GMR
The Original

IMPACT OF EARLY ENTERAL FEEDING WITH WATER ON POSTOPERATIVE THIRST AND DISCOMFORT: A RANDOMISED CONTROLLED TRIAL

Dr. Lakshme Sanjana Karthik[1]*, Dr. Gayathri B[2], Dr. Amirdath Prakash[3], Dr. Chandinie[4]

[1*]Postgraduate, Department of Anaesthesiology, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.
Email: lk8065@srmist.edu.in
[2]Professor and Head, Department of Anaesthesiology, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.
Email: gayathrb@srmist.edu.in
[3]Assistant Professor, Department of Anaesthesiology, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.
Email: amirdatr@srmist.edu.in;
[4]Senior Resident, Department of Anaesthesiology, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.
Email: chandhir@srmist.edu.in

ABSTRACT

Background: Postoperative thirst and oropharyngeal discomfort are among the most common and distressing symptoms experienced following general anaesthesia. Prolonged perioperative fasting and airway instrumentation contribute significantly to patient discomfort and may adversely affect recovery quality. Early oral hydration has been proposed as a simple intervention to improve postoperative recovery and is increasingly advocated within Enhanced Recovery After Surgery (ERAS) pathways. However, evidence regarding its effectiveness and safety in daycare surgical patients remains limited.

Aim: To evaluate the effectiveness and safety of early oral water intake following recovery from general anaesthesia in patients undergoing daycare surgical procedures.

Methods: A prospective randomized controlled trial was conducted among 108 adult patients undergoing daycare surgery under general anaesthesia. Participants were randomly allocated into two groups: Group A (n=54), which received standard postoperative fasting care, and Group B (n=54), which received early oral water intake at a dose of 1 mL/kg following recovery from anaesthesia after achieving a Postoperative Recovery Functional Index (PROFI) score of 6/6. The primary outcome was postoperative comfort score. Secondary outcomes included postoperative thirst, oropharyngeal discomfort, and postoperative nausea and vomiting (PONV). Statistical analysis was performed using the Chi-square test and Student's t-test, with $p<0.05$ considered statistically significant.

Results: Baseline demographic and perioperative characteristics were comparable between the two groups. Postoperative thirst was significantly lower in Group B compared with Group A (33.3% vs. 75.9%, $p<0.001$). Similarly, the incidence of oropharyngeal discomfort was significantly lower in Group B than in Group A (29.6% vs. 70.4%, $p<0.001$). Patients receiving early oral hydration demonstrated significantly higher postoperative comfort scores compared with the control group (8.22 ± 0.87 vs. 5.94 ± 1.15, $p<0.001$). Although the incidence of postoperative nausea and vomiting was lower in Group B than in Group A (13.0% vs. 16.7%), the difference was not statistically significant ($p=0.590$). No aspiration-related events or other hydration-related complications were observed.

Conclusion: Early oral water intake following recovery from general anaesthesia is a safe, simple, and effective intervention in daycare surgical patients. Early hydration significantly reduces postoperative thirst and oropharyngeal discomfort while substantially improving patient comfort without increasing postoperative nausea and vomiting or other complications. These findings support the incorporation of structured early oral hydration protocols into routine perioperative and ERAS-based recovery pathways.

KEYWORDS: Early oral hydration; General anaesthesia; Daycare surgery; Enhanced Recovery After Surgery; Postoperative thirst; Oropharyngeal discomfort; Patient comfort; Postoperative recovery

INTRODUCTION

Postoperative recovery is a critical determinant of patient satisfaction, quality of care, and healthcare resource utilization. Despite advances in perioperative management, postoperative discomfort remains a common challenge, particularly among patients undergoing ambulatory and daycare surgical procedures under general anaesthesia. Symptoms such as thirst, oropharyngeal discomfort, and postoperative nausea and vomiting (PONV) frequently occur during the immediate recovery period and can negatively affect patient experience, delay discharge, and impair overall recovery outcomes [1,2]. Among these symptoms, postoperative thirst is often under-recognized despite being one of the most distressing complaints reported by surgical patients. Prolonged preoperative fasting, perioperative fluid restriction, administration of anaesthetic agents, and airway instrumentation contribute to dehydration, xerostomia, and increased thirst perception [3,4].

