

INPLASY PROTOCOL

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The authors declare no conflicts of interest.

The Effectiveness of different teaching methods on medical or nursing students: Protocol for a systematic review and network meta-analysis

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Review question / Objective: P: medical or nursing students; I: case-based learning; problem-based learning; simulation-based learning; C: traditional teaching; O: critical thinking ability and autonomous learning ability; S: RCT.

Condition being studied: In recent years, more and more hospital administrators have recognized the shortcomings of traditional teaching methods, so they try to use multiple teaching methods to improve the critical thinking ability and autonomous learning ability of medical or nursing students. Compared with traditional teaching methods, such as problem-based learning, case-based learning, simulation-based learning reflects its own advantages. At present, there is no conclusion about the effect of different teaching methods on the critical thinking ability and autonomous learning ability of medical or nursing students, and few studies directly compare the differences in the effects of different teaching methods. Therefore, it is necessary and practical to evaluate the influence of different teaching methods on the critical thinking ability and autonomous learning ability of medical or nursing students.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 July 2020 and was last updated on 05 July 2020 (registration number INPLASY202070017).

INTRODUCTION

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METHODS

Participant or population: Students majoring in medicine or nursing.

Intervention: Problem-based learning; case-based learning; simulation-based learning.

Comparator: Traditional teaching.

Study designs to be included: Randomized controlled trial.

Eligibility criteria: There were no geographic or language limitations on eligibility. Studies were eligible if they were conducted in 1980 or later to be relevant to current intervention practices. Eligible studies were those that assessed intervention effects for undergraduate college students from any country, who were no older than 30 years of age. Given the analytical assumptions required for a network meta-analysis, only randomized controlled trials (RCTs) were eligible for inclusion; that is, we only included RCTs due to their ability to reduce threats of selection bias and to prevent concerns that including multiple types of study design would further increase the chances of inconsistency.

Information sources: We searched Chinese National Knowledge Infrastructure, Wanfang Data (Chinese database), VIP Information (Chinese database), Chinese Biomedical Literature, and English language databases, including PubMed

and Embase, Web of Science, EBSCO, Cochrane library.

Main outcome(s): Critical thinking ability and autonomous learning ability.

Quality assessment / Risk of bias analysis: Two independent raters used the Cochrane Risk of Bias tool to assess risk of bias, modified to separately examine selective reporting for each of the three outcomes in the review and incomplete outcome data for each of the three waves selected. The tool was also modified to separately assess participant and personnel blinding.

Strategy of data synthesis: A network meta-analysis includes additional analyses to assess whether transitivity and consistency assumptions are met. Namely, inconsistency statistics and plots assessed global inconsistency and (local) loop-specific heterogeneity. A global assessment of all inconsistency parameters to reject the hypothesis of consistency across the network, is conducted using the Wald test statistic, which follows a χ^2 distribution. In the inconsistency plots, an inconsistency factor (IF) is calculated as the absolute difference between direct and indirect evidence. Inconsistency factors closer to zero indicate that direct and indirect evidence are in agreement. Contribution plots, which demonstrate the influence of the direct, mixed, and indirect evidence sources in the network, were used to assess whether single comparisons were unduly influencing the results. Finally, node-splitting was conducted to assess the effect of leaving one study out of the network at a time: good model fit is indicated by non-significant χ^2 test results.

Subgroup analysis: We will consider subgroups such as student satisfaction, score.

Sensibility analysis: In case of possible important heterogeneity or inconsistency, we explored the possible sources using subgroup and meta-regression analyses.

Country(ies) involved: China.

Keywords: Teaching method; network meta-analysis; medical students; nursing students.

Contributions of each author:

Author 1 - Bei Yun - Author 1 drafted the manuscript.

Author 2 - YiTong Cai - The author provided statistical expertise.

Author 3 - Qian Su - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.

Author 4 - Lian Chen - The author read, provided feedback and approved the final manuscript.

Author 5 - Lin Han - The author made substantive intellectual contributions to the interpretation of data and draft of the manuscript.