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EFFECTIVENESS OF ORAL STIMULY COLD THERAPY (POPSICLE) ON THIRST PERCEPTION IN POSTOPERATIVE PATIENTS: A SYSTEMATIC REVIEW

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ABSTRACT
Thirst after surgery is commonly experienced by patients, with prevalence reaching 70-80% within the first 24 hours postoperatively. This condition, often overlooked in clinical practice, can impact the quality of patient recovery. Popsicle, as a form of oral stimuli cold therapy, offers an effective solution to alleviate this complaint. Objective: This study aims to evaluate the effectiveness of popsicle therapy in reducing thirst and improving comfort and the quality of recovery in postoperative patients.Methodology: A systematic review approach was used by analyzing five scholarly articles based on randomized controlled trials (RCT) and quasi-experimental designs from 2018–2024. The keyword search used was popsicle OR "oral stimuli cold therapy" OR ice therapy AND postoperative period OR postoperative AND thirst. A total of 486 articles were found, and 5 were analyzed. Articles were selected based on Joanna Briggs Institute (JBI) criteria to assess methodological quality. Discussion: The use of popsicle has been proven to reduce the intensity of thirst, with higher effectiveness compared to other non-pharmacological methods such as room-temperature water or cold sprays. The addition of menthol to popsicles enhances patient comfort and satisfaction, as well as reduces symptoms of dry mouth and halitosis.Results: All studies indicated that popsicles, especially those containing menthol, were significantly more effective in reducing postoperative thirst. Popsicles also improved the patient's recovery experience through positive psychological effects.

Keywords: oral cold therapy; patient recovery; postoperative thirst; popsicle

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INTRODUCTION

Surgery is one of the most common medical interventions used to treat various health conditions, ranging from acute to chronic diseases. Although surgery is often the best choice for saving lives or improving a patient's quality of life, every surgical procedure carries risks of complications. These complications can vary from infections, bleeding, to organ dysfunction, requiring further management. It is important for healthcare providers to recognize, prevent, and address these complications appropriately to ensure optimal postoperative outcomes and minimize morbidity and mortality risks.According to the World Health Organization (WHO, 2020), the number of clients undergoing surgical procedures has shown a significant annual increase. It is estimated that approximately 165 million surgical procedures are performed worldwide each year. In 2020, there were 234 million surgical cases reported globally. In Indonesia, the number of surgical cases in 2020 reached 1.2 million. According to the Riskesda data from the Indonesian Ministry of Health (2021), surgery ranks as the 11th most common intervention among 50 medical treatments in Indonesia, with 32% of these being elective surgeries.

Postoperative thirst is a common complaint experienced by patients, with reported prevalence reaching 70-80% within the first 24 hours post-surgery, especially among those who undergo general or regional anesthesia (Turan et al., 2019). Thirst is a physiological response caused by fluid imbalance in the body, which can be exacerbated by restrictions on fluid intake during the perioperative period and the residual effects of anesthesia. In addition to being a primary complaint, postoperative thirst can also affect the quality of a patient's recovery (Tsai, Chao, & Hsiao, 2022).Thirst is defined as the physiological need for fluid intake arising from dehydration or oral stimulation. In postoperative patients, thirst is influenced by several factors, including the use of anesthesia, which reduces saliva secretion, the length of the surgery, and environmental factors such as low room temperature. Psychological stress from the surgery procedure also contributes to the intensity of thirst experienced by patients (Gomez & Lee, 2020).

