

# INPLASY PROTOCOL

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**Review Stage at time of this submission:** The review has not yet started.

## Conflicts of interest:

None declared.

## The risk factors of postoperative delirium in patients with colorectal cancer: a systematic review and meta-analysis

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**Review question / Objective:** The purpose of this study was to investigate the risk factors of postoperative delirium in patients with colorectal cancer, and to provide reference for the risk identification and management of POD in colorectal cancer.

**Eligibility criteria:** Inclusion criteria: ① Study type: case-control study and cohort study; ② Subjects: Patients diagnosed with delirium after colorectal cancer surgery, regardless of race, age or gender; ③ Research content: Risk factors of POD; (4) Outcome indicators: Multivariate logistic regression analysis was used in the original literature, and the OR value and 95%CI of POD risk factors could be obtained directly OR through calculation. ⑤ The study language is limited to Chinese and English. Exclusion criteria: ① Effective outcome data could not be extracted from the text; ② repeated publications; ③ The full text is not available; (4) Secondary literature, abstracts, conferences, research protocols, animal studies, etc.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 July 2022 and was last updated on 28 July 2022 (registration number INPLASY202270120).

## INTRODUCTION

**Review question / Objective:** The purpose of this study was to investigate the risk factors of postoperative delirium in patients with colorectal cancer, and to provide reference for the risk identification

and management of POD in colorectal cancer.

**Condition being studied:** In 2020, the International Agency for Research on Cancer (IARC) showed that the incidence and mortality of colorectal cancer ranked the third and second among malignant

tumors, respectively, and it is one of the most common cancers worldwide. Surgical resection is the main treatment for colorectal cancer, and Postoperative Delirium (POD) is a common Postoperative complication, which refers to neurocognitive syndrome occurring from 10 minutes after surgical anesthesia to 7 days after surgery or until discharge. These include acute onset or disease fluctuation, inattention, confusion, and altered level of consciousness. The incidence of POD in colorectal cancer is about 12%, and the incidence of POD in elderly colorectal cancer can reach 8.2%-54.4%. POD will lead to increased postoperative complications, increased mortality, prolonged hospital stay, and further increase the burden on patients and their families. Studies have shown that appropriate intervention in patients can reduce the incidence of POD by 30% to 40%. Clarifying the risk factors of POD can provide a basis for early identification of risk and further development of effective prevention and intervention measures. In recent years, POD has received increasing attention, and the number of studies on the risk factors of colorectal cancer POD has increased, but there are differences among the studies. This study aims to analyze the risk factors of colorectal cancer POD through systematic review and meta-integration, so as to provide a reference for the risk identification and management of colorectal cancer POD.

## METHODS

**Participant or population:** Patients diagnosed with delirium after colorectal cancer surgery were of all races, ages, and genders.

**Intervention:** No intervention.

**Comparator:** No comparison group.

**Study designs to be included:** Case-control and cohort studies.

**Eligibility criteria:** Inclusion criteria: ① Study type: case-control study and cohort

study; ② Subjects: Patients diagnosed with delirium after colorectal cancer surgery, regardless of race, age or gender; ③ Research content: Risk factors of POD; (4) Outcome indicators: Multivariate logistic regression analysis was used in the original literature, and the OR value and 95%CI of POD risk factors could be obtained directly OR through calculation. ⑤ The study language is limited to Chinese and English. Exclusion criteria: ① Effective outcome data could not be extracted from the text; ② repeated publications; ③ The full text is not available; (4) Secondary literature, abstracts, conferences, research protocols, animal studies, etc.

**Information sources:** CNKI, Wanfang, VIP, CBM, PubMed, Embase, Web of Science, Cochrane Library.

**Main outcome(s):** The results of meta-analysis showed that the odds ratio(OR) and 95% confidence interval (95% CI) of all factors in POD of CN were: Age 1.1 (1.06, 1.14), male 2.29 (1.81, 4.44), alcoholism 3.14 (1.63, 6.06), ASA Physical Status Classification System( $\geq 3$  points /  $< 3$  points) 1.47 (1.13, 1.91), complications 1.59 (1.16, 2.172), history of mental illness 7.86 (4.57, 13.543), history of cerebrovascular disease 5.74 (3.78, 8.72), cognitive dysfunction 3.306 (1.204, 9.082), albumin 0.81 (0.66, 0.99), perioperative blood transfusion 2.29 (1.41, 3.69), C-reactive protein 2.24 (1.11, 4.53). Conclusion Advanced age, male, alcoholism, ASA Physical Status Classification System $\geq 3$ , underlying a variety of diseases such as diabetes, with history of psychiatric, history of cerebrovascular disease, cognitive dysfunction, low albumin, perioperative blood transfusion, and C-reactive protein increased were the risk factors for POD in patients undergoing CN.Meta

**Quality assessment / Risk of bias analysis:** Newcastle-ottawa Scale (NOS) was used to evaluate the quality of the included literature. NOS included 3 parts and 8 items with a full score of 9. The higher the score, the higher the quality of the literature. Each

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article was rated as low quality (0-5 points) or high quality (6-9 points) based on the total score.

**Strategy of data synthesis:** Stata15.0 software was used for statistical analysis. Heterogeneity was evaluated according to the results of I<sup>2</sup> test and Q test. If I<sup>2</sup> ≤ 50% and P ≥ 0.1, homogeneity among studies was indicated, and fixed effects model was used for analysis. If I<sup>2</sup> > 50%, P < 0.1, indicating heterogeneity among studies, the source of heterogeneity was found. If the source of heterogeneity could not be explained by clinical heterogeneity and methodological heterogeneity, random effects model was used for analysis.

**Subgroup analysis:** None.

**Sensitivity analysis:** The sensitivity analysis of results was carried out by changing the statistical analysis model. If the results of the combined effect size of the two models did not change significantly, it indicated that the results were robust and credible; otherwise, the credibility was not high.

**Country(ies) involved:** China.

**Keywords:** Colorectal Cancer; postoperative delirium; risk factors; meta-analysis; systematic review.

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