

Beyond the Single QALY: Challenges in Applying Non-HALY Outcomes in Economic Evaluation

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INTRODUCTION

Health-adjusted life years (HALYs), such as QALYs and DALYs, face growing criticism for their limitations in capturing diverse health outcomes. This cross-sectional study comprehensively examined non-HALY indicators adoption in recent economic evaluations and identified key methodological challenges in their application.

METHODS

We searched PubMed for full economic evaluations published between January 1, 2023, and March 18, 2025, in journals ranked in the top 5% by Journal Impact Factor across 51 Clinical Medicine subcategories according to the Journal Citation Reports. Three trained groups of independent reviewers extracted data on study design, analytical perspective, research domain, outcome types, cost-effectiveness thresholds (CET), and corresponding cost-effectiveness conclusions.

RESULTS

1. Low Usage Rate of Non-HALY

Among the 363 included studies, only 17.6% (64/363) incorporated non-HALY measures and thus did not rely solely on HALY indicators. A total of 118 distinct outcome measures were identified (36 HALYs, 82 non-HALYs). All subsequent analyses were restricted to these 64 studies.

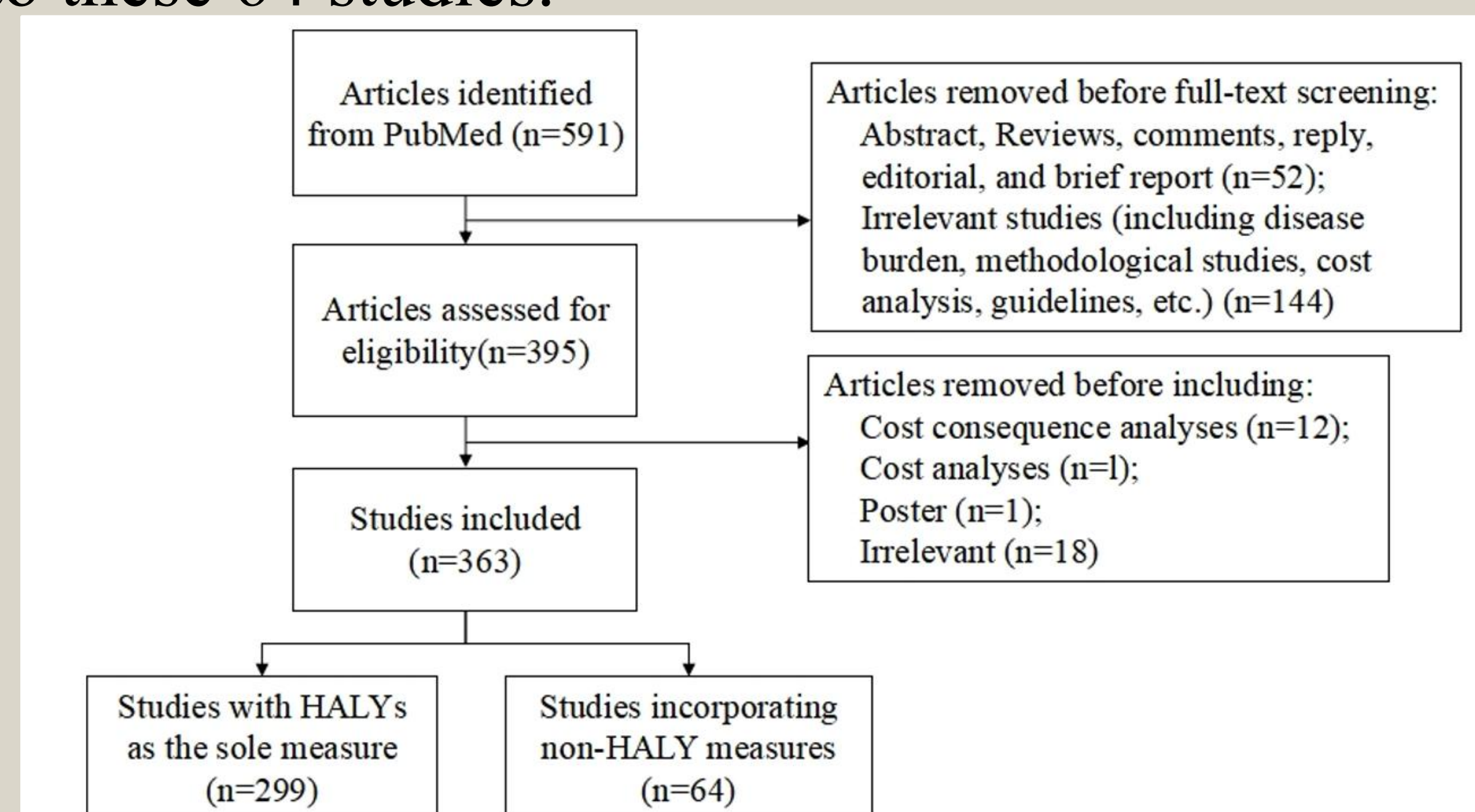


Figure 1. Screening process for eligible studies

2. The CET is Poorly Standardized

While 97.2% (35/36) of HALY measures reported a predefined CET, only 26.8% (22/82) of non-HALY measures did so. Among measures with a clear CET, HALY indicators predominantly referenced published literature (53.3%), while non-HALY measures most frequently adopted WHO recommendations for DALYs (41.2%).