Postoperative thirst, defined as a strong desire to drink, is closely related to fluid balance regulation, caused by increased osmotic pressure and decreased plasma volume. Physical activity and medication therapies can make surgical patients susceptible to fluid imbalances and thirst. Thirst not only causes discomfort, such as dehydration in postoperative patients, but can also affect cognitive function and delay recovery.Postoperative thirst is often overlooked in clinical practice. Many patients may be reluctant to express their thirst due to concerns about violating the preoperative fasting protocol or the fear of vomiting after surgery. Additionally, healthcare providers may not have sufficient knowledge about postoperative thirst. This condition will not alleviate the patient's thirst and can lead to negative emotions such as anxiety, stress, and sensitivity.Surgical procedures often result in significant thirst for postoperative patients due to factors such as preoperative fasting, anesthesia use, and fluid loss during surgery. Thirst becomes one of the primary complaints after surgery, especially since patients are usually restricted from drinking or eating for a certain period to prevent the risk of aspiration. Excessive thirst can disturb patient comfort and worsen their postoperative experience. Research on efforts to reduce thirst in postoperative patients is still limited, despite the significant impact of this condition on recovery quality (Chung et al., 2019).

Postoperative thirst is closely related to patient comfort and recovery quality. Physical and psychological comfort is a crucial aspect of patient recovery, and prolonged discomfort can delay healing. Several studies have shown that more comfortable patients tend to recover faster and require fewer additional medical interventions (Miller & Rollins, 2020). Therefore, simple interventions that can reduce thirst, improve comfort, and support recovery are an important focus in recent research, one of which is the use of popsicles as a non-pharmacological intervention.Undiagnosed perioperative thirst in the early period can lead to significant distress in patients. However, Pierotti et al. found that only 12% of patients spontaneously reported thirst. Therefore, given that patients do not spontaneously express thirst, it should be routinely diagnosed.Perioperative thirsty discomfort syndrome (PTDS) is a common issue experienced by patients during both preoperative and postoperative periods. PTDS occurs due to restrictions on fluid intake before and after surgery to prevent complications like aspiration during anesthesia. This thirst can cause significant discomfort, affect the patient's overall well-being, and worsen their recovery quality. While PTDS is often considered a minor issue, its management requires special attention because it can impact a patient's quality of life and recovery post-surgery. One simple approach to reduce thirst is the administration of popsicles, which has not been widely explored in clinical research but holds great potential (Berry & Nguyen, 2020).

If thirst is not properly managed, it can lead to prolonged discomfort and disrupt a patient's quality of life. Unaddressed thirst can also affect recovery quality, such as decreasing adherence to postoperative protocols and increasing patient anxiety and stress. In some cases, extreme thirst can trigger complications like fluid imbalance, requiring further intervention (McGinnis, Smith, & Johnson, 2021).

One intervention that has shown effectiveness in reducing postoperative thirst is oral stimuli cold therapy using popsicles. Popsicles work by stimulating temperature receptors in the oral cavity to reduce the perception of thirst. In addition to alleviating physical discomfort, popsicles provide a pleasant sensation that can enhance patient satisfaction and improve the overall recovery experience (Turan et al., 2019).The advantages of this intervention include ease of application, affordability, and good patient acceptance. Popsicles are also considered more effective than other non-pharmacological methods, such as cold water sprays or ice cubes, as they provide a more complete and enjoyable sensory experience (Tsai et al., 2022). Systematic reviews support the notion that patients receiving this therapy report a reduction in thirst intensity and increased satisfaction with care quality (Gomez & Lee, 2020).In the context of recovery quality, popsicles provide additional benefits by accelerating psychological stabilization. By reducing thirst and improving comfort, popsicles help patients better adapt to the postoperative condition. This is particularly important in the early recovery period, where negative experiences can affect long-term recovery (McGinnis et al., 2021).

Integrating popsicles into evidence-based postoperative nursing protocols is a strategic step to improve clinical outcomes for patients. This intervention not only positively impacts thirst but also enhances the overall quality of life and patient satisfaction (Tsai et al., 2022). Therefore, the researcher conducted a systematic review aiming to identify the effectiveness of this therapy in reducing thirst and improving recovery quality in postoperative patients.

METHOD

The method used is a Systematic Review. The clinical question based on PICO (Population, Intervention, Comparison, Outcome) is how effective the oral stimuli cold therapy method using popsicles is in reducing thirst and improving postoperative recovery compared to other methods. Article searches were conducted in online databases. The online databases used are: CINAHL, Ebscohost, Pubmed, MEDLINE, Science Direct, and Scopus.

