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Association of preoperative body mass index with postoperative complications and survival for patients with gastric cancer: A systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202480004

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 August 2024 and was last updated on 01 August 2024.

INTRODUCTION

Review question / Objective To evaluate the association between preoperative BMI and postoperative complications and clinical outcomes in patients with gastric cancer using a meta-analytic approach.

Condition being studied The relationship between body mass index (BMI), postoperative complications, and clinical outcomes in patients undergoing gastrectomy for gastric cancer remains unclear.

METHODS

Search strategy "gastric cancer," "underweight," "overweight," "obesity," and "body mass index."

Participant or population All participants were diagnosed with GC and received surgical treatment.

Intervention This included patients who were preoperatively underweight, with a BMI less than 18.5 kg/m², and those preoperatively overweight, with a BMI of 25.0 kg/m² or more.

Comparator The control group comprised individuals of normal weight, defined as having a BMI ranging from 18.5–25.0 kg/m².

Study designs to be included There were no limitations on the type of study design, encompassing both prospective and retrospective cohort studies.

Eligibility criteria Studies were included based on the following criteria. (1) Patient demographics: All participants were diagnosed with GC and received surgical treatment. (2) Exposure: This included patients who were preoperatively underweight, with a BMI less than 18.5 kg/m², and those preoperatively overweight, with a BMI of 25.0 kg/m² or more. (3) Control group: The control group comprised individuals of normal weight, defined as having a BMI ranging from 18.5–25.0 kg/m². (4)

Outcomes assessed: The study focused on postoperative complications, overall survival (OS), and disease-free survival (DFS). (5) Study design: There were no limitations on the type of study design, encompassing both prospective and retrospective cohort studies.

Information sources PubMed, EmBase, and Cochrane Library databases.

Main outcome(s) The study focused on postoperative complications, overall survival (OS), and disease-free survival (DFS).

Quality assessment / Risk of bias analysis The quality of the included studies was evaluated using the Newcastle-Ottawa Scale (NOS), with a maximum score of 9 for each individual study. Studies scoring 0–3, 4–6, and 7–9 were categorized as low, moderate, and high quality, respectively.

Strategy of data synthesis The association between preoperative BMI and the risk of postoperative and specific complications was assigned as a categorical variable, and odds ratios (OR) with 95% confidence intervals (CI) were calculated based on crude data before data pooling. The relationship between preoperative BMI and OS or disease-free survival (DFS) was calculated based on the effect estimates in each study; hazard ratios (HR) with 95%CI were calculated. Subsequently, a random-effects model was used to pool effect estimates regarding the association between preoperative BMI and postoperative complications and survival outcomes, considering the underlying variations among the included studies.

Subgroup analysis Subgroup analysis was performed for postoperative complications, OS, and DFS according to country, age, male proportion, study quality, and interaction; the P test with a ratio of effect estimates was used to compare the differences between subgroups.

Sensitivity analysis Sensitivity analyses were performed for postoperative complications, OS, and DFS to assess the robustness of the pooled conclusions by sequentially removing each study.

Language restriction English and Chinese.

Country(ies) involved China.

Keywords preoperative body mass index; postoperative complications; overall survival;

disease-free survival; gastric cancer; meta-analysis.

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