

Effectiveness of multiple teaching methods in standardized training of internal medicine residents in China – A network Meta Analysis

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University of Chinese Medicine.Ye, GC¹; Liu, CP²; Li, W³; Zhu, HC⁴; Lv, L⁵; Zhu, ZH⁶; Wang, YH⁷; Hu, J⁸; Zheng, XJ⁹; Fang, JY¹⁰; Ma, YC¹¹; Liu, MX¹²; Wang, YW¹³; Gao, YK¹⁴; Zhang, ZY¹⁵; Zhao, LM¹⁶; Xie, CX¹⁷; Lim, MY¹⁸; Wang, HL¹⁹.**ADMINISTRATIVE INFORMATION****Support** - This work was supported by funding from the National Natural Science Foundation of China (Num: 82174336), National Key R&D Program (Num: 2022YFC3501203), National Key R&D Program (Num: 2022YFC3501002) and National Training Program for Excellent Clinical Talents of Traditional Chinese Medicine (Num: 2022-01).**Review Stage at time of this submission** - Completed but not published.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202380121**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 August 2023 and was last updated on 29 August 2023.**INTRODUCTION**

Review question / Objective
R Participants: Standardized training trainees of Chinese residents, and have rotated the department of internal medicine. Intervention: Adopt all kinds of new teaching methods, such as case teaching method, problem-oriented and so on, which can be used alone or together. If both groups adopt new teaching methods, they must be of different types. Outcome measures: Theoretical test scores, Practical test scores, Medical record test scores, Score of autonomous learning ability, and Number of dissatisfied people.

Condition being studied On December 31, 2013, the National Health and Family Planning

Commission (NHFPC) officially issued the Guiding Opinions on Establishing a Standardized Resident Training System, requiring graduates who have completed five years of undergraduate medical education to receive three years of standardized resident training at the training base. In principle, the training base is a first-class hospital in China. By 2023, the system has been implemented for 10 years and trained a large number of qualified medical personnel for China. But we also found the corresponding problems more training bases still use lecture teaching method and students only passive learning is difficult to really mobilize the enthusiasm for learning, and lack of familiarity with clinical skills. In recent years, with the continuous advancement of medical education reform in China, the application of new teaching methods such as problem-based teaching method (PBL)

and case-based teaching method (CBL) has been gradually applied to the standardized training of residents. Based on the application of various new teaching methods in the standardized training of residents in China, this paper compares the advantages and disadvantages between different teaching methods and conventional teaching methods with the help of the network Meta-based outcome index system to screen the best teaching in internal medicine teaching.

METHODS

Participant or population Standardized training trainees of Chinese residents, and have rotated the department of internal medicine.

Intervention Adopt all kinds of new teaching methods, such as case teaching method, problem-oriented and so on, which can be used alone or together. If both groups adopt new teaching methods, they must be of different types.

Comparator Two groups of resident standardized training students adopt different teaching methods. If both groups adopt new teaching methods, they must be of different types.

Study designs to be included We require that all studies must be controlled and not limited to whether they use random methods. The language of experiment is limited to Chinese or English, and the data of multi-arm experiment is combined into two-arm experiment. If the same research is presented through multiple articles, it will be merged during processing.

Eligibility criteria Exclude: (1) Non-prospective or retrospective comparative studies. (2) Repeated publication of literature. (3) Non-Chinese or English literature. (4) Non-periodical literature. (5) Lack of the above outcome indicators and no baseline data. (6) Intervention measures involve less than 3 literatures. (7) Self-control study before and after, the research results are unknown, the data is false, etc. (8) Data are not presented in the form of average and difference. (9) The department of clinical rotation is not internal medicine.

Information sources We searched and built the database by computer until July 30, 2023. The Cochrane Library, PubMed, EMBASE, Web of Science, Wanfang academic journals Database, VIP Chinese Sci-tech Periodical Database, Chinese Biomedical Literature Database and other databases. We collect all the controlled research of new teaching methods in the standardized training of residents in China and manually search the

review literature to supplement some of the research.

Main outcome(s) The primary study outcome should include theoretical test scores, practical test scores, medical record test scores, score of autonomous learning ability, and number of dissatisfied people.

Quality assessment / Risk of bias analysis We assessed the risk of bias in the included randomized controlled trials (RCTs) using the Cochrane "risk of bias" assessment tool, including the domains of allocation, blinding, incomplete outcome data, selective reporting, and other bias. Each study was scored according to the selection, comparability, and outcome.

Strategy of data synthesis We used the Stata 16.0 software mvmeta package to carry out network Meta. The measurement data used the mean and difference as the effect statistics, and used the RevMan5.3 software to evaluate the literature and the risk of bias. Each effect size provided its 95% confidence interval (95% CI). Prediction interval plots were used to judge whether there was heterogeneity among studies, and local inconsistencies were assessed by node splitting. The similarity test of the evidence network is evaluated by comparing the clinical and clinical characteristics of each study, and the comparison results of the outcome indicators of any two treatment techniques are displayed in a league table, and the Meta test level is $\alpha=0.05$. When a closed loop is formed between interventions, an inconsistency test is required to assess the degree of consistency between direct and indirect comparisons. We Use the surface under the cumulative ranking curve (SUCRA) to identify the best interventions. At the same time, Stata16.0 software was used to draw the publication bias funnel diagram (compare calibration map).

Subgroup analysis Our study does not involve subgroup analysis.

Sensitivity analysis We will consider running sensitivity analysis to identify the robustness and stability of merged results by excluding studies with high risk of bias.

Country(ies) involved China.

Keywords Standardized training of Chinese residents; New teaching methods; Efficacy; Network Meta-Analysis.

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