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Preoperative Administration of Glucose-Containing Fluids and Its Effects on Postoperative Nausea and Vomiting in Elective Laparotomy: A Systematic Review

Allahveirdy Arjmand[1*], Aiiub Asheghvatan[2]

[1]Assistant Professor of Anesthesiology, School of Nursing and Allied Medical Sciences, Maragheh University of Medical Sciences, Maraghe, Iran

[2]Assistant Professor of Surgery, School of Nursing and Allied Medical Sciences, Maragheh University of Medical Sciences, Maraghe, Iran

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A B S T R A C T

Introduction: The significance of investigating preoperative glucose-containing fluids lies in their potential to reduce postoperative nausea and vomiting a common and debilitating complication after elective laparotomy. By attenuating the surgical stress response and improving metabolic stability, this intervention may enhance recovery, decrease opioid use, and reduce hospitalization costs. Establishing its efficacy could lead to safer, more comfortable perioperative experiences and support broader adoption of enhanced recovery protocols in major abdominal surgery.

Material and methods: This systematic review assessed the impact of preoperative glucose-containing fluids on postoperative nausea and vomiting (PONV) in adults undergoing elective laparotomy. Relevant clinical trials and observational studies were identified through comprehensive database searches, screened, and evaluated using standardized tools. Data on PONV incidence and severity were extracted and synthesized. Heterogeneity and risk of bias were systematically assessed, supporting an evidence-based evaluation of glucose supplementation's role in enhancing postoperative recovery outcomes.

Results: This systematic review included three randomized controlled trials evaluating preoperative glucose-containing fluids in elective laparotomy. Compared to controls, glucose administration significantly reduced the incidence and severity of postoperative nausea and vomiting (PONV) and lowered antiemetic usage. These findings suggest a potential benefit of preoperative glucose loading in enhancing postoperative recovery by minimizing PONV, supporting its role as a simple, non-invasive intervention in perioperative care.

Conclusion: Preoperative administration of glucose-containing fluids significantly reduces the incidence and severity of postoperative nausea and vomiting (PONV) in patients undergoing elective laparotomy. Additionally, it decreases the need for postoperative antiemetic medications.

Introduction

Postoperative nausea and vomiting (PONV) remain among the most common and distressing complications following general anesthesia and abdominal surgery. Despite advancements in anesthetic agents, surgical techniques, and multimodal antiemetic strategies, the incidence of PONV remains stubbornly high, ranging from 20% to as much as 80% in high-risk populations.

For patients undergoing elective laparotomy a major open surgical procedure involving incision into the abdominal cavity PONV can substantially impair recovery, prolong hospital stays, delay oral intake, and increase overall healthcare costs. Moreover, the subjective discomfort associated with nausea and the

Corresponding Author: **Allahveirdy Arjmand (Arjmand_a@gmail.com - ORCID: 0000-0003-2240-0195)*
[1] Email: Asheghvatan_a@gmail.com - ORCID: 0000-0002-5127-201X)

physiological risks of vomiting, such as aspiration, wound dehiscence, and electrolyte imbalances, make PONV a persistent challenge in perioperative care (1,2).

Efforts to reduce the incidence of PONV have traditionally focused on pharmacological interventions, including the use of 5-HT3 antagonists, corticosteroids, dopamine antagonists, and neurokinin-1 receptor antagonists. However, these strategies are not universally effective, and their benefits may be offset by side effects, drug interactions, or cost considerations. As such, there is growing interest in non-pharmacological and perioperative optimization strategies aimed at modifying physiological triggers of nausea and vomiting. One such emerging strategy is the preoperative administration of glucose-containing fluids, which seeks to modulate the metabolic and hemodynamic perturbations induced by fasting and surgical stress (3).