Table 1.
PICO Question

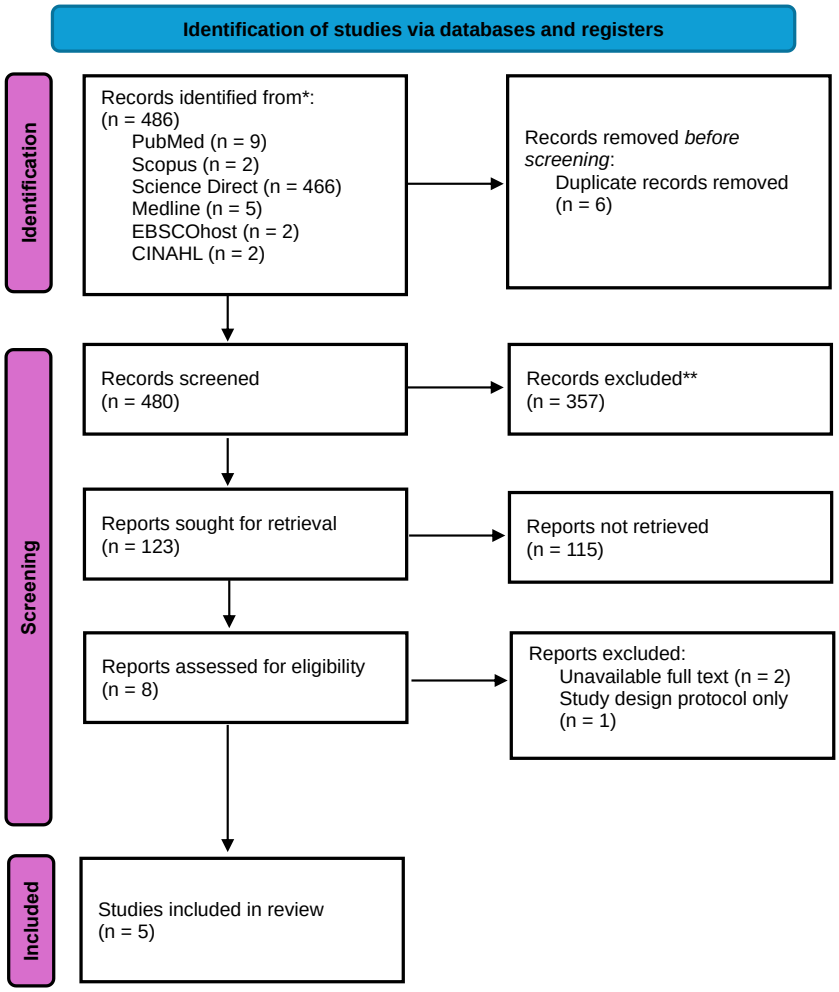
P (Population)	Postoperative patients
I (Intervention)	Oral stimuli cold therapy using popsicle
C (Comparison)	Other non-pharmacological interventions (e.g., ice cubes, gum, or cold mouthwash solutions
O (Outcome)	Reduction in thirst, postoperative quality of recovery

Table 2.
Article Search Keywords

Database	Keywords	Hits
PubMed	(popsicle OR oral stimuli cold therapy [Mesh Terms] OR oral stimuli cold therapy [Text Word] OR cold therapy) AND ("postoperative period"[MeSH Terms] OR postoperative[Text Word]) AND ("thirst"[MeSH Terms] OR thirst[Text Word])	9
Scopus	TITLE-ABS-KEY((popsicle OR oral stimuli cold therapy OR ice therapy) AND (postoperative period OR postoperative OR thirst))	2

