

Title: A Systematic Review and Meta-Analysis of Empathy Changes In Medical Students During Medical Education

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Introduction: Reduction in empathy has been explored in medical students (MS). Questions remain on whether significant changes in empathy occur during MS education.

Objective: Focusing on studies using the Jefferson Scale of Empathy medical student version (JSE-S), the authors aimed to quantify and assess reported changes across reviewed literature.

Methods: A systematic review and meta-analysis were performed using PRISMA guidelines. Criteria for inclusion were articles 1) written in English, 2) pertained to human subjects, and 3) written in the previous ten years (2009-2019). Exclusion criteria were those that 1) did not assess MS, 2) did not utilize the JSE-S, 3) did not compare empathy scores from JSE-S between class years, 4) contained an interventional program or course aimed to maintain/improve empathy, 5) were systematic reviews, meta-analyses, or dissertations.

Results: Thirty-nine of 448 articles met the criteria. Overall, no significant reduction in empathy was found across all nations (mean difference 0.09; $p=0.8930$). Stratifying by nationality, JSE-S scores of US-based MS declined slightly, while MS in other countries increased slightly from baseline (mean change -1.13; $p=0.0265$ vs. 0.38 units; $p=0.6311$). 37 of 39 articles compared JSE-S scores between female and male MS, and a majority of the articles (78.4%) reported higher scores for female than males.

Conclusions: The analysis supports that no significant empathy changes by JSE-S scores were noted in MS worldwide from baseline. Although evidence supports that empathy declined among US-based MS, no material difference was detected. This supports the notion that rigorous medical education curriculae does not necessarily curtail empathy among medical students.