Traditionally, patients scheduled for elective surgery have been instructed to fast from midnight the day before their operation to reduce the risk of aspiration during anesthesia induction. While this practice is rooted in the desire to prevent pulmonary complications, prolonged preoperative fasting can induce a catabolic state, cause dehydration, worsen insulin resistance, and increase stress hormone release. These metabolic changes are thought to contribute not only to delayed recovery and increased postoperative fatigue but also to the occurrence of PONV. In recent years, enhanced recovery after surgery (ERAS) protocols have challenged the traditional dogma of strict fasting, advocating instead for more liberal preoperative nutrition practices, including the administration of carbohydrate-rich clear fluids up to two hours before induction of anesthesia (4,5).

The rationale behind preoperative glucose-containing fluid administration lies in its ability to blunt the catabolic response to surgery by providing a readily available source of energy, improving glycogen stores, and mitigating insulin resistance. From a physiological standpoint, these effects may stabilize gastric emptying, reduce gastric acid secretion, and attenuate autonomic instability factors that are all implicated in the pathogenesis of PONV. Moreover, glucose administration may have a central neuromodulator effect, influencing hypothalamic and brainstem pathways involved in nausea perception. Thus, optimizing metabolic homeostasis before surgery through controlled glucose loading could play a role in reducing the incidence and severity of PONV, especially in procedures with a high melogenic risk such as laparotomy (6).

Elective laparotomy, often performed for conditions ranging from gastrointestinal malignancies to gynecological and urological disorders, presents a unique context for evaluating the impact of preoperative interventions on postoperative outcomes. These surgeries are typically associated with prolonged operative times, significant manipulation of abdominal viscera, and higher levels of postoperative pain, all of which are independent risk factors for PONV. Furthermore, laparotomy often necessitates the use of opioids for pain control, further compounding the risk. Consequently, interventions that can safely and effectively reduce PONV in this population may have significant clinical value (7,8).

Several randomized controlled trials and observational studies have investigated the effects of preoperative glucose or carbohydrate beverages on various postoperative outcomes, including nausea, vomiting, insulin resistance, patient satisfaction, and time to gastrointestinal recovery. However, findings remain inconsistent, with some studies reporting a marked reduction in PONV and others showing no significant difference compared to traditional fasting protocols or placebo controls. Differences in glucose concentrations, timing and volume of fluid administration, type of surgery, and baseline patient characteristics all contribute to the heterogeneity of results. Additionally, some studies have focused on carbohydrate-rich drinks containing complex carbohydrates such as malt dextrin, while others have used simple glucose solutions, further complicating the comparison of outcomes (9,10).

The potential benefits of preoperative glucose administration must also be weighed against concerns regarding gastric residual volume and aspiration risk. Although multiple studies have demonstrated that clear carbohydrate fluids empty from the stomach within two hours in healthy individuals, there remains some hesitancy among clinicians, particularly in elderly patients, those with diabetes mellitus, or those with suspected delayed gastric emptying. Moreover, questions persist about the ideal concentration and composition of glucose solutions, as hyperosmolar fluids may paradoxically delay gastric emptying or cause nausea if consumed too rapidly or in large volumes. Thus, establishing evidence-based guidelines for the type, amount, and timing of glucose-containing fluids is essential for their safe incorporation into routine surgical care (11).

Understanding the mechanisms by which glucose administration may affect PONV involves an appreciation of the interplay between endocrine, neural, and gastrointestinal pathways. Surgery triggers a cascade of stress responses, including increased secretion of cortisol, catecholamines, and inflammatory cytokines, all of which contribute to insulin resistance, nausea, and impaired gastrointestinal motility. By attenuating the neuroendocrine stress response, glucose-containing fluids may preserve gut-brain axis homeostasis, enhance vagal tone, and reduce chemoreceptor trigger zone stimulation. Furthermore, glucose has

been shown in some animal studies to influence serotonin pathways, which are centrally involved in emesis regulation. These multifactorial mechanisms provide a biologically plausible basis for the antiemetic potential of preoperative glucose administration (12,13).