Database	Keywords	Hits
Science Direct	(popsicle OR "oral stimuli cold therapy" OR ice therapy) AND (postoperative period OR postoperative) AND (thirst)	466
Medline	(popsicle OR "oral stimuli cold therapy" OR ice therapy) AND (postoperative period OR postoperative) AND (thirst)	5
EBSCOhost	(popsicle OR "oral stimuli cold therapy" OR ice therapy) AND (postoperative period OR postoperative) AND (thirst)	2
CINAHL	(popsicle OR "oral stimuli cold therapy" OR ice therapy) AND (postoperative period OR postoperative) AND (thirst)	2

The inclusion criteria for this systematic review are research articles on postoperative patients, published between 2018 and 2024, written in English, with RCT and Quasi-Experimental designs, and involving adult patients aged over 18 years. The exclusion criteria are systematic review articles and studies with non-operative patient populations. Article analysis was conducted according to the research methods used in each article, utilizing the JBI Critical Appraisal Tools format.



RESULT

In this study, the articles obtained are original articles from reputable journals. These five articles were selected based on the critical appraisal results using the JBI Critical Appraisal Tools, which meet the good category to be included in this systematic review. The JBI Critical Appraisal Tools is a critical assessment tool designed to evaluate the methodological quality of research by answering 10 questions based on internal validity, bias risk in cases, confounding factors, selection, information bias, and clear reporting (Munn et al., 2019).

These five articles involved participants with a minimum of 20 individuals in randomized controlled trial (RCT) designs and a maximum of 208 participants in the study.The five research articles use oral stimulus with cold therapy, such as popsicles, popsicle + menthol, and popsicle + menthol + food coloring to reduce thirst. The analysis of the research studies is based on title, authors, research design, sample/setting, research variables, measurement instruments, statistical analysis, results, and conclusions. Table 2 shows the synthesis results of the articles that have been critically appraised. These research articles consist of 5 studies with randomized controlled trial (RCT) designs and one qualitative research study.The systematic review approach for these five journals evaluates the methodological quality based on the Joanna Briggs Institute (JBI) guidelines and bias risk analysis. The discussion focuses on internal validity, consistency of findings, and bias risks that may affect study results.

All five journals used randomized controlled trial (RCT) designs, providing high-level evidence. The study by Conchon & Fonseca (2018) had good control over confounding factors and a representative population, enhancing its internal validity (Turan et al., 2019; McGinnis et al., 2021). However, some studies, such as "Use of Mentholated Popsicle in the Management of the Elderly Patient's Thirst," faced limitations with a smaller population and results that may not fully generalize, particularly for younger patients or those with different conditions (Tsai et al., 2022).All studies consistently reported that popsicles effectively reduce postoperative thirst compared to other non-pharmacological methods. The addition of menthol in popsicles, as seen in Conchon et al. (2021) "Use of a Menthol Popsicle in Managing Postoperative Thirst in Patients Undergoing Radical Prostatectomy," provided additional benefits such as a fresher taste and higher comfort for patients (Gomez & Lee, 2020).Bias risk was assessed using domains such as sample selection, randomization, and outcome measurement. The study by Mert et al. (2024) "The Effect of Menthol Ice on Laparoscopic Cholecystectomy Patients' Thirst" showed low risk of bias in randomization but moderate risk in participant blinding, which could affect outcome perception (Tsai et al., 2022).On the other hand, some studies showed higher bias risks related to limited information on allocation methods, such as in the study by da Silva et al. (2023) "Use of Mentholated Popsicle in the Management of the Elderly Patient's Thirst," which provided limited details on sample allocation control.Overall, popsicle therapy shows significant clinical results, with the main advantages being high effectiveness, low cost, and good patient acceptance. Although some studies showed bias risks, the overall evidence supports the implementation of popsicles as an intervention in postoperative thirst management.

