



# Methodological Approaches and Current Applications of Distributed Cost-Effectiveness Analysis: A Systematic Review

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## BACKGROUND

- 'Health equity' is often defined as equal access to health for all individuals in a society.

- Traditional health economics evaluations have focused on how to maximize the efficiency of healthcare resource allocation, with relatively little quantitative consideration of equity factors.



Figure 1 Health Equity vs. Health Equality

- Distributed cost-effective analysis (DCEA) is an extension of CEA designed to assess the distribution of health effects and costs across population subgroups. It centres on assessing the distribution of health at baseline and the distribution of net health benefits after the implementation of interventions for different subgroups of the population, grouped by specific equity factors.

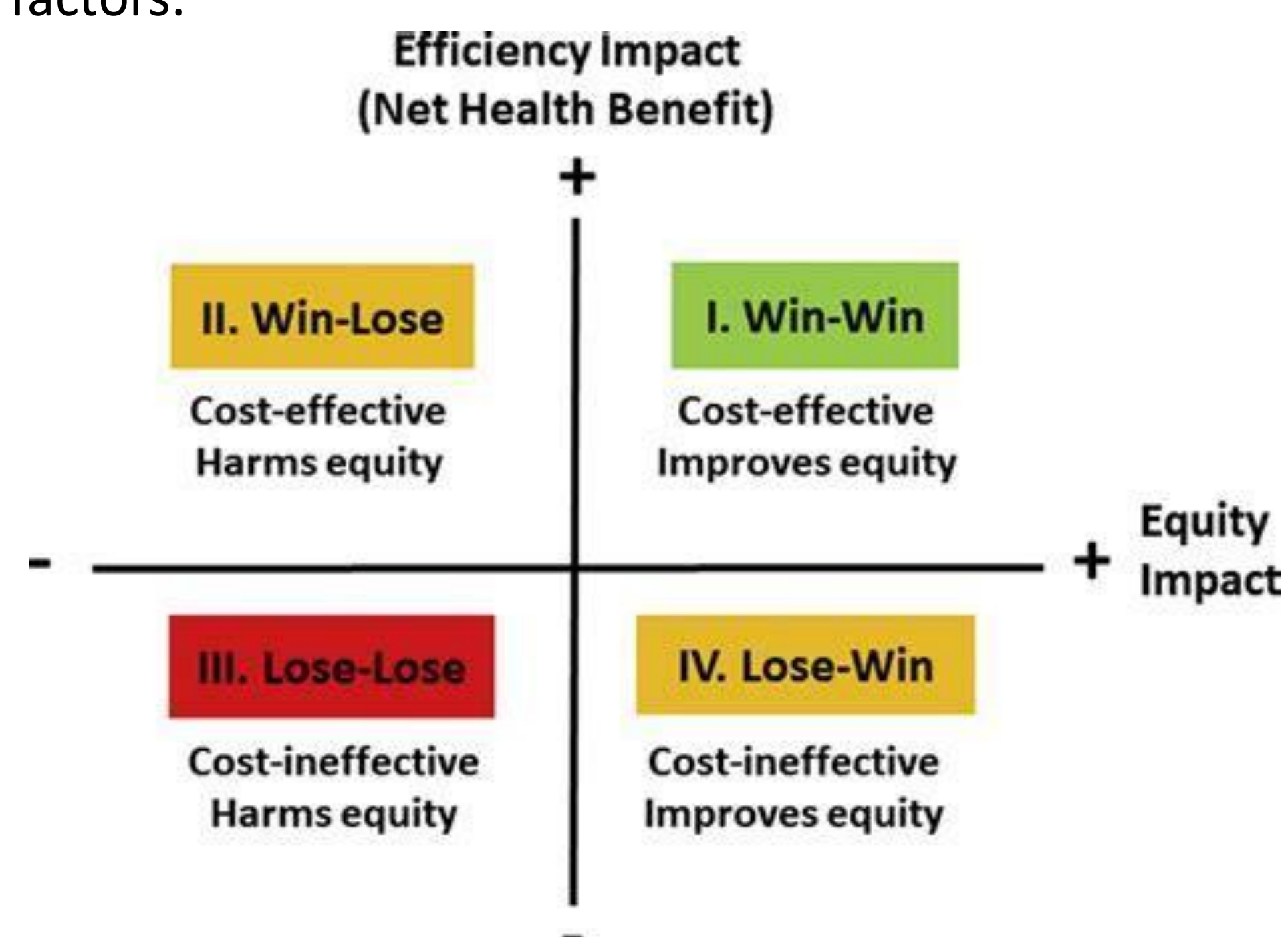


Figure 2 Equity-efficiency impact plan

## OBJECTIVES

- This study aims to comprehensively collect literature that utilizes DCEA for equity evaluation of health intervention programs. It summarized the **research methods** and **status applications** of DCEA, providing a reference for conducting health economic evaluation that incorporates considerations of health equity.