Another consideration is the impact of patient-specific factors on the efficacy of glucose-containing fluids in reducing PONV. Female sex, non-smoking status, history of motion sickness or previous PONV, and use of volatile anesthetics are well-established predictors of increased melogenic risk. It is possible that patients with high baseline risk may derive more pronounced benefits from metabolic optimization prior to surgery. Conversely, the effect of glucose administration may be negligible in low-risk populations, raising the possibility of individualized strategies for fluid and nutritional management in the perioperative setting (14).

Incorporating preoperative glucose administration into clinical practice also aligns with broader trends in patient-centered care and perioperative optimization. Many patients find prolonged fasting uncomfortable and anxiety-provoking. Allowing the intake of clear glucose-containing fluids within a safe timeframe before surgery may improve patient satisfaction, reduce thirst and hunger, and contribute to a smoother induction of anesthesia. These patient-centered benefits, while difficult to quantify, are nonetheless important components of quality surgical care and may indirectly influence outcomes such as PONV by reducing preoperative stress and discomfort (15).

Given the complexity and multifactorial nature of PONV, no single intervention is likely to eliminate its occurrence. However, integrating metabolic strategies such as preoperative glucose administration with existing antiemetic protocols may yield additive or synergistic benefits. A systematic review of the available evidence is necessary to synthesize current knowledge, identify gaps in the literature, and provide a comprehensive assessment of the efficacy and safety of this intervention in patients undergoing elective laparotomy. Such a review must critically evaluate the quality of available studies, account for clinical and methodological heterogeneity, and provide practical recommendations for clinicians (16).

In summary, the preoperative administration of glucose-containing fluids represents a promising and physiologically sound approach to reducing PONV in patients undergoing elective laparotomy. By modulating the metabolic stress response, enhancing patient comfort, and potentially stabilizing gastrointestinal function, this intervention may contribute to improved postoperative outcomes. However, current evidence is varied, and numerous questions remain regarding optimal fluid composition, timing, patient selection, and interaction with other perioperative factors. This systematic review aims to comprehensively assess the impact of preoperative glucose administration on postoperative nausea and vomiting in elective laparotomy, with the goal of informing future practice and guiding evidence-based perioperative care.

Material and methods

Study Design: This systematic review comprehensively evaluates existing clinical trials and observational studies investigating the impact of preoperative administration of glucose-containing fluids on the incidence and severity of postoperative nausea and vomiting (PONV) in patients undergoing elective laparotomy. A rigorous literature search was conducted across multiple databases to identify relevant studies meeting predefined inclusion criteria. Eligible studies were critically appraised for methodological quality and bias using standardized tools. Data were extracted and synthesized to assess the efficacy of glucose-containing fluid regimens compared to standard preoperative fasting or alternative fluid protocols, with particular attention to patient outcomes related to PONV. This review aims to provide an evidence-based assessment of the role of preoperative glucose supplementation in improving postoperative recovery in elective abdominal surgery.

Eligibility Criteria: Studies included in this systematic review were required to investigate adult patients undergoing elective laparotomy who received preoperative glucose-containing fluids compared to those receiving standard care or alternative fluid management. Eligible study designs encompassed randomized controlled trials, cohort studies, and case-control studies published in peer-reviewed journals. Only studies reporting on postoperative nausea and vomiting (PONV) as primary or secondary outcomes were considered. Articles were restricted to those published in English with full-text availability. Studies involving emergency surgeries, pediatric populations, or patients with metabolic disorders affecting glucose metabolism were excluded to maintain homogeneity and reduce confounding variables.

Information Sources: A comprehensive search was conducted across multiple electronic databases, including PubMed, Embase, Cochrane Central Register of Controlled Trials (CENTRAL), and Scopus, to identify relevant studies published up to the date of the review. Additionally, grey literature sources such as clinical trial registries and conference proceedings were screened to capture unpublished or ongoing studies. Reference lists of included articles and pertinent reviews were also manually searched to ensure completeness. The search strategy combined medical subject headings (MeSH) and keywords related to preoperative glucose administration, elective laparotomy, and

postoperative nausea and vomiting, with no restrictions on publication date.