Previous studies have demonstrated that untreated postoperative thirst is associated with significant patient dissatisfaction and may adversely affect the quality of recovery [5].
Oropharyngeal discomfort, including sore throat, dryness, irritation, and difficulty swallowing, is another common consequence of airway manipulation during general anaesthesia. The reported incidence of postoperative sore throat ranges from 30% to 70%, depending on the type of airway device used, duration of surgery, and perioperative airway management practices [6]. Although generally considered a minor complication, persistent throat discomfort can impair oral intake, communication, and overall patient well-being during the postoperative period [7].
Postoperative nausea and vomiting remain among the most frequent adverse events following surgery and anaesthesia, affecting approximately 20–30% of patients and substantially more in high-risk groups [8]. PONV contributes to patient discomfort, delayed discharge, dehydration, unanticipated hospital admission, and increased healthcare costs [9]. Consequently, reducing postoperative symptoms while maintaining patient safety remains a key objective of modern perioperative care.
Enhanced Recovery After Surgery (ERAS) protocols have increasingly emphasized patient-centered recovery strategies, including early oral intake and optimization of perioperative hydration. Early postoperative hydration has been proposed as a simple, inexpensive, and potentially effective intervention for reducing thirst and improving comfort without increasing the risk of aspiration or other complications in appropriately selected patients [10]. Several pharmacological and non-pharmacological interventions have been investigated for the management of postoperative discomfort; however, evidence regarding the effectiveness and safety of early oral water administration in daycare surgical patients remains limited and inconsistent across studies [11].
Patient comfort has emerged as an important multidimensional outcome measure reflecting the overall quality of postoperative recovery. Unlike isolated symptom assessment, comfort scores integrate physical well-being, symptom relief, functional recovery, and psychological satisfaction, thereby providing a comprehensive evaluation of patient-centered outcomes [12].
Given the increasing emphasis on enhanced recovery pathways and patient-centered perioperative care, further evidence is required regarding the role of early oral hydration following general anaesthesia. Therefore, the present study was undertaken to evaluate the effectiveness and safety of early oral water intake in reducing postoperative thirst, oropharyngeal discomfort, and postoperative nausea and vomiting, while improving overall postoperative comfort among patients undergoing daycare surgery under general anaesthesia.

MATERIALS AND METHODS

Study Design and Setting

This prospective randomized controlled trial was conducted in the Department of Anaesthesiology, SRM Medical College Hospital, Chennai, India, over a period of 12 months following approval from the Institutional Ethics Committee.

Study Population

A total of 108 adult patients scheduled for elective daycare surgical procedures under general anaesthesia were enrolled in the study. Participants were randomly allocated into two equal groups: Group A (standard postoperative fasting protocol; n=54) and Group B (early oral water intake; n=54).

Eligibility Criteria

Patients aged 18–65 years belonging to the American Society of Anesthesiologists (ASA) physical status I or II and undergoing daycare surgery under general anaesthesia were eligible for inclusion. Written informed consent was obtained from all participants before enrolment.
Patients undergoing gastrointestinal surgical procedures, endoscopic or colonoscopic interventions, those with pre-existing respiratory pathology, impaired airway protective reflexes, or requiring postoperative oxygen support were excluded from the study.

Randomization and Allocation

Participants were assigned to study groups using a computer-generated randomization sequence. Allocation concealment was maintained using sequentially numbered opaque sealed envelopes opened only after completion of surgery and recovery from anaesthesia.

Study Intervention

Patients in Group A received conventional postoperative management with standard nil per oral (NPO) restrictions until routine oral intake was permitted according to institutional protocol.
Patients in Group B received early oral hydration in the form of plain drinking water at a dose of 1 mL/kg body weight following complete recovery from anaesthesia. Early oral intake was initiated only after achievement of a Postoperative Recovery Functional Index (PROFI) score of 6/6, confirmation of intact airway protective reflexes, and successful completion of a 10-mL swallow test.

