

INPLASY

Risk factors of nosocomial infection in patients after percutaneous coronary intervention a Meta-analysis

INPLASY2024100069

doi: 10.37766/inplasy2024.10.0069

Received: 16 October 2024

Published: 16 October 2024

Wang, W; Chong, YL; Xu, ZZ; Wang, YH; Gao, YX.

Corresponding author:

xia xiaomei

850578902@qq.com

Author Affiliation:

The First Affiliated Hospital of Shandong First Medical University & Shandong Provincial Qianfoshan Hospital.

ADMINISTRATIVE INFORMATION

Support - No.

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

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2024100069

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 October 2024 and was last updated on 16 October 2024.

INTRODUCTION

Review question / Objective To identify the main influencing factors of nosocomial infection in patients after percutaneous coronary intervention by meta-analysis.

Condition being studied Percutaneous Coronary Intervention (PCI) refers to the treatment of relieving stenosis and improving myocardial blood supply by expanding the stenosed coronary artery through a variety of methods through the catheter. It has become one of the main treatment methods for coronary heart disease and acute myocardial infarction, which effectively solves the problem of coronary artery stenosis, significantly reduces the risk of death of patients, and improves the quality of life of patients. In 2021, the total number of PCI registered cases in China reached 1.16 million, which increased by one-fifth compared with 2020, and about 1.48 stents were implanted in each patient on average. However, PCI, as an invasive treatment method, is easy to be complicated by

nosocomial infection for patients with low resistance. Infection can worsen the condition, increase the burden on the heart, and even lead to multiple organ failure, which has a serious impact on the prognosis of patients and is even one of the important causes of death in patients. At the same time, infection can prolong the length of hospital stay, increase medical costs, reduce the quality of life, and even threaten the life of patients. In addition, the abuse of antibiotics is common in China in recent years, which makes the distribution and drug resistance of pathogens related to infection after PCI more complicated. At present, there are many studies on nosocomial infection after PCI, mainly focusing on status quo investigation and drug intervention. In addition, the risk factors of nosocomial infection after PCI are different in terms of age, whether there is invasive operation, and whether there is combined chronic disease. Therefore, this study explores the main risk factors by Meta-analysis in order to provide reference for reducing the incidence of nosocomial

infection after PCI, promoting rapid recovery and increasing patient satisfaction.

METHODS

Search strategy Chinese and English databases were searched by computer, including China National Knowledge Infrastructure (CNKI), Wanfang Database, China Biology Medicine Database, VIP, Pubmed, Web of Science, Cochran Library and Embase. The investigative research literature related to nosocomial infection after PCI was searched from the establishment of the database to June 2024. The main Chinese search terms were: coronary intervention, nosocomial infection, influencing factors, etc. Percutaneous coronary intervention, nosocomial infection, Risk Factors, etc., the search method was combined with subject words and free words, supplemented by manual search of the references of the included studies.

Participant or population Patients undergoing PCI and observational studies with definite diagnostic criteria of nosocomial infection: prospective/retrospective study.

Intervention Inclusion criteria: (1) Chinese or English literature (2) patients undergoing PCI (3) observational studies with definite diagnostic criteria of nosocomial infection: prospective/retrospective study (4) NOS score ≥ 7 . Exclusion criteria: (1) reviews, dissertations, case reports, etc. (2) literature with incomplete data (3) literature without original text found (4) literature with repeated publication.

Comparator Inclusion criteria: (1) Chinese or English literature (2) patients undergoing PCI (3) observational studies with definite diagnostic criteria of nosocomial infection: prospective/retrospective study (4) NOS score ≥ 7 . Exclusion criteria: (1) reviews, dissertations, case reports, etc. (2) literature with incomplete data (3) literature without original text found (4) literature with repeated publication.

Study designs to be included Inclusion criteria: (1) Chinese or English literature (2) patients undergoing PCI (3) observational studies with definite diagnostic criteria of nosocomial infection: prospective/retrospective study (4) NOS score ≥ 7 . Exclusion criteria: (1) reviews, dissertations, case reports, etc. (2) literature with incomplete data (3) literature without original text found (4) literature with repeated publication.