• Over 50% of non-HALY measures inappropriately applied CET originally derived from HALYs.

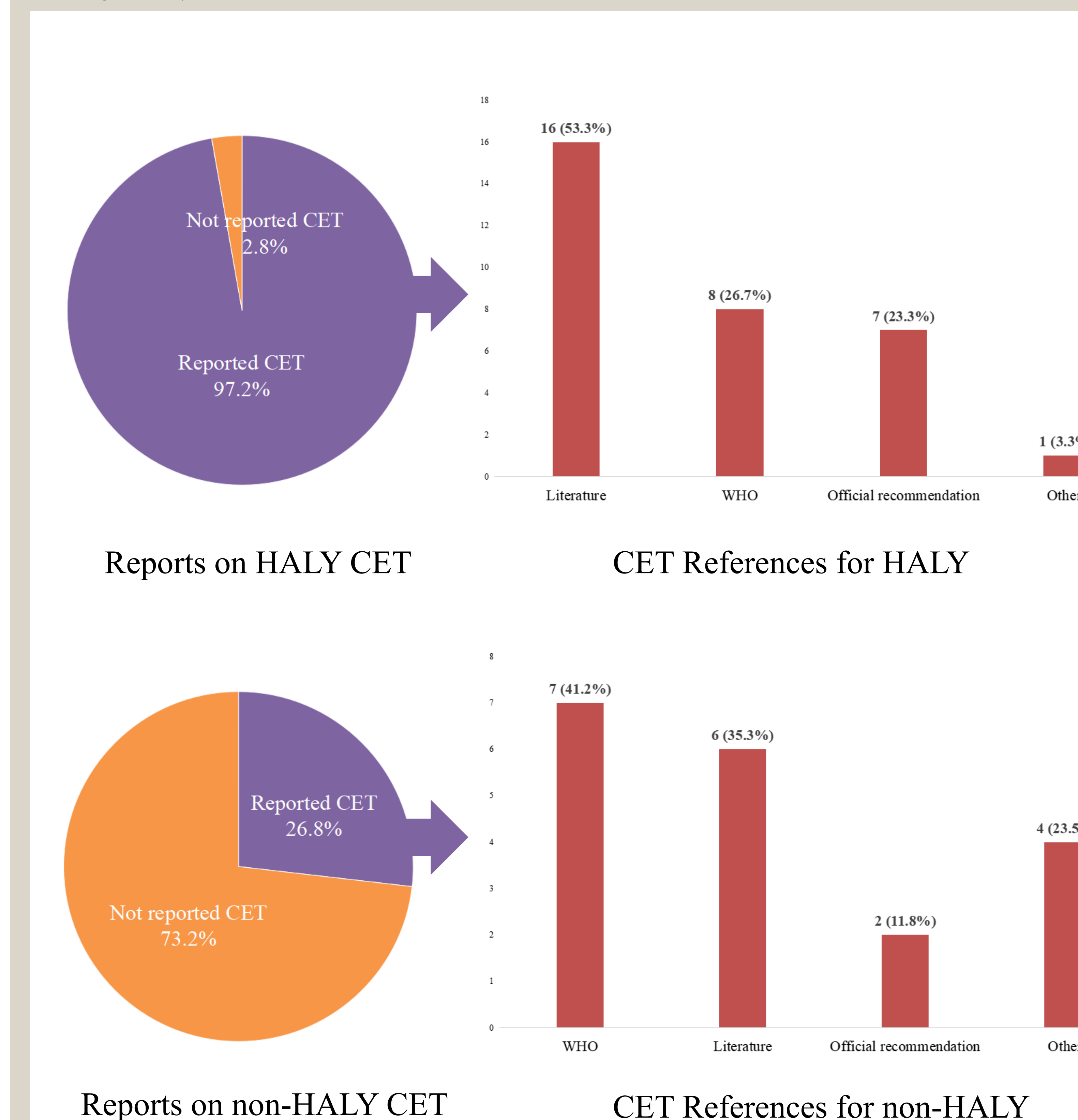


Figure 2. HALY/non-HALY CET usage and references

3. The Multiple Outcome Conclusions Are Problematic

Nevertheless, 90.7% (39/43) of multi-outcome studies reported definitive economic conclusions, even when CET were inconsistently applied across conflicting quadrants.