Outcome Measures

The primary outcome measure was postoperative patient comfort assessed using a validated postoperative comfort scale during the recovery period.
Secondary outcome measures included:

1. Incidence of postoperative thirst.
2. Presence of oropharyngeal discomfort.
3. Incidence of postoperative nausea and vomiting (PONV).
4. Return of bowel activity.
5. Safety of early oral hydration following general anaesthesia.

Data Collection Procedures

Following recovery from anaesthesia, all participants underwent assessment of PROFI score, airway protective reflexes, and swallowing ability using a standardized 10-mL water swallow test. Gastric motility and gastric emptying status were further evaluated using bedside ultrasonography prior to administration of oral fluids in the intervention group.

Patients were subsequently monitored in the postoperative recovery area, and outcome variables including thirst, oropharyngeal discomfort, PONV, bowel activity, and comfort scores were recorded using a standardized data collection proforma.

Sample Size Calculation

The sample size was calculated using Rosner's formula for comparing two independent proportions:

$$n = [Z(1-\alpha/2)\sqrt{\{2P(1-P)\}} + Z(1-\beta)\sqrt{\{P_1(1-P_1) + P_2(1-P_2)\}}]^2 / (P_1-P_2)^2$$

Where:

- n = sample size required per group
- P_1 = expected proportion in the control group
- P_2 = expected proportion in the intervention group
- $P = (P_1 + P_2)/2$
- $Z(1-\alpha/2) = 1.96$ for a 95% confidence level
- $Z(1-\beta) = 0.84$ for 80% study power

Based on previous literature evaluating postoperative thirst interventions by Mao et al. [16], a clinically meaningful reduction in postoperative thirst was anticipated between the intervention and control groups. Assuming a 5% level of significance, 80% power, and an expected difference in outcome proportions between groups, the minimum required sample size was calculated to be approximately 49 participants per group. To compensate for possible dropouts and incomplete data, an additional 10% was added, resulting in a final sample size of 54 participants per group. Therefore, a total of 108 patients were enrolled in the study.

Statistical Analysis

Data were entered into Microsoft Excel and analysed using Statistical Package for Social Sciences (SPSS) software version 26.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequency and percentage.

Comparisons between groups for categorical variables were performed using the Chi-square test or Fisher's exact test, where appropriate. Continuous variables were compared using the independent samples Student's t-test. A two-tailed p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

The study protocol was reviewed and approved by the Institutional Ethics Committee of SRM Medical College Hospital prior to commencement of participant recruitment. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Written informed consent was obtained from all participants before enrolment, and confidentiality of patient information was maintained throughout the study.

RESULTS

TABLE 1. Baseline Demographic Characteristics of the Study Population

Variable	Group A (Standard Fasting) n=54	Group B (Early Oral Water Intake) n=54	Total (N=108)	p-value
Age (years), Mean ± SD	39.8 ± 10.5	40.6 ± 11.2	40.2 ± 10.8	0.684
Age ≤40 years, n (%)	29 (53.7)	27 (50.0)	56 (51.9)	0.701
Age >40 years, n (%)	25 (46.3)	27 (50.0)	52 (48.1)	
Male, n (%)	28 (51.9)	30 (55.6)	58 (53.7)	0.702
Female, n (%)	26 (48.1)	24 (44.4)	50 (46.3)	
BMI (kg/m²), Mean ± SD	24.7 ± 3.5	25.1 ± 3.8	24.9 ± 3.7	0.571

Inference: No statistically significant differences were observed between the groups, confirming baseline comparability.

TABLE 2. Perioperative Characteristics

Variable	Group A (n=54)	Group B (n=54)	Total (N=108)	p-value
ASA Grade I	31 (57.4%)	29 (53.7%)	60 (55.6%)	0.701
ASA Grade II	23 (42.6%)	25 (46.3%)	48 (44.4%)	
Duration of Surgery (minutes), Mean ± SD	48.6 ± 11.4	50.1 ± 12.2	49.4 ± 11.8	0.513
Duration ≤60 min	41 (75.9%)	39 (72.2%)	80 (74.1%)	0.659
Duration >60 min	13 (24.1%)	15 (27.8%)	28 (25.9%)	

Inference: Surgical and anaesthetic characteristics were comparable between groups.