## METHODS

- PubMed, Web of Science, CNKI, and VIP databases were searched for literature on economic evaluation using DCEA from the time of database construction to April 2024. The search terms included 'distributional cost effectiveness analysis', 'health equity', and 'economic evaluation', etc.
- We excluded abstracts, comments, and general reviews. Literature was methodologically assessed using the **NICE economic evaluation checklist**.
- We extracted details such as the **study region**, **subjects**, perspectives, disease types, **subgroup classification criteria**, intervention measures, health outcome indicators, equity measurement methods, and sensitivity analysis.

## RESULTS

- 508 references** were identified, with 14 studies meeting the criteria. The majority of the studies were published **after 2018 (71.4%)**.
- The overall quality of the included studies was high, with **11 studies (78.6%)** having a full compliance rate of over 70% and being rated as "partially limited".

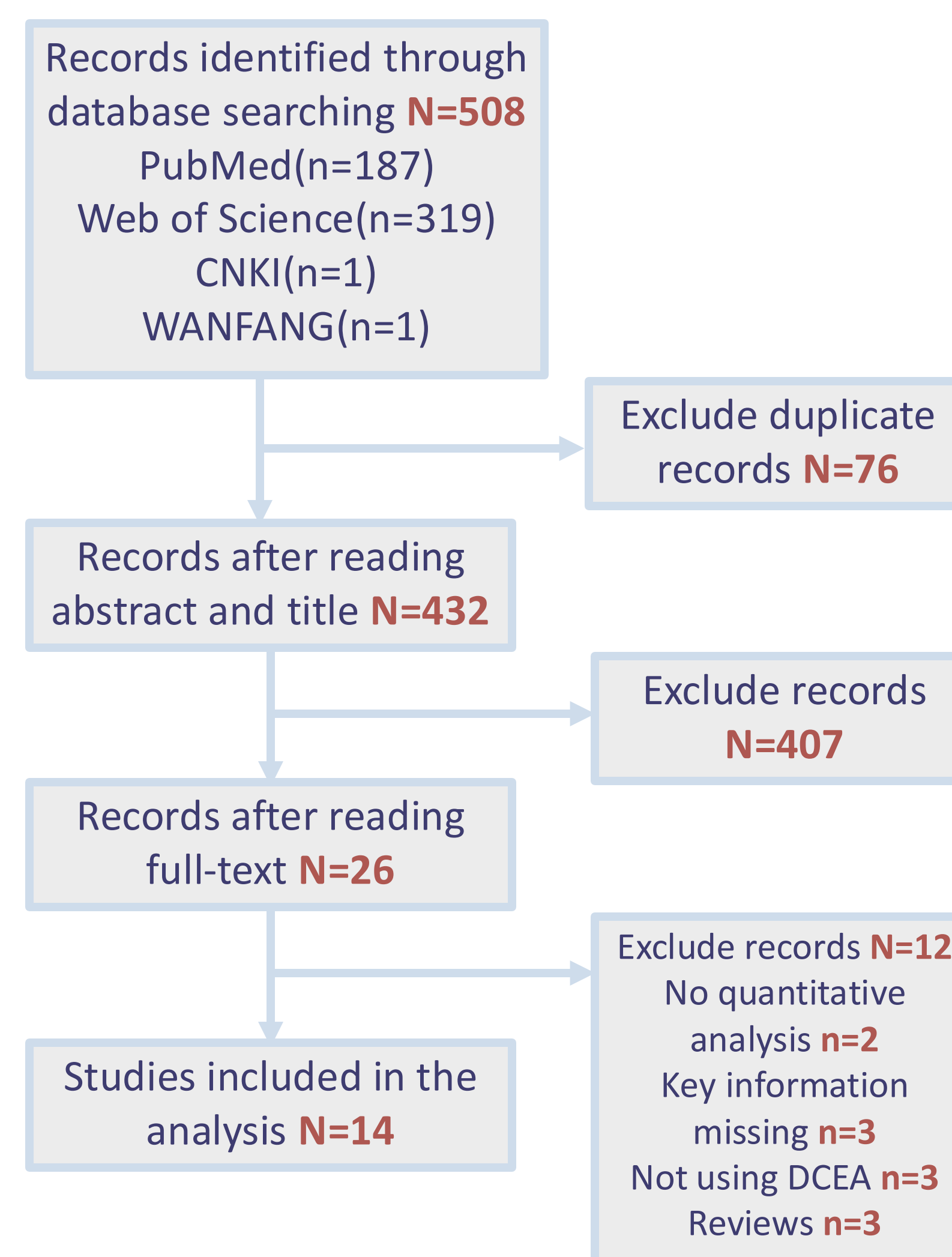


Figure 3 Literature Screening Flow Chart

## RESULT

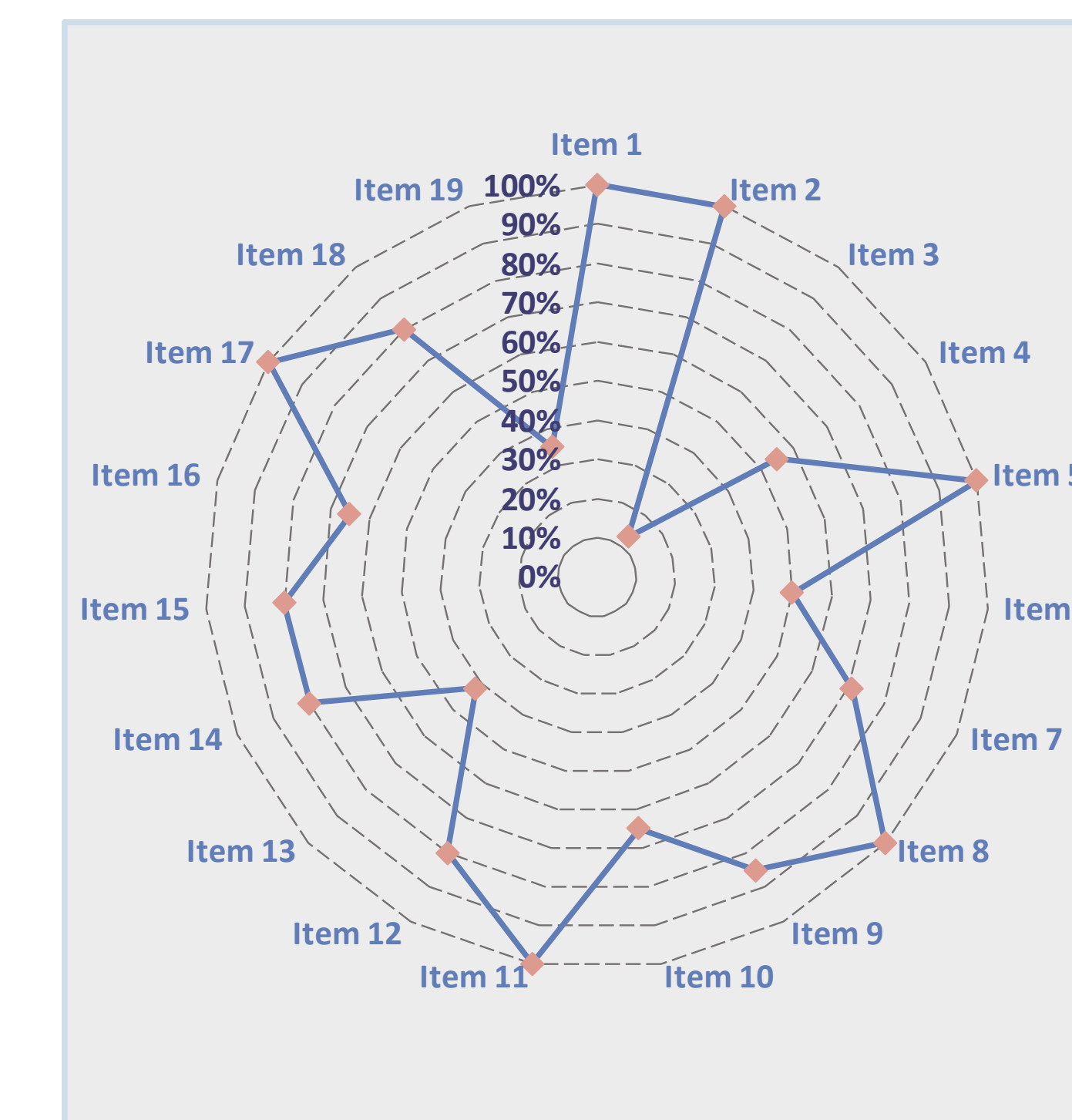


Figure 4 NICE checklist result

- The research regions were mainly concentrated in **developed countries(71.4%)**, such as the United Kingdom, USA, and South Korea, with only four studies (28.6%) conducted in developing countries like Ethiopia and Malawi. The study subjects were diverse, primarily including **patients (28.6%)**, the general population (28.6%), and children (21.4%).

- In terms of disease type, three (21.4%) evaluated **infectious disease** interventions, including AIDS treatment and vaccinations; and five (35.7%) of the diseases examined in the literature were **cancers** (bowel, cervical, and non-small-cell lung cancer).
- 9 studies (64.3%) used **QALY** as the main health outcome measure. In addition, two papers have chosen to use **DALY** as a measure of health output. Meanwhile, two other papers have chosen **QALE** as an outcome.
- In terms of subgroup classification basis, four of them included '**race**' as a subgroup classification basis. six papers (42.9 %) included '**economic status**' as a subgroup classification basis.
- In terms of the use of equity evaluation tools, 10 articles (**71.4 %**) chose the **Atkinson index** to measure inequality. One (7.1 %) used the **Gini coefficient** as an instrument to measure equity. In addition, 3 (21.4 %) used the **inequality slope index** to measure equity.

## CONCLUSION

DCEA can effectively balance the cost-effectiveness and health equity of health interventions. However, DCEA also has certain limitations, and future research should further focus on and improve aspects such as data collection, methodological advancements, and the definition of equity. .