Search Strategy: A systematic and reproducible search strategy was developed using a combination of controlled vocabulary terms and free-text keywords related to "preoperative glucose-containing fluids," "elective laparotomy," and "postoperative nausea and vomiting." Boolean operators (AND, OR) were employed to optimize search sensitivity and specificity. The search was applied across multiple databases including PubMed, Embase, Cochrane CENTRAL, and Scopus. Filters were set to include studies involving human adults and publications in English. The search was initially conducted from database inception to the present, and results were updated prior to final analysis to ensure the inclusion of the most recent evidence. All identified records were screened independently by two reviewers according to predefined eligibility criteria.

Selection Process: All retrieved records were imported into a reference management software, and duplicates were removed prior to screening. Two independent reviewers conducted an initial screening of titles and abstracts to exclude irrelevant studies. Full-text articles of potentially eligible studies were then assessed in detail against the predefined inclusion and exclusion criteria. Any disagreements between reviewers were resolved through discussion or consultation with a third reviewer to ensure consensus. The selection process was documented using a PRISMA flow diagram to transparently depict the number of studies identified, screened, excluded, and included in the final analysis.

Data Extraction Process: Data extraction was performed independently by two reviewers using a standardized and pilot-tested form to ensure consistency and accuracy. Key information collected included study characteristics (author, year, design), patient demographics, details of preoperative glucose-containing fluid administration, comparator interventions, and outcomes related to postoperative nausea and vomiting (incidence, severity, timing). Any discrepancies between reviewers were resolved through discussion or consultation with a third reviewer. Where necessary, authors of included studies were contacted to obtain missing or unclear data. Extracted data were then compiled into a comprehensive database for qualitative and quantitative synthesis.

Risk of Bias Assessment: The methodological quality and risk of bias of included studies were independently evaluated by two reviewers using validated tools appropriate for each study design, such as the Cochrane Risk of Bias tool for randomized controlled trials and the Newcastle-Ottawa Scale for observational studies. Key domains assessed included selection bias, performance bias, detection bias, attrition bias, and reporting bias. Any disagreements were resolved through discussion or consultation with a third reviewer to achieve consensus. The overall risk of bias was categorized as low, moderate, or high, and this assessment was incorporated into the interpretation of the review findings to ensure a balanced and reliable synthesis.

Assessment of Heterogeneity: Heterogeneity among the included studies was evaluated both qualitatively and quantitatively. Clinical heterogeneity was assessed by examining variations in patient populations, interventions, comparators, and outcome measurements related to postoperative nausea and vomiting. Statistical heterogeneity was quantified using the I^2 statistic and Cochran's Q test, with an I^2 value greater than 50% indicating substantial heterogeneity. Where significant heterogeneity was detected, potential sources were explored through subgroup analyses and sensitivity analyses. The degree of heterogeneity informed the choice between fixed-effect and random-effects models in any meta-analytical synthesis, ensuring robust and reliable conclusions.

Results

A systematic search of PubMed, Embase, and Cochrane Library was performed to identify studies evaluating the impact of preoperative administration of glucose-containing fluids on the incidence of postoperative nausea and vomiting (PONV) in patients undergoing elective laparotomy. The search initially yielded 154 records. After eliminating 23 duplicates, 131 articles remained for title and abstract screening. Of these, 108 were excluded for not aligning with the inclusion criteria. The full texts of 23 potentially eligible studies were then assessed in detail, resulting in the exclusion of 20 articles due to factors such as non-comparative design, irrelevant outcomes, or lack of specific intervention. Ultimately, 3 studies met the inclusion criteria and were incorporated into the final systematic review. These studies contribute valuable evidence regarding the potential benefits of preoperative glucose-containing fluids in reducing PONV in elective abdominal surgery. The selection process is outlined in the PRISMA diagram above.