TABLE 3. Comparison of Postoperative Thirst

Thirst Status	Group A n=54	Group B n=54	Total (N=108)	χ^2	p-value
Present	41 (75.9%)	18 (33.3%)	59 (54.6%)	19.62	<0.001
Absent	13 (24.1%)	36 (66.7%)	49 (45.4%)		

Effect Measure	Value
Absolute Risk Reduction	42.6%
Relative Risk	2.28
Relative Risk Reduction	56.1%
Number Needed to Treat (NNT)	2.3

Inference: Early hydration reduced postoperative thirst by more than half compared with conventional fasting.

TABLE 4. Comparison of Oropharyngeal Discomfort

Oropharyngeal Discomfort	Group A n=54	Group B n=54	Total (N=108)	χ^2	p-value
Present	38 (70.4%)	16 (29.6%)	54 (50.0%)	17.61	<0.001
Absent	16 (29.6%)	38 (70.4%)	54 (50.0%)		

Effect Measure	Value
Absolute Risk Reduction	40.8%
Relative Risk	2.38
Relative Risk Reduction	58.0%
Number Needed to Treat	2.4

Inference: Patients receiving water experienced significantly less throat discomfort and dryness.

TABLE 5. Comparison of Postoperative Nausea and Vomiting (PONV)

PONV	Group A n=54	Group B n=54	Total (N=108)	χ^2	p-value
Present	9 (16.7%)	7 (13.0%)	16 (14.8%)	0.29	0.590
Absent	45 (83.3%)	47 (87.0%)	92 (85.2%)		

Effect Measure	Value
Absolute Risk Reduction	3.7%
Relative Risk	1.28
Relative Risk Reduction	22.2%

Inference: Early hydration did not significantly influence the occurrence of postoperative nausea and vomiting.

TABLE 6. Comparison of Postoperative Comfort Scores

Variable	Group A (n=54)	Group B (n=54)	Mean Difference	95% CI	p-value
Comfort Score	5.94 ± 1.15	8.22 ± 0.87	2.28	1.89–2.67	<0.001

Comfort Score Categories

Category	Group A	Group B	Total

Poor (<6)	28 (51.9%)	3 (5.6%)	31 (28.7%)
Moderate (6–8)	24 (44.4%)	18 (33.3%)	42 (38.9%)
Excellent (>8)	2 (3.7%)	33 (61.1%)	35 (32.4%)

Inference: Early oral hydration significantly improved subjective patient comfort during recovery.

TABLE 7. Overall Outcome Summary and Clinical Benefit Analysis

Outcome	Group A	Group B	Difference	p-value
Thirst	75.9%	33.3%	−42.6%	<0.001
Oropharyngeal discomfort	70.4%	29.6%	−40.8%	<0.001
PONV	16.7%	13.0%	−3.7%	0.590
Comfort score	5.94 ± 1.15	8.22 ± 0.87	+2.28	<0.001

Ranking of Intervention Effect

Outcome	Magnitude of Benefit
Reduction in Thirst	Very High
Reduction in Oropharyngeal Discomfort	Very High
Improvement in Comfort Score	High
Reduction in PONV	Minimal

Overall Interpretation

Early oral water intake following recovery from general anaesthesia significantly reduced postoperative thirst and oropharyngeal discomfort while markedly improving patient comfort scores. No increase in adverse events or postoperative nausea and vomiting was observed, supporting the safety and effectiveness of early postoperative hydration in daycare surgical patients.

DISCUSSION

The present prospective randomized controlled trial evaluated the effectiveness of early oral water intake following recovery from general anaesthesia in patients undergoing daycare surgical procedures. Baseline demographic and perioperative characteristics were comparable between the two groups, indicating successful randomization and minimizing the influence of confounding variables. The study demonstrated that early oral hydration significantly reduced postoperative thirst and oropharyngeal discomfort while substantially improving postoperative comfort scores. Although the incidence of postoperative nausea and vomiting (PONV) was numerically lower among patients receiving early oral hydration, the difference was not statistically significant. Overall, the findings suggest that early oral water intake is a safe and effective strategy for enhancing postoperative recovery and improving patient-centred outcomes.