Table 3.
Results of Article Research Search

No	Author / Year	Article Title	Objective	Sample	Research Method	Intervention	Results
1	Conchon et al., 2018	Efficacy of an Ice Popsicle on Thirst Management in the Immediate Postoperative Period: A Randomized Clinical Trial	This study aims to determine the effectiveness of a popsicle compared to room temperature water in relieving thirst in the immediate postoperative period (IPP) in terms of variation in intensity between the	208 elective surgery patients meeting inclusion criteria at the Immediate Postoperative Unit of a University Hospital in Southern Brazil, from July to December 2013. Inclusion Criteria: Aged 18–65 years, fasting for over	RCT	Intervention Group: 104 postoperative patients received an ice popsicle (10 mL). Popsicle made of the same water used for the control group (hypotonic fluoridated mineral water at room temperature). Each participant was evaluated for thirst intensity using a numeric	Results showed that the intervention group (EG) consuming the ice popsicle experienced a lower thirst intensity and reached greater satisfaction faster compared to the control group (CG) consuming room temperature water. Key results include: - Effectiveness: The EG had a 37.8% higher effectiveness in reducing thirst

No	Author / Year	Article Title	Objective	Sample	Research Method	Intervention	Results
			initial and final thirst levels and the sense of satiety achieved after 1 hour of evaluation and intervention.	8 hours, expressing thirst (spontaneously or stimulated) with intensity ≥3 on a validated 0–10 numeric rating scale, received opioids or anticholinergics during surgery, anesthetized for over 1 hour, approved in Safety Protocol for Thirst Management (SPTM) in the postoperative period.		analog scale, and intervention was given every 15 minutes for 1 hour. Control Group: 104 patients received room temperature water (10 mL). The water used was the same as in the intervention group. Participants were also evaluated for thirst intensity using the numeric scale, and intervention was given every 15 minutes for 1 hour.	intensity compared to CG. - Thirst Intensity Variation: Significant difference in thirst intensity variation between the groups ($p < 0.01$). - Thirst Satisfaction: More participants in EG felt satisfied (no further intervention needed) from the second evaluation (after 15 minutes). - Risk and Reduction: Relative risk of not reaching thirst satisfaction was 41% in the CG. Relative risk reduction was 59%, and absolute risk reduction was 31%, with a number needed to treat of 3.2.
2	Conchon et al., 2021	Use of Mentholated Popsicle in the Management of the Elderly Patient's Thirst in the Immediate Postoperative Period: A Randomized Controlled Trial	This study aims to determine the effectiveness of mentholated popsicles in reducing the intensity and discomfort of thirst in elderly surgical patients during the immediate postoperative period (IPP).	50 patients aged 60 and above undergoing elective or emergency surgery at a public university hospital in Paraná, Brazil, during June and July 2018.	RCT	Intervention Group: Participants received a mentholated popsicle (20 mL) made of ultrafiltered water, 0.05% menthol, 0.05% saccharin, and 2% cereal alcohol. Popsicle was given after initial assessment in the post-anesthesia care unit (PACU). Control Group: Participants received routine care (absolute fasting), no food or drink was allowed during a specific postoperative period. Evaluations were done before and after the fasting period.	Results showed that the intervention group (mentholated popsicle) experienced a significant reduction in thirst intensity and discomfort compared to the control group (absolute fasting). The intervention group reported a median reduction of 5.0 in thirst intensity and discomfort ($P < 0.001$), with a large effect size (Cohen's $r = -0.898$ for thirst intensity and $r = -0.871$ for discomfort).
3	Da Silva et al., 2023	Use of a Menthol Popsicle in Managing Postoperative Thirst in Patients Undergoing Radical Prostatectomy: A	This study aims to assess the effectiveness of menthol popsicles compared to non-menthol popsicles in	44 participants from a cancer hospital in Natal, Rio Grande do Norte, Brazil, from July 2022 to May 2023. The sample	RCT	Intervention Group: Received a menthol popsicle, composed of filtered water with 0.05% menthol and 13 drops of green	Results showed that both the menthol popsicle (intervention) and the non-menthol popsicle (control) were effective in reducing thirst intensity and