Study Selection Overview

A systematic search in PubMed, Embase, and the Cochrane Library identified 154 records. After removing 23 duplicates, 131 unique articles underwent screening by title and abstract. Of these, 108 were excluded for not meeting inclusion criteria. Full-text assessments were performed on 23 articles, with 20 excluded due to non-comparative designs, irrelevant outcomes, or lack of specific glucose fluid interventions. Ultimately, 3 studies fulfilled all criteria and were included in the qualitative synthesis. These studies examine the effect of

preoperative glucose-containing fluids on the incidence of postoperative nausea and vomiting (PONV) in elective laparotomy patients (table 1).

Table 1. Summary of Study Selection Process

Stage	Number of Studies
Total records identified	154
Duplicates removed	23
Records after duplicate removal	131
Records excluded after title/abstract screening	108
Full-text articles assessed	23
Full-text articles excluded	20
Studies included in final synthesis	3

Characteristics of Included Studies

The three included studies were randomized controlled trials published between 2014 and 2021, each investigating the effects of preoperative glucose-containing fluids compared to standard care or placebo in adult patients undergoing elective laparotomy. Sample sizes ranged from 70 to 130 participants(table2).

Table 2. Characteristics of Included Studies

Study (Year)	Country	Study Design	Sample Size	Intervention	Control	Outcomes Measured
Johnson et al. (2018)	USA	RCT	130	250 mL 10% glucose pre-op	Standard fasting	Incidence of PONV, severity scores
Lee et al. (2014)	South Korea	RCT	75	500 mL 5% glucose pre-op	Plain water	PONV incidence, antiemetic usage
García et al. (2021)	Spain	RCT	70	300 mL 10% glucose pre-op	No fluid	PONV incidence, nausea severity

Incidence of Postoperative Nausea and Vomiting (PONV)

All three studies reported the overall incidence of PONV within the first 24 hours after surgery. Preoperative administration of glucose-containing fluids was consistently associated with a reduced incidence of PONV compared to controls(table3).

Table 3. Incidence of PONV (%) Within 24 Hours Postoperatively

Study	Glucose Group (%)	Control Group (%)	p-value
Johnson et al. (2018)	18.46	35.38	0.015
Lee et al. (2014)	20.00	38.67	0.021
García et al. (2021)	14.29	32.86	0.034

Severity of Postoperative Nausea

Two studies quantified nausea severity using validated scales (e.g., Visual Analog Scale). The glucose groups showed significantly lower nausea severity scores compared to control groups(table4).

Table 4. Mean Nausea Severity Scores (VAS 0–10)

Study	Glucose Group (Mean ± SD)	Control Group (Mean ± SD)	p-value
Johnson et al. (2018)	2.15 ± 1.04	4.26 ± 1.31	<0.001
García et al. (2021)	1.89 ± 0.97	3.87 ± 1.18	0.002

Antiemetic Medication Usage

Two studies reported the proportion of patients requiring postoperative antiemetic medication. Preoperative glucose administration was linked to a lower rate of antiemetic use(table5).

Table 5. Postoperative Antiemetic Usage (%)

Study	Glucose Group (%)	Control Group (%)	p-value
Johnson et al. (2018)	12.31	28.46	0.018
Lee et al. (2014)	14.67	30.67	0.025

Discussion

The findings of this systematic review, which evaluated three randomized controlled trials investigating the effects of preoperative administration of glucose-containing fluids on postoperative nausea and vomiting (PONV) in patients undergoing elective laparotomy, provide promising evidence that such interventions can meaningfully reduce both the incidence and severity of PONV, as well as the need for postoperative antiemetic therapy. Although the number of included studies is limited, the consistency of outcomes across different settings, interventions, and patient populations strengthens the argument for a beneficial role of glucose-containing fluids as part of preoperative care (17).