The baseline characteristics of the study population were comparable between the two groups. The mean age was 39.8 ± 10.5 years in Group A and 40.6 ± 11.2 years in Group B ($p=0.684$). Similarly, there were no significant differences in sex distribution, body mass index, ASA physical status, or duration of surgery between the groups. Male participants constituted 51.9% of Group A and 55.6% of Group B, while the mean BMI was 24.7 ± 3.5 kg/m² and 25.1 ± 3.8 kg/m², respectively. ASA grade distribution and duration of surgery were also comparable ($p>0.05$). These findings indicate adequate homogeneity of the study groups and strengthen the validity of the observed postoperative outcome differences.

The primary outcome of the present study was postoperative comfort. Patients receiving early oral hydration demonstrated significantly higher comfort scores than those managed using conventional fasting protocols (8.22 ± 0.87 vs. 5.94 ± 1.15, $p<0.001$). Furthermore, excellent comfort scores were observed in 61.1% of patients receiving early oral hydration compared with only 3.7% of patients in the control group. These findings indicate that early oral hydration contributes substantially to overall recovery quality and patient satisfaction. Kolcaba [12] proposed that comfort is a multidimensional construct involving physical, psychospiritual, environmental, and sociocultural domains. According to this theory, interventions that relieve physical discomfort can significantly improve overall well-being and recovery experiences. The marked improvement in comfort scores observed in the present study supports this concept and suggests that reducing postoperative symptoms such as thirst and throat discomfort positively influences patient-centred recovery.

Oropharyngeal discomfort was significantly lower among patients receiving early oral hydration. The incidence decreased from 70.4% in the conventional fasting group to 29.6% in the intervention group ($p<0.001$), representing an absolute reduction of 40.8%. Postoperative sore throat remains a common complication following airway instrumentation and endotracheal intubation. Mazzotta et al. [13] reported that postoperative sore throat is among the most frequent airway-related complaints following general anaesthesia and highlighted the importance of preventive and supportive measures to reduce airway irritation. The substantial reduction observed in the present study is consistent with these observations and suggests that restoration of oral and pharyngeal hydration may reduce mucosal dryness and irritation. The same authors subsequently emphasized the role of hydration and airway care in reducing postoperative throat symptoms [20]. The significantly lower incidence of oropharyngeal discomfort observed in the intervention group therefore provides additional clinical evidence supporting hydration-focused postoperative care.

The findings of the present study are also consistent with the principles of Enhanced Recovery After Surgery (ERAS). Ljungqvist et al. [14] emphasized that prolonged fasting should be minimized and that restoration of normal physiological function should occur as early as possible following surgery. In the present study, early oral hydration significantly improved comfort scores and reduced postoperative symptoms without increasing complications, thereby supporting

ERAS recommendations. The observed benefits indicate that early hydration can serve as a practical component of enhanced recovery protocols in ambulatory surgical settings.

The findings should additionally be interpreted in the context of perioperative fasting practices. Brady et al. [15], in a Cochrane review, questioned the necessity of prolonged fasting policies and reported limited evidence supporting excessive restrictions on oral intake among low-risk surgical patients. The significant reduction in postoperative discomfort observed in our study further supports a more liberal approach to postoperative hydration. The findings suggest that prolonged postoperative fasting may unnecessarily contribute to patient discomfort without providing additional clinical benefit in appropriately selected patients.

One of the most important findings of the present study was the significant reduction in postoperative thirst. The incidence of thirst was 75.9% in the conventional fasting group compared with only 33.3% in the early hydration group ($p<0.001$), corresponding to an absolute risk reduction of 42.6% and a relative risk reduction of 56.1%. These findings indicate that thirst remains a highly prevalent postoperative symptom and that early oral hydration is highly effective in reducing its occurrence. Mao et al. [16], in a randomized controlled trial evaluating mini-mint ice cubes for thirst relief following general anaesthesia, reported significant improvements in thirst perception and patient satisfaction among patients receiving oral interventions. Although the intervention differed from that used in the present study, both studies demonstrated that simple hydration-based measures can substantially reduce postoperative thirst.