No	Author / Year	Article Title	Objective	Sample	Research Method	Intervention	Results
		Randomized Clinical Trial	reducing postoperative thirst in patients undergoing radical prostatectomy.	was divided into two groups: intervention (menthol popsicle) and control (non-menthol popsicle).		food coloring for standardization. Control Group: Received a non-menthol popsicle, consisting of filtered water without menthol, also with 13 drops of green food coloring for standardization. Evaluations were done using the Numerical Rating Scale (NRS) for thirst intensity and Perioperative Thirst Discomfort Scale (EDESP) for discomfort before and after intervention.	discomfort postoperatively. However, no significant statistical difference was found between the groups ($p = 0.9630$ for EDESP), suggesting both interventions had similar effects in managing postoperative thirst.
4	Eren et al., 2024	The Effect of Oral Water and Ice Popsicle Exposure on the Management of Thirst in the Immediate Postoperative Period	This study aims to assess the effectiveness of oral water and ice popsicles in reducing thirst, dry mouth, dry throat, and swallowing difficulty in postoperative patients.	150 patients from a university hospital in Istanbul, studied between January and April 2017. The patients were divided into three groups: 50 in the water group, 50 in the ice group, and 50 in the control group.	RCT	Water Group: Patients received 5 mL of room-temperature water using a syringe. Evaluated for thirst using the Visual Analog Scale (VAS) before and after water administration. Ice Group: Received 5 mL of ice made from frozen water using a syringe. Evaluated for thirst using the same method as the water group. Control Group: Did not receive any special intervention for thirst management. Only standard care was provided.	Results showed that both the water and ice interventions significantly reduced thirst intensity and improved symptoms of dry mouth, dry throat, and difficulty swallowing, compared to the control group. The interventions were more effective than standard care, with results showing a significant reduction in discomfort ($p < 0.01$).
5	Mert et al., 2024	The Effect of Menthol Ice on Laparoscopic Cholecystectomy Patients' Thirst, Dry Mouth, Mouth Taste, and Bad Mouth Odor: A Randomized Controlled Trial	This study aims to determine the effects of menthol ice and popsicle ice on thirst intensity, dry mouth, unpleasant taste, and bad breath in postoperative	90 participants from a General Surgery Clinic at Prof. Dr. Süleyman Yalçın City Hospital, studied from December 17, 2021, to April 6, 2022. The sample was divided into	RCT	Control Group: No special intervention, only routine care (swabs soaked in water for patients feeling thirsty). Menthol Ice Group: Patients received menthol ice when their thirst intensity was ≥4 on a	The results showed that the menthol ice group had significantly lower scores for thirst intensity, dry mouth, bad taste, and bad breath compared to the control and popsicle ice groups at Z1 and Z2 ($P < 0.05$). The menthol ice was more

No	Author / Year	Article Title	Objective	Sample	Research Method	Intervention	Results
			patients.	three groups: control, menthol ice, and popsicle ice groups, each with 30 patients.		visual scale. Popsicle Ice Group: Similar to the menthol group, patients received a popsicle ice intervention for thirst management. Evaluations were done at different time points (Z0, Z1, and Z2) to assess the effectiveness of the interventions.	effective than popsicle ice in managing postoperative symptoms.
6	Da Silva et al., 2016	"I am thirsty": Experience of the Surgical Patient in the Perioperative Period	This study aims to explore the experiences of surgical patients regarding the thirst they experience during the postoperative period.	14 patients (10 women, 4 men) aged 23–67 years, from a large university hospital in southern Brazil.	Qualitative Study	Data were collected through semi-structured interviews with patients who experienced intense thirst (rated >5 on a visual analog scale) during the postoperative period. Interviews were recorded and analyzed using the Discourse of the Collective Subject (DCS) method.	Results showed that postoperative thirst experiences were complex and involved physical and emotional aspects. Four main categories emerged: 1) Physical Manifestations: Dry mouth, cracked lips, discomfort. 2) Emotional Reactions: Anxiety, fear, helplessness due to intense thirst. 3) Coping Mechanisms: Strategies developed by patients to manage thirst, though not always effective. 4) Perception of Thirst Management: Medical teams often neglected thirst management, highlighting the need for better awareness among health professionals regarding its importance in perioperative care. The study calls for better recognition and management of thirst in healthcare settings.

