. There are, however, some gaps in knowledge about the use of this strategy. One of them refers to the effectiveness time of only one popsicle, a simple, non-invasive strategy that does not generate risks to patients. In view of this, the objective of this study was to evaluate the action time of a single popsicle in the IPO in relation to the intensity and discomfort of thirst.

METHOD

This is a quantitative, prospective, quasi-experimental, pre and post-test study, conducted in the Post Anesthesia Care Unit (PACU) of a large public-school hospital in northern Paraná.

To ensure a representative sample, the researchers considered the proportion of

variables such as sex, age, and evaluation of the physical status of patients according to the ASA and the surgical clinics in the population of patients served in this surgical center. The sample was non-probabilistic, composed of 63 patients, including patients aged between 18 and 65 years, of both sexes, submitted to any anesthetic-surgical procedure, who were oriented in time and space (they answered the following questions: what day is it today? What is your name? What surgery did you perform?), in IPO, in the Post Anesthesia Care Unit (PACU).

The inclusion criteria were: to present thirst with intensity greater than three in the Numerical Verbal Scale (NVS), and to be approved in the security evaluation, according to the Safety protocol for Thirst Management (SPTM)⁽¹¹⁾. The NVS's assessment of thirst perception can be employed with different ages included in this study and widely used in thirst studies⁽¹²⁾. Patients who were discharged from the ARR before completion of the five-minute evaluation were excluded.

Data collection was conducted by the principal researcher between November 2017 and March 2018. During the patient's

admission to the surgical center, in a preoperative room, the patients received orientation regarding the research objectives and were invited to participate.

When patients agreed to participate in the research, they signed the Free and Informed Form and the researcher utilized a structured script consisting of clinical data, demographics, presence of thirst, intensity and discomfort scales of thirst for data collection. This moment was called M0 (beginning of data collection), equivalent to zero minute.

The intensity of the thirst, from zero to 10, was obtained through the NVS, where zero means "no thirst", and ten means "the worst possible thirst". Thirst discomfort was measured by PTDS, which evaluates seven attributes scored with a three-point Likert scale, where zero means "not uncomfortable at all"; one "little uncomfortable" and two "very uncomfortable", obtaining a score from zero (no discomfort) to 14 (worst possible discomfort). This scale presents a content validity index of 0.98, and a reliability index of 1, Cronbach alpha of 0.91 and kappa weighted 1⁽⁷⁾.

Once the intensity and discomfort of thirst was checked, the patient was

evaluated through SPTM. This protocol was validated as an instrument of safety evaluation for the administration of thirst relief strategies in adult patients. For protocol validation the theoretical and semantic evaluation was performed by judges. SPTM evaluates criteria such as level of consciousness, protective airway reflexes (coughing and swallowing), and presence of nausea or vomiting⁽¹¹⁾.

Thirst Management adopted in the institution recommends that after the patient is approved in the SPTM, the administration of ice popsicles of 10 ml in IPO. Thus, after the approval in the SPTM, an ice popsicle was offered to patients. Thereafter, the patient was reevaluated every 10 minutes, and was asked about the intensity and discomfort of the thirst. The following moments were called M10 (10 minutes after the popsicle application), M20 (20 minutes), M30 (30 minutes) and M40 (40 minutes).

Data processing and analysis were performed with IBM SPSS® software (version 20.0), considering a 5% significance level. To verify normality, the Shapiro-Wilk test was used, as well as the Friedman test for the significance of changes between evaluation moments.

The research was approved by the Research Ethics Committee of the State University of Londrina with CAAE No. 29069414.5.0000.5231, following Resolution No. 466/12 of the National Health Council.

RESULTS

Participants in the survey were 63 patients, 33 men (52.4%) and 30 women (47.6%), with a mean age of 37.7 years (± 12.8). The clinical status evaluation according to the American Society of Anesthesiologists (ASA) was ASA I in nine patients (14.3%) and ASA II in 48 (76.2%). The most representative surgical clinics were Gynecology and Obstetrics with 21 patients (33.3%), Urology with 15 (23.8%) and Orthopedics and Traumatology with 13 (20.6%).

The average fasting time for liquids was 14 hours (± 4.9), with a variation between five and 32 hours. The mean fasting time for solids was 15 hours (± 5.8). Regarding the surgical procedure, the mean duration was 1 hour and 56 minutes, and the duration of the anesthetic procedure was 3 hours and 5 minutes.