The findings are further supported by Özsoy and Kara Söylemez [17], who reported that thirst is frequently perceived by patients as one of the most distressing perioperative symptoms and has a significant impact on recovery experiences. Similarly, Belete et al. [18] documented a high prevalence of postoperative thirst and identified fasting duration and perioperative fluid restriction as major contributing factors. The high thirst prevalence observed in the control group of the present study is consistent with these observations. Furthermore, the systematic review and meta-analysis by Sarmadi et al. [19] concluded that oral stimulation and hydration-based interventions significantly reduce postoperative thirst and improve patient comfort. The substantial reduction in thirst observed in the present study therefore adds further evidence supporting the use of structured hydration strategies during the postoperative period.

The broader implications of the present findings are reinforced by recent developments in ERAS programmes. Ljungqvist et al. [21] highlighted that future ERAS pathways should increasingly focus on patient-centred outcomes, optimization of hydration, and enhancement of postoperative recovery quality. Similarly, Gottumukkala and Joshi [22] emphasized hydration optimization, symptom control, and patient satisfaction as important opportunities for improving perioperative recovery programmes. The significant reductions in thirst and throat discomfort together with the marked improvement in comfort scores observed in the present study provide practical evidence supporting these recommendations.

The significant improvement in comfort scores observed in our study is also supported by recent evidence emphasizing patient-centred recovery assessment. Myles et al. [23] demonstrated that recovery trajectories and patient-reported outcomes are increasingly recognized as meaningful indicators of healthcare quality and postoperative success. The improvement in comfort scores from 5.94 ± 1.15 to 8.22 ± 0.87 observed in our study highlights the value of incorporating patient-centred outcomes into perioperative research and supports the use of comfort-based measures when evaluating postoperative recovery interventions.

Although postoperative nausea and vomiting occurred less frequently in the intervention group than in the control group (13.0% vs. 16.7%), the difference did not achieve statistical significance ($p=0.590$). This finding suggests that early oral hydration neither increases nor substantially influences the occurrence of PONV. Glebov et al. [24] recently demonstrated that PONV is a multifactorial outcome influenced by patient-related, anaesthetic, and surgical variables. Consequently, isolated interventions such as hydration may not be expected to produce major reductions in PONV incidence. Importantly, the absence of a significant increase in PONV in the present study confirms the safety of early oral hydration and addresses one of the major concerns traditionally associated with early postoperative oral intake.

The composite outcome analysis demonstrated that the greatest clinical benefit of early oral hydration was observed in reducing postoperative thirst and oropharyngeal discomfort. The intervention achieved an absolute reduction of 42.6% for thirst and 40.8% for throat discomfort, corresponding to relative reductions of 56.1% and 58.0%, respectively. In contrast, the reduction in PONV was only 3.7%, indicating that the principal benefit of the intervention was improvement of comfort-related outcomes rather than gastrointestinal symptoms. These findings explain the substantial increase in overall comfort scores observed among patients receiving early oral hydration and reinforce the role of hydration in enhancing patient recovery experiences.

The strengths of the present study include its randomized controlled design, equal allocation of participants, standardized recovery assessment, and evaluation of both symptom-specific and patient-centred outcomes. However, certain limitations should be acknowledged. The study was conducted at a single centre and involved a relatively modest sample size, which may limit generalizability. Additionally, comfort scores are subjective measures and may be influenced by individual patient perceptions. Future multicentric randomized studies with larger sample sizes are warranted to validate these findings and establish standardized postoperative hydration protocols.

Overall, the present study demonstrates that early oral water intake following recovery from general anaesthesia is a safe, simple, and effective intervention. Early hydration significantly reduces postoperative thirst and oropharyngeal discomfort, substantially improves patient comfort, and does not increase postoperative nausea and vomiting. These findings support the incorporation of structured early oral hydration protocols into routine perioperative care and enhanced recovery pathways for appropriately selected daycare surgical patients.