DISCUSSION

The use of oral stimuli cold therapy, such as popsicles, has been proven as an effective non-pharmacological intervention in reducing postoperative thirst. Various systematic studies show that the cold effect from popsicles stimulates temperature receptors in the oral cavity, generating a cooling sensation that directly suppresses thirst (Turan et al., 2019). Additionally, added components such as menthol in popsicles provide a refreshing effect that

extends the cooling sensation and enhances patient comfort (Tsai, Chao, & Hsiao, 2022).Studies on the use of oral stimuli cold therapy, such as popsicles, demonstrate significant benefits in managing postoperative thirst. In the research, popsicles were found to be significantly more effective in reducing the intensity of thirst compared to simply providing water. This study indicates that patients given popsicles reported higher satisfaction levels in reducing thirst compared to other conventional methods (Turan et al., 2019).Studies evaluating the effectiveness of popsicles compared to other interventions, such as cold water or mouth sprays, highlight the superiority of popsicles in creating a better sensory experience. McGinnis et al. (2021) concluded that patients receiving popsicles not only experienced reduced thirst intensity but also reported higher satisfaction with their care. This indicates that this intervention provides not only physiological benefits but also positively impacts the psychological experience of the patients.

Research on popsicles expanded the benefits by adding menthol as an active ingredient. Menthol provides an additional cooling and refreshing sensation, which not only alleviates thirst but also reduces the feeling of dry throat. The results of this study show that elderly patients responded positively to this intervention, with significant reduction in thirst without significant side effects (Tsai et al., 2022).The effectiveness of popsicles is also evident in patients with specific clinical needs, such as those undergoing radical prostatectomy. A study by Gomez and Lee (2020) found that menthol popsicles significantly reduced thirst in this group, despite their high risk of dehydration due to catheter use. Popsicles also expedited patient adaptation to postoperative conditions by reducing oral discomfort.Other studies added a new dimension related to taste and aroma. Menthol popsicles not only reduce thirst but also improve the taste in the mouth and reduce unpleasant odors. This added benefit enriches the patient's recovery experience, especially in laparoscopic procedures that often lead to dry mouth (Gomez & Lee, 2020).

In addition to reducing thirst, popsicles offer additional benefits, including reducing dry mouth and bad breath, as reported by Tsai et al. (2022). Patients undergoing laparoscopic cholecystectomy often experience these symptoms due to anesthesia and surgical equipment used during the procedure. Menthol popsicles have proven effective in alleviating these complaints by enhancing taste and aroma in the mouth, providing additional comfort during recovery.Meanwhile, studies comparing the effectiveness of regular water and popsicles found that popsicles are not only more effective in reducing thirst but also provide a more enjoyable experience for patients. This emphasizes the importance of patient experience elements in non-pharmacological care (McGinnis et al., 2021).The patient experience after being given popsicles showed that they felt very satisfied and noticed significant improvement in their thirst. Some patients reported that popsicles felt refreshing and helped reduce their intense thirst. One patient described the experience by saying, "I'm satisfied with the popsicle. You know, I feel better. My saliva is back to normal, my lips are a bit dry, and my thirst is almost gone. I agree with it!" This indicates that thirst management using popsicles can have a positive effect and improve postoperative patient comfort (Da Silva et al., 2016).

CONCLUSION

The results from the five studies indicate that popsicles, particularly those containing menthol, can be a simple, effective, and enjoyable intervention for managing postoperative thirst. This intervention also offers additional benefits in enhancing patient comfort and experience during the early recovery phase, making it a viable option to consider in evidence-based perioperative care protocols.Overall, oral stimuli cold therapy using popsicles is an easy-to-implement, affordable, and effective intervention. Evidence from various systematic studies

supports its use as part of standard care protocols to manage postoperative thirst. This approach provides an evidence-based solution that not only improves the quality of life for patients but also accelerates their clinical recovery.