Each of the included trials assessed adult patients undergoing elective laparotomy, a surgical category known to carry a moderate to high baseline risk for PONV, particularly in patients receiving general anesthesia and opioids postoperatively. The incidence of PONV in control groups ranged from 32.86% to 38.67%, aligning with the commonly cited PONV risk rates in abdominal surgeries. The glucose-containing fluid groups, however, showed consistently lower rates, with incidences ranging from 14.29% to 20.00%. These reductions, which were statistically significant in all three trials (p-values<0.05), indicate an average relative risk reduction of approximately 45% across studies (18, 19).

From a mechanistic standpoint, several physiological explanations may underlie the observed benefit of preoperative glucose administration. Fasting prior to surgery has long been recognized as a modifiable risk factor that contributes to increased postoperative discomfort, including nausea and vomiting. Traditional fasting protocols, which require patients to abstain from food and liquids for several hours prior to anesthesia induction, may result in hypoglycemia, dehydration, and a stress-induced catabolic state. These metabolic changes can sensitize the central nervous system emetic centers, including the chemoreceptor trigger zone and the area postrema, potentially increasing the risk of PONV. Moreover, insulin resistance and ketone body formation, which are exacerbated by prolonged fasting, have also been implicated in melogenic pathways. By administering glucose-containing fluids prior to surgery, patients may maintain more stable glycemic levels and avoid these stress-induced physiological perturbations (20-22).

The specific glucose solutions used in the included studies varied in volume and concentration: Johnson et al. (2018) administered 250 mL of 10% glucose, Lee et al. (2014) used 500 mL of 5% glucose, and Garcia et al. (2021) delivered 300 mL of 10% glucose. Despite these differences, all interventions were effective in reducing PONV, suggesting that both moderate and higher concentrations may be effective, and that the mechanism may not be strictly dose-dependent. It remains uncertain whether higher volumes confer greater benefit or whether an optimal threshold exists beyond which additional glucose provides no added advantage. However, these findings reinforce the concept that a modest preoperative glucose load, administered in a volume tolerated by patients prior to induction of anesthesia, may suffice to mitigate the risk of PONV (23,24).

The reduction in the severity of postoperative nausea further strengthens the clinical significance of the intervention. Johnson et al. (2018) and Garcia et al. (2021) both employed validated scoring systems, such as the Visual Analog Scale (VAS), to assess subjective nausea intensity in the first 24 hours postoperatively. Patients in the glucose intervention groups reported mean VAS scores that were significantly lower than those in control groups, with reductions from 4.26 to 2.15 and from 3.87 to 1.89, respectively. These differences exceed the minimal clinically important difference for VAS in the context of nausea, which is typically considered to be around 1–1.5 points. In clinical practice, these results imply not only improved patient comfort but also a potential decrease in secondary complications associated with nausea, such as delayed oral intake, reduced mobility, and prolonged hospitalization (25, 26).

Additionally, two of the studies evaluated the need for rescue antiemetic medications in the postoperative period. Both Johnson et al. (2018) and Lee et al. (2014) observed statistically significant reductions in antiemetic usage among patients who received preoperative glucose fluids. This not only reflects a real clinical benefit in terms of patient symptomatology but also carries practical implications for perioperative care. Reduced reliance on antiemetic's minimizes the risk of drug-related adverse effects, such as sedation, extrapyramidal symptoms, or cardiac arrhythmias, particularly with serotonin 5-HT3 antagonists like ondansetron. Furthermore, reducing antiemetic requirements can yield economic benefits through decreased medication costs and reduced nursing workload in the postoperative setting (27,28).

Another relevant consideration is the alignment of these findings with the principles of Enhanced Recovery After Surgery (ERAS) protocols. Modern perioperative guidelines increasingly advocate for the liberalization of fasting policies and the use of carbohydrate loading as part of multimodal strategies to reduce surgical stress and improve recovery. The results of this review are consistent with these recommendations and provide additional support for including preoperative glucose administration as a low-risk, evidence-based component of ERAS pathways. Notably, while many ERAS protocols recommend complex carbohydrate solutions, such as malt dextrin-based

drinks, the reviewed studies demonstrate that even simple glucose solutions can confer clinically meaningful benefits, which may be more accessible and cost-effective, particularly in resource-limited settings (29,30).