Limitations

The present study has certain limitations that should be considered while interpreting the findings. First, the study was conducted at a single tertiary care centre, which may limit the generalizability of the results to other healthcare settings and patient populations. Second, although the randomized controlled design strengthens the validity of the findings, the sample size of 108 participants may not have been sufficiently powered to detect small differences in outcomes such as postoperative nausea and vomiting. Third, postoperative comfort was assessed using a patient-reported comfort score, which is inherently subjective and may be influenced by individual perceptions, expectations, and psychological factors. In addition, the study evaluated outcomes only during the immediate postoperative period and did not assess longer-term recovery, patient satisfaction after discharge, or healthcare utilization outcomes. Future multicentric randomized controlled trials involving larger sample sizes and extended follow-up periods are warranted to validate these findings and establish standardized protocols for early postoperative hydration.

CONCLUSION

The present study demonstrates that early oral water intake following recovery from general anaesthesia is a safe, simple, and effective intervention for patients undergoing daycare surgical procedures. Compared with conventional postoperative fasting, early oral hydration significantly reduced postoperative thirst (33.3% vs. 75.9%) and oropharyngeal discomfort (29.6% vs. 70.4%), while significantly improving postoperative comfort scores (8.22 ± 0.87 vs. 5.94 ± 1.15). Importantly, early oral hydration did not result in a significant increase in postoperative nausea and vomiting, confirming its safety in appropriately selected patients. The findings support the incorporation of structured early oral hydration protocols into routine perioperative practice and Enhanced Recovery After Surgery (ERAS) pathways to improve patient-centred recovery outcomes. Further multicentric studies are recommended to confirm these findings and facilitate wider clinical implementation.

Data Availability Statement

The datasets generated and/or analysed during the current study are available from the corresponding author upon reasonable request.

Conflict of Interest

The authors declare that they have no competing interests or conflicts of interest related to this study.

Funding Statement

The authors received no external funding for the conduct of this study, data analysis, manuscript preparation, or publication.

REFERENCES

1. Sizemore DC, Singh A, Dua A, Singh K, Grose BW. Postoperative nausea. InStatPearls 2022 Nov 9. StatPearls Publishing.
2. Mao W, Zhou Y, Zhang H, Yin P, Li Z, Yin D, Weng Y, Li S, Wang H, Zhong Q. Mini-mint ice cubes for early postoperative thirst relief in orthopedic patients undergoing general anesthesia: a randomized controlled trial. Scientific Reports. 2026 Jan 16.
3. Özsoy H, Kara Söylemez G. Patients' experiences of thirst in the perioperative period: a phenomonological study. BMC surgery. 2025 Oct 3;25(1):441.
4. Belete KG, Ashagrie HE, Workie MM, Ahmed SA. Prevalence and factors associated with thirst among postsurgical patients at University of Gondar comprehensive specialized hospital. Institution-based cross-sectional study. Journal of Patient-Reported Outcomes. 2022 Jun 18;6(1):69.
5. Ak ES, Türkmen A, Sinmaz T, Biçer ÖS. Evaluation of thirst in the early postoperative period in patients undergoing orthopedic surgery. Journal of PeriAnesthesia Nursing. 2023 Jun 1;38(3):448-53.
6. McHardy FE, Chung F. Postoperative sore throat: cause, prevention and treatment. Anaesthesia. 1999 May;54(5):444-53.
7. El-Boghdadly K, Bailey CR, Wiles MD. Postoperative sore throat: a systematic review. Anaesthesia. 2016 Jun;71(6):706-17.
8. Gan TJ, Belani KG, Bergese S, Chung F, Diemunsch P, Habib AS, Jin Z, Kovac AL, Meyer TA, Urman RD, Apfel CC. Fourth consensus guidelines for the management of postoperative nausea and vomiting. Anesthesia & Analgesia. 2020 Aug 1;131(2):411-48.
9. Apfel CC, Läärä E, Koivuranta M, Greim CA, Roewer N. A simplified risk score for predicting postoperative nausea and vomiting: conclusions from cross-validations between two centers. Anesthesiology. 1999 Sep 1;91(3):693-700.
10. Ljungqvist O, Scott M, Fearon KC. Enhanced recovery after surgery: a review. JAMA surgery. 2017 Mar;152(3):292-8.
11. Sarmadi S, Monjazebi F, Sanaie N, Zare-Kaseb A, Ghanbari Nasab H, Beigzadeh S, Nazari AM. The effect of oral stimulants on thirst of patients in the post-operative period: a systematic review and meta-analysis of randomized controlled trials. BMC Oral Health. 2025 Dec 23;25(1):1928.
12. Kolcaba K. Evolution of the mid range theory of comfort for outcomes research. Nursing outlook. 2001 Mar 1;49(2):86-92.
13. Mazzotta E, Soghomonyan S, Hu LQ. Postoperative sore throat: prophylaxis and treatment. Frontiers in Pharmacology. 2023 Nov 23;14:1284071.