- More than half of studies (22/43) with incremental cost-effectiveness ratios (ICERs) falling in Quadrant I or III relied on CET to formulate definitive findings.
- 30.2% (13/43) reported ICERs confined to Quadrant II or IV, enabling definitive conclusions without CET utilisation.

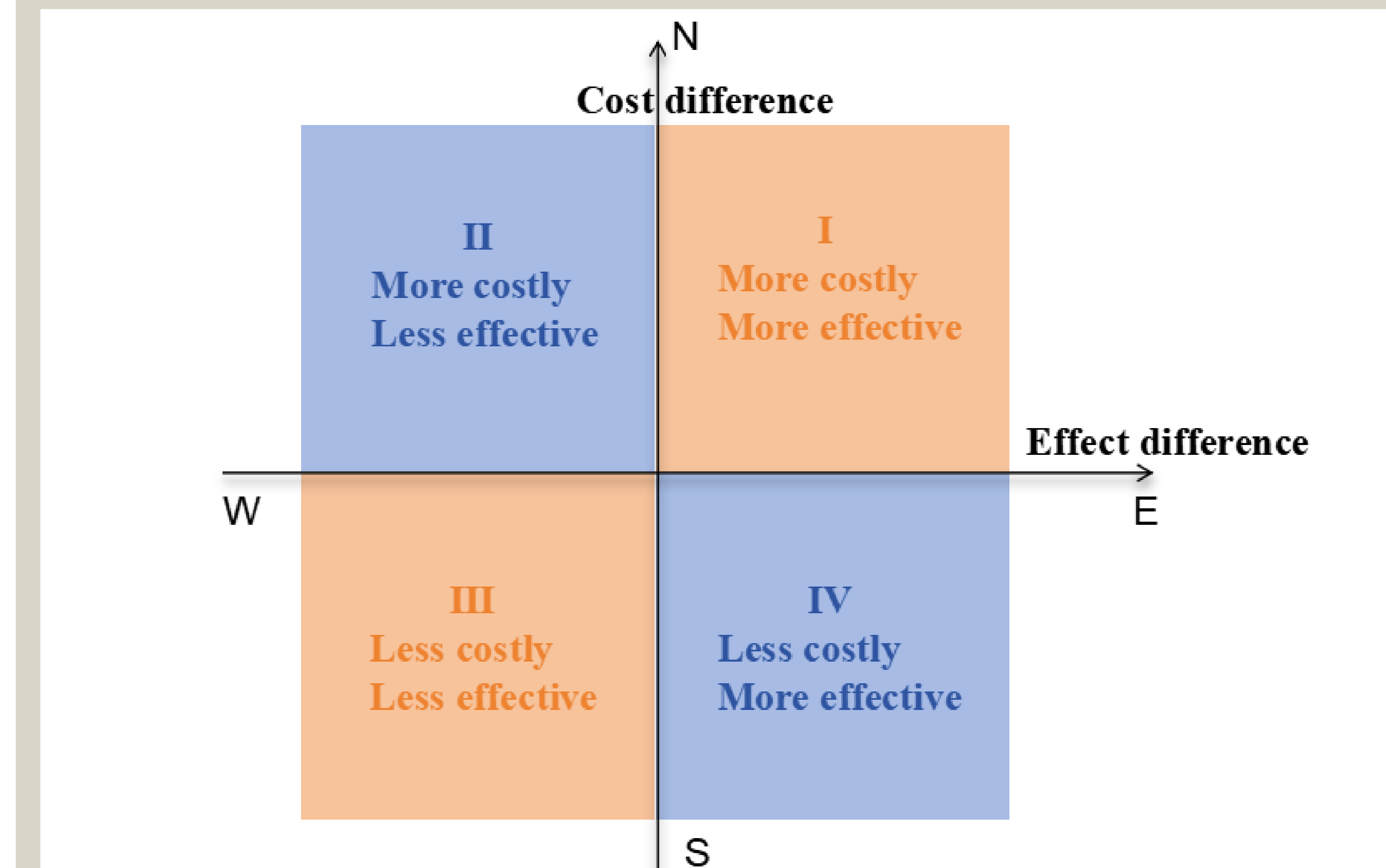


Figure 3. The cost-effectiveness plane

CONCLUSIONS

Non-HALY outcomes remain underutilized and poorly standardized in current economic evaluations. Key methodological gaps include insufficient specification and transparency of CET for non-HALY measures, as well as a lack of standardized approaches for interpreting multiple outcomes, particularly when conflicting cost-effectiveness results emerge across different outcome domains.