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ADMINISTRATIVE INFORMATION

Support - Shanghai Pudong New Area Health System Discipline Leader Training Program (PWRd2022-10).

Review Stage at time of this submission - Data analysis.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2025110064

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 November 2025 and was last updated on 20 November 2025.

INTRODUCTION

Review question / Objective To comprehensively assess the association between statin use and survival outcomes in patients with colorectal cancer.

Condition being studied CRC is a leading cause of global cancer incidence and mortality. While the anti-tumor potential of statins has gained increasing attention, their exact impact on patient prognosis remains controversial.

METHODS

Search strategy PubMed:
#1 "Hydroxymethylglutaryl-CoA Reductase Inhibitors"[Mesh] OR statin*[tiab]
#2 "Colorectal Neoplasms"[Mesh] OR "colorectal cancer*" [tiab] OR "colon cancer*" [tiab] OR "rectal cancer*" [tiab]
#3 prognosis [tiab] OR prognos* [tiab] OR surviv* [tiab] OR mortality [tiab] OR recurrence [tiab]

#4 #1 AND #2 AND #3

EmBase:
#1 'hydroxymethylglutaryl coenzyme a reductase inhibitor'/exp OR statin*:ti,ab
#2 'colorectal cancer'/exp OR 'colorectal cancer*:ti,ab OR 'colon cancer*:ti,ab ...
#3 'prognosis'/exp OR prognos*:ti,ab OR surviv*:ti,ab OR mortality:ti,ab
#4 #1 AND #2 AND #3

Cochrane library:
#1 (statin*):ti,ab,kw
#2 ("colorectal cancer*" OR "colon cancer" OR "rectal cancer"):ti,ab,kw
#3 (prognos* OR surviv* OR mortality OR recurrence):ti,ab,kw
#4 #1 AND #2 AND #3

Web of Science:
#1 TS=(statin* OR atorvastatin OR simvastatin OR rosuvastatin OR pravastatin OR lovastatin OR fluvastatin)

#2 TS=("colorectal cancer*" OR "colorectal tumour*" OR "colorectal tumor*" OR "colon cancer*" OR "rectal cancer*")
 #3 TS=(prognos* OR surviv* OR mortality OR recurrence OR "disease-free survival" OR "overall survival")
 #4 #1 AND #2 AND #3.

Participant or population Patients with pathologically confirmed CRC.

Intervention Use of statins (either before or after CRC diagnosis).

Comparator No use of statins.

Study designs to be included Observational studies such as cohort or case-control studies, or randomized controlled trials (RCTs).

Eligibility criteria Studies were included according to the following criteria: (1) Study population: patients with pathologically confirmed CRC; (2) Exposure: use of statins (either before or after CRC diagnosis); (3) Control: no use of statins; (4) Outcome: reporting of at least one of the following prognostic indicators—all-cause mortality (ACM), cancer-specific mortality (CSM), disease-free mortality (DFM), or recurrence-free mortality (RFM); (5) Study type: observational studies such as cohort or case-control studies, or randomized controlled trials (RCTs).

Information sources PubMed, Embase, Cochrane Library, and Web of Science.

Main outcome(s) All-cause mortality (ACM), cancer-specific mortality (CSM).

Additional outcome(s) Disease-free mortality (DFM), or recurrence-free mortality (RFM).

Quality assessment / Risk of bias analysis Newcastle–Ottawa Scale (NOS), which evaluates three domains: selection of study populations, comparability of groups, and outcome assessment.

Strategy of data synthesis All analyses were performed using random-effects models.

Subgroup analysis Subgroup analyses were performed for ACM and CSM based on study design, country, mean patient age, tumor site, extent of covariate adjustment, and study quality.

Sensitivity analysis To evaluate the stability of the pooled results, we conducted a leave-one-out

sensitivity analysis by sequentially excluding individual studies and recalculating the pooled effect size to observe whether the results changed substantially.

Language restriction No restriction.

Country(ies) involved China.

Keywords statins; colorectal cancer; prognosis; systematic review; meta-analysis.

Contributions of each author

Author 1 - Gang Li.

Author 2 - Wenzhong Zhang.

Author 3 - Jie Wang.

Author 4 - Baiying Xu.

Author 5 - Yongbing Wang.