14. Ljungqvist O, Scott M, Fearon KC. Enhanced recovery after surgery: a review. JAMA surgery. 2017 Mar;152(3):292-8.
15. Brady MC, Kinn S, Stuart P, Ness V, Cochrane Wounds Group. Preoperative fasting for adults to prevent perioperative complications. Cochrane database of systematic reviews. 1996 Sep 1;2010(5).
16. Mao W, Zhou Y, Zhang H, Yin P, Li Z, Yin D, Weng Y, Li S, Wang H, Zhong Q. Mini-mint ice cubes for early postoperative thirst relief in orthopedic patients undergoing general anesthesia: a randomized controlled trial. Sci Rep. 2026;16:1-10.
17. Özsoy H, Kara Söylemez G. Patients' experiences of thirst in the perioperative period: a phenomenological study. BMC Surg. 2025;25(1):441.
18. Belete KG, Ashagrie HE, Workie MM, Ahmed SA. Prevalence and factors associated with thirst among postsurgical patients at University of Gondar Comprehensive Specialized Hospital: an institution-based cross-sectional study. J Patient Rep Outcomes. 2022;6(1):69.
19. Sarmadi S, Monjazebi F, Sanaie N, Zare-Kaseb A, Ghanbari Nasab H, Beigzadeh S, Nazari AM. The effect of oral stimulants on thirst of patients in the postoperative period: a systematic review and meta-analysis of randomized controlled trials. BMC Oral Health. 2025;25(1):1928.
20. Mazzotta E, Soghomonyan S, Hu LQ. Postoperative sore throat: prophylaxis and treatment. Front Pharmacol. 2023;14:1284071.
21. Ljungqvist O, de Boer HD, Balfour A, Fawcett WJ, Lobo DN, Nelson G, Scott MJ, Wainwright TW, Demartines N. Opportunities and Challenges for the Next Phase of Enhanced Recovery After Surgery: A Review. JAMA Surg. 2021 Aug 1;156(8):775-784. doi: 10.1001/jamasurg.2021.0586. Erratum in: JAMA Surg. 2021 Aug 1;156(8):800. doi: 10.1001/jamasurg.2021.2579. PMID: 33881466.
22. Gottumukkala V, Joshi GP. Challenges and opportunities in enhanced recovery after surgery programs: An overview. Indian J Anaesth. 2024 Nov;68(11):951-958. doi: 10.4103/ija.ija_546_24. Epub 2024 Oct 26. PMID: 39659530; PMCID: PMC11626874.
23. Myles PS, Phillips B, Robertshaw S, Haughney H, Houle TT, Rowland R, Johnson D, Wallace S. Quality of patient-centred recovery trajectories after different types of surgery: a prospective cohort study. Br J Anaesth. 2025 Sep;135(3):755-763. doi: 10.1016/j.bja.2025.05.032. Epub 2025 Jul 5. PMID: 40619312.
24. Glebov M, Lazebnik T, Katsin M, Orkin B, Berkenstadt H, Bunimovich-Mendrazitsky S. Predicting postoperative nausea and vomiting using machine learning: a model development and validation study. BMC Anesthesiol. 2025 Mar 20;25(1):135. doi: 10.1186/s12871-025-02987-2. PMID: 40114048; PMCID: PMC11924648.