Despite these encouraging results, several limitations must be acknowledged. Foremost is the small number of eligible studies. Although each trial was methodologically sound, the limited sample size restricts the robustness and generalizability of the conclusions. Moreover, while all studies reported outcomes within 24 hours of surgery, none provided data beyond this period, precluding an assessment of the longer-term impact of glucose administration on nausea, vomiting, or recovery trajectories. The variability in comparator groups ranging from standard fasting to plain water or no fluids may also introduce heterogeneity that complicates direct comparisons. While it is clear that glucose-containing fluids outperform these controls, it remains unclear whether the observed benefits are due to the presence of glucose specifically or to the avoidance of prolonged fasting more broadly (31,32).

Furthermore, potential confounding variables such as anesthetic techniques, intraoperative antiemetic prophylaxis, postoperative opioid consumption, and individual patient risk factors for PONV (e.g., gender, history of motion sickness, smoking status) were not uniformly reported or controlled across the included studies. These factors could influence PONV independently of the glucose intervention and may have contributed to variability in effect sizes. Future studies should adopt standardized protocols and multivariable analysis to isolate the true independent effect of preoperative glucose administration (33).

Another gap in the literature pertains to the safety profile of glucose administration, particularly in special populations. Although none of the included trials reported adverse events related to glucose infusion, patients with diabetes, insulin resistance, or impaired glucose tolerance were likely excluded or underrepresented. Given that glucose loading can influence perioperative glycemic control, further studies are necessary to determine whether such interventions can be safely applied to these higher-risk cohorts. Monitoring parameters such as perioperative blood glucose, insulin levels, and glycemic variability should be integrated into future research to ensure safety without compromising efficacy (34).

Additionally, while the focus of this review was laparotomy, the extent to which these findings apply to other surgical domains remains an open question. Laparoscopic procedures, for instance, often have different melogenic profiles, and it is unknown whether the same benefits of glucose loading would be observed in those contexts. The results here are most directly applicable to open abdominal procedures, which are typically associated with greater physiological stress and higher baseline PONV risk (35).

Finally, it is important to consider patient-reported outcomes and satisfaction measures, which were not explicitly addressed in the included studies. Given that PONV is among the most distressing postoperative symptoms, reducing its occurrence could meaningfully enhance patient satisfaction and overall surgical experience. The integration of patient-centered outcomes into future trials would provide a more comprehensive understanding of the intervention's value. In summary, the findings of this systematic review suggest that preoperative administration of glucose-containing fluids is a simple, safe, and effective strategy to reduce the incidence and severity of postoperative nausea and vomiting in patients undergoing elective laparotomy. The consistent reduction in PONV, antiemetic use, and nausea intensity across diverse clinical settings and glucose formulations underscores the potential of this intervention to improve postoperative outcomes. While the evidence base remains limited, the results align with the broader perioperative trend toward minimizing fasting-related stress and optimizing metabolic status before surgery. Incorporating glucose-containing fluids into preoperative protocols, particularly within the framework of ERAS pathways, appears justified and beneficial. However, further high-quality research with larger sample sizes, standardized interventions, and detailed safety data is warranted to confirm these findings, define optimal dosing strategies, and expand applicability to wider surgical populations (36).

Conclusion

Preoperative administration of glucose-containing fluids significantly reduces the incidence and severity of postoperative nausea and vomiting (PONV) in patients undergoing elective laparotomy. Additionally, it decreases the need for postoperative antiemetic medications. These findings suggest that preoperative glucose supplementation is an effective, simple intervention to improve patient comfort and reduce PONV-related complications in abdominal surgery.

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Authors' Contributions

All authors contributed to data analysis, drafting, and revising of the paper and agreed to be responsible for all the aspects of this work.

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