The time for the patient to swallow the ice popsicle was an average of 4.8 minutes (± 0.8), varying from 3 to 7 minutes. Table 1 shows the intensity and discomfort of thirst, with their respective measures of central tendency and dispersion, as well as the evaluation of the normality test for these variables. The zero moment corresponds to the values identified immediately before the administration of the relief method, as well as the later moments portray the changes that occurred after the administration of the ice popsicle.

Comparison between the different moments for the intensity and discomfort of thirst showed that in both evaluations, there was a significant difference when compared to the previous moment the popsicle administration. In the comparison between the previous moment and 40 minutes after the ice popsicle administration no significant difference was observed (table 2).

The size of the effect was evaluated by the coefficient W of Kendall ($W=0.627$). The coefficient W of Kendall uses the same classification of Cohen's D, which evaluates the size of the effect, with 0.1 (small effect), 0.3 (moderate effect) and 0.5 (big effect).

Figure 1 represents the distribution

of thirst intensity and discomfort. It is observed the decrease in M10, continuing to

do so in M20, and the elevation of values as time progresses in the following moments.

Table 1 - Intensity and discomfort of thirst throughout the evaluation time. Paraná, Brazil, 2018.

Intensity					
Moments	Medium	SD	Median	IIQ*	P value [†]
M0	8.54	1.812	9.00	2	0.000
M10	4.92	2.824	5.00	5	0.019
M20	5.25	2.951	5.00	5	0.012
M30	6.02	3.160	7.00	4	0.000
M40	7.13	2.785	8.00	5	0.000
PTDS					
Moments	Medium	SD	Median	IIQ*	P value [†]
M0	6.76	2.545	6.00	3	0.006
M10	3.71	2.472	3.00	4	0.000
M20	4.05	2.568	4.00	4	0.000
M30	4.89	2.800	4.00	4	0.000
M40	6.00	2.811	6.00	4	0.001

*Interquartile range †Shapiro-Wilk test

Table 2 - Multiple comparison hypothesis test for thirst intensity and discomfort in the four intervals, resulting from the five evaluations. Paraná, Brazil, 2018

Intensity			
Ranges	Test Statistics	Standard Error	P value*
10-0	2.659	0.282	0.000
20-0	2.325	0.282	0.000
30-0	1.405	0.282	0.000
40-0	0.595	0.282	0.346
PTDS			
Ranges	Test Statistics	Standard Error	P value*
10-0	2.270	0.282	0.000
20-0	2.119	0.282	0.000
30-0	1.365	0.282	0.000
40-0	0.397	0.282	1.000

* Friedman's pair comparison test. Each line tests the null hypothesis that the distributions of Sample 1 and Sample 2 are the same. Asymptotic significances (2-sided test) are displayed. The significance level is 0.05.

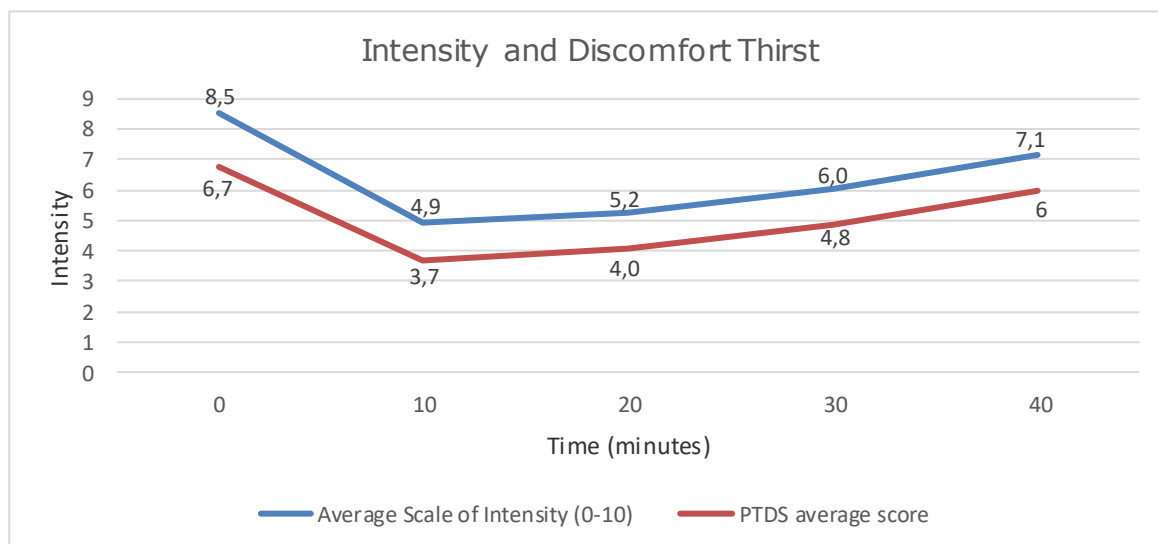


Figura 1 - Distribuição da média entre a intensidade e o desconforto ao longo do tempo de avaliação. Paraná, Brasil, 2018.