Eligibility criteria No.

Information sources Two researchers independently screened and cross-checked the literature according to the inclusion and exclusion criteria by using Endnote X9 software. If there was any disagreement, the third researcher was invited to discuss and make a decision. For the final included literature, the general information was extracted, including: the first author, publication year, research area, research type, investigation time, sample size, and the main influencing factors mentioned by the three literatures at the same time.

Main outcome(s) No.

Additional outcome(s) No.

Data management In this study, Revman 5.3 software was used for meta-analysis. OR value was used for qualitative data, and MD value and 95% confidence interval were used for quantitative data. If $I^2 \leq 50\%$, random fixed effect model was used for Meta-analysis, otherwise random effect model was used. Subgroup analysis was used for heterogeneity analysis. According to the Cochran recommendation, the funnel plot was used to analyze the publication bias of the factors that affected the number of included articles ≥ 10 .

Quality assessment / Risk of bias analysis I1.4 Literature quality evaluation

In this study, two researchers independently evaluated the quality of the preliminary-included literature using the Newcastle-Ottawa scale (NOS) scale [24], and the third researcher was invited to discuss and decide if there was any disagreement. The total score of NOS scale was 0-9, and only high-quality literatures with a total score ≥ 7 were included in this study.

1.5 Statistical analysis

In this study, Revman 5.3 software was used for meta-analysis. OR value was used for qualitative data, and MD value and 95% confidence interval were used for quantitative data. If $I^2 \leq 50\%$, random fixed effect model was used for Meta-analysis, otherwise random effect model was used. Subgroup analysis was used for heterogeneity analysis. According to the Cochran recommendation, the funnel plot was used to analyze the publication bias of the factors that affected the number of included articles ≥ 10 . In this study, Revman 5.3 software was used for meta-analysis. OR value was used for qualitative data, and MD value and 95% confidence interval were used for quantitative data. If $I^2 \leq 50\%$, random fixed effect model was used for Meta-analysis, otherwise random effect model was used. Subgroup analysis was used for heterogeneity

analysis. According to the Cochran recommendation, the funnel plot was used to analyze the publication bias of the factors that affected the number of included articles ≥ 10 .

Strategy of data synthesis 1.4 Literature quality evaluation

In this study, two researchers independently evaluated the quality of the preliminary-included literature using the Newcastle-Ottawa scale (NOS) scale [24], and the third researcher was invited to discuss and decide if there was any disagreement. The total score of NOS scale was 0-9, and only high-quality literatures with a total score ≥ 7 were included in this study.

1.5 Statistical analysis

In this study, Revman 5.3 software was used for meta-analysis. OR value was used for qualitative data, and MD value and 95% confidence interval were used for quantitative data. If $I^2 \leq 50\%$, random fixed effect model was used for Meta-analysis, otherwise random effect model was used. Subgroup analysis was used for heterogeneity analysis. According to the Cochran recommendation, the funnel plot was used to analyze the publication bias of the factors that affected the number of included articles ≥ 10 .

Subgroup analysis Subgroup analysis was used for heterogeneity analysis.

Sensitivity analysis No.

Country(ies) involved China.

Other relevant information No

Keywords Percutaneous coronary intervention; Hospital infection; Risk factors; Meta-analysis.

Dissemination plans No.

Contributions of each author

Author 1 - Wang wei.

Email: 499918313@qq.com

Author 2 - Chong yuliang.

Author 3 - xu zhaozhen.

Author 4 - wang yanhong.

Author 5 - gao yan.

Author 6 - xia xiaomei.

First author: Wang Wei 499918313@qq.com, Research design, data analysis, writing and revising articles
Second author: Chong Yuliang chongyuliang007@163.com literature search, quality evaluation, data collection
Third author: Xu Zhaozhen 190355773@qq.com Quality evaluation