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Effect of Glucagon-like Peptide-1 Receptor Agonists on Gastric Residual Volume and Quality of Bowel Preparation in Patients Undergoing Painless Gastroenteroscopy: A Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 November 2025 and was last updated on 10 November 2025.

INTRODUCTION

Review question / Objective Do glucagon-like peptide-1 receptor agonists (GLP-1 RAs) affect gastric residual volume and bowel preparation quality in patients undergoing sedated gastrointestinal endoscopy? The PICO (population, intervention/comparison, outcome) setting of this study was as the followings: P – patients receiving sedated gastrointestinal endoscopy; I – Glucagon-like peptide-1 receptor agonist (GLP-1 RA) users; C – controls; and O – gastric residual volume/ bowel preparation quality / total BBPS scores.

Condition being studied In recent years, glucagon-like peptide-1 receptor agonist (GLP-1 RA) have seen increasingly widespread use in the management of diabetes and obesity. They function by inhibiting gastric motility and delaying gastric emptying time, thereby increasing satiety and lowering blood glucose levels. However, delayed gastric emptying may increase residual gastric content (RGC), which is a major risk factor for aspiration under anesthesia. Delayed gastric emptying may also potentially affect intestinal peristalsis and the efficacy of bowel preparation cleansing in patients undergoing gastrointestinal endoscopy.

METHODS

Participant or population This study aims to investigate patients receiving sedated gastrointestinal endoscopy, with or without the use of GLP-1 RA.

Intervention The intervention group will be those using GLP-1 RA before the sedated gastrointestinal endoscopy.

Comparator The control group will be those NOT using GLP-1 RA before the sedated gastrointestinal endoscopy.

Study designs to be included The study design could be either randomized controlled trials (RCTs) or prospective / retrospective cohort studies.

Eligibility criteria The inclusion criteria consisted of clinical trials involving human subjects undergoing sedated gastrointestinal endoscopy, with an intervention group of GLP-1 RA users and a control group, and reporting at least one of the outcomes mentioned above. The exclusion criteria were: 1) non-Chinese/English literature; 2) meeting abstracts, conference proceedings, or unpublished data. 3)Duplicate publications; 4) Disagreements on the eligible criteria between the two reviewers will be resolved by discussion till there's a consensus.

Information sources PubMed, Web of Science, the Cochrane Library, Embase, CINAHL, Wanfang Database, CNKI, VIP Database, China Biomedical Literature Database (SinoMed), Chinese Medical Journal Full-text Database.

Main outcome(s) Gastric residual volume and bowel preparation quality(BBPS).

Quality assessment / Risk of bias analysis The Cochrane Risk of Bias (RoB 1) tool was used for quality appraisal of randomized controlled trials (RCTs), while the Newcastle-Ottawa Scale (NOS) was used for cohort studies.

Strategy of data synthesis RevMan 5.3 and Stata 15.0 software were used for statistical analysis. The dichotomous variables were represented by odds ratios (ORs) and their 95% confidence intervals (CIs), and continuous variables were expressed by mean differences (MD) or standardized mean differences (SMDs) and their 95% CIs. The I^2 statistic was used to evaluate the heterogeneity between studies, and if the $I^2 \leq 50\%$, the heterogeneity was considered acceptable, and the fixed-effect model was used for analysis. If the $I^2 > 50\%$, it is considered that there is significant heterogeneity, and the random-effects model is used for pooled analysis.

Subgroup analysis Subgroup analysis may be performed for specific types of GLP-1 RAs if feasible.

Sensitivity analysis To ensure the reliability of this meta-analysis, sensitivity analyses were conducted by systematically removing one study at a time. This approach was used to check if the exclusion of any single study significantly altered the overall effect size.

Country(ies) involved CHINA.

Keywords Glucagon-like peptide-1 receptor agonist, Gastrointestinal endoscopy, Gastric residual volume,Bowel preparation.

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