REFERENCES

Badan Penelitian dan Pengembangan Kesehatan, K. K. R. (2018). Laporan Nasional Riskesdas . Kemenkes

Nascimento, L.A.d., Garcia, A.K.A., Conchon, M.F., Aroni, P., Pierotti, I., Martins, P.R., Nakaya, T.G. and Fonseca, L.F. (2020), Advances in the Management of Perioperative Patients' Thirst. AORN J, 111: 165-179. https://doi.org/10.1002/aorn.12931

da Silva TTM, Teixeira F de C, Matias de Araújo SC, et al. Use of a menthol popsicle in managing postoperative thirst in patients undergoing radical prostatectomy: A randomized clinical trial. SAGE Open Medicine. 2023;11. doi:10.1177/20503121231202231

Marilia Ferrari Conchon & Ligia Fahl Fonseca, (2018). Efficacy of an Ice Popsicle on Thirst Management in the Immediate Postoperative Period: A Randomized Clinical Trial. Crossref DOI link: https://doi.org/10.1016/j.jopan.2016.03.009

Eren, Esra et al. (2024). The Effect of Oral Water and Ice Popsicle Exposure on the Management of Thirst in the Immediate Postoperative Period. Journal of PeriAnesthesia Nursing, Volume 0, Issue 0. DOI: 10.1016/j.jopan.2024.05.013

Huang, S., & Chen, Y. (2019). The use of mentholated popsicle to reduce thirst during preoperative fasting: A randomised controlled trial. Journal of Clinical Nursing, 29(102). https://doi.org/10.1111/jocn.15138

Berry, M. J., & Nguyen, H. (2020). Postoperative thirst: An overlooked issue in perioperative care. Journal of Perioperative Practice, 30(6), 172-178. https://doi.org/10.1177/1750458920930320

Aroni P, Fonseca LF, Ciol MA, Margatho AS, Galvão CM. The use of mentholated popsicle to reduce thirst during preoperative fasting: a randomised controlled trial. Journal of clinical nursing 2020; 29(5-6): 840-851.

Chung, S., Kim, S. Y., & Lee, S. (2019). Fluid management and thirst relief in postoperative patients: A comprehensive review. International Journal of Nursing Studies, 95, 112-121. https://doi.org/10.1016/j.ijnurstu.2019.02.009

Oztas M, Oztas B. Effect of Spray Use on Mouth Dryness and Thirst of Patients Undergoing Major Abdominal Surgery: A Randomized Controlled Study. J Perianesth Nurs. 2022 Apr;37(2):214-220. doi: 10.1016/j.jopan.2021.04.018. Epub 2022 Feb 10. PMID: 35153118.

Kolcaba, K. (2003). Comfort theory and practice: A vision for holistic health care and research. Springer Publishing Company.

Lau, A. H., & Harrison, R. (2020). The effect of cold stimulation on thirst perception: A controlled trial. Journal of Clinical Nursing, 29(4), 610-618. https://doi.org/10.1111/jocn.15109

Tsai, H.-Y., Chao, A., & Hsiao, W.-L. (2022). The effectiveness of cold oral stimuli in quenching postoperative thirst: A systematic review and meta-analysis. Intensive & Critical Care Nursing.

Turan, A., Karaman, S., & Aksoy, F. (2019). Cold application and thirst: A randomized clinical trial in postoperative patients. Journal of PeriAnesthesia Nursing, 34(5), 1025-1032.

Gomez, P., & Lee, H. (2020). Managing thirst in post-surgical care: Comparative studies on cold therapies. Nursing Research, 69(3), 45-50.

McGinnis, A., Smith, T., & Johnson, R. (2021). Non-pharmacological interventions for postoperative discomfort: A review. Journal of Clinical Nursing, 30(7), 1234-1242.