DISCUSSION

The relevance of this study is the analysis of the action time of a single ice popsicle in reducing the intensity and discomfort of thirst in IPO patients, contributing to the evaluation of this strategy and its incorporation into clinical practice.

The American Society of Anesthesiologists (ASA) recommends more liberal fasting practices, allowing the ingestion of clear, residue-free liquids up to two hours before surgery. However, in practice the preoperative fasting time found

is much longer⁽¹⁴⁻¹⁵⁾. In a study of 749 patients, the mean fasting time was 15 hours ($\pm 6:30$), and there was an association between the presence of thirst and fasting time⁽¹⁶⁾. These findings are confirmed in the fasting time found in this study.

The preoperative fasting time influences the patient's recovery, causing damage and increasing symptoms such as hunger and thirst⁽¹⁴⁾. In accordance with the literature, the preoperative fasting time performed was longer than recommended, influencing the initial thirst intensity (8.5) on a scale from 0 to 10, of patients admitted to the IPO.

Besides thirst intensity, the presence of other symptoms such as dry mouth, dry lips, thick tongue, thick saliva, dry throat, bad taste in the mouth and willingness to drink water, which are recognized by the discomforts of thirst, are identified⁽⁶⁻⁷⁾.

The administration of a single ice popsicle resulted in a significant decrease in intensity and in the discomfort of thirst. It was observed that the values of intensity and discomfort showed a marked reduction in 10 minutes, with a plateau within 10-20 minutes. The action of a single popsicle lasted up to 30 minutes, when compared to the initial moment. The values presented 40 minutes after the popsicle administration did not differ significantly from the moment before the administration of the relief strategy.

To understand the relevance of this result it is necessary to understand that thirst quenching occurs in two ways: pre-absorptive and post-absorptive. The pre-absorptive satiety occurs 2 to 5 minutes after the ingestion of liquids, through the activation of oropharyngeal receptors by the stimulation of swallowing, by gastrointestinal pressure receptors and cognitive factors. Post-absorption satiety, in turn, occurs

between 12 and 25 minutes after water intake, when the liquid is absorbed by the gastrointestinal tract, with consequent changes in composition and blood volume^(4,18-19).

There is evidence that the use of cold strategies presents very positive results, minimizing the intensity and discomfort of thirst in the perioperative period. In the preoperative period, a study used a 30 ml mentholated popsicle three hours before surgery, significantly reducing the intensity of thirst and some discomforts, such as dry mouth, in addition to promoting a feeling of relief in patients⁽²⁰⁾. Although this study did not follow the time of the effect of a single popsicle on thirst reduction and used a larger volume than that presented in this study, it was observed that after 20 minutes of intake, the reduction remained significant.

In the postoperative period, strategies such as ice popsicles with or without menthol have proven effective in reducing the intensity and discomfort of thirst, including specific populations, such as the elderly⁽¹⁰⁾. A randomized clinical trial evaluated patients in the IPO who received 10 ml ice popsicle compared to those who received 10 ml water at room temperature.

Ice Popsicle proved to be a 37.8% more effective strategy in reducing thirst intensity⁽¹⁰⁾.

The strategies used for thirst relief are effective and significantly reduce the suffering caused by this symptom in the surgical patient. The nursing team needs to include the relief of intentionally in the planning of the care to patients, because this discomfort influences negatively their entire surgical experience⁽¹⁾.

As limitations of this study, the non-probabilistic method of choice of patients that does not allow generalizations is cited. New research on this subject can be carried out with other populations or with the use of mantholated popsicle, comparing the results with these findings.

CONCLUSION

After the administration of a single ice popsicle, the intensity and discomfort of the thirst were significantly reduced for up to 30 minutes. This result reinforces the importance of the ice popsicle as a strategy in relieving the suffering caused by thirst during the IPO, when the patient still cannot receive large volumes of liquids.

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