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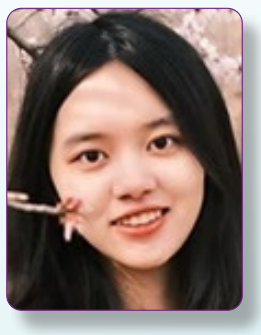

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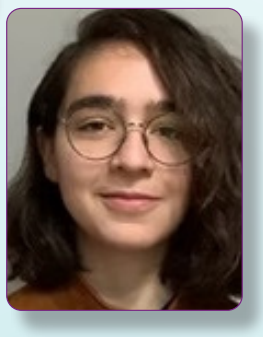

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Minimal detectable change of the Patient Health Questionnaire-9, Patient Health Questionnaire-8, and Patient Health Questionnaire-2: individual patient data meta-analysis

Yutong Wang, Yin Wu, Nadia P González-Domínguez, Jill T. Boruff, Brooke Levis, Pim Cuijpers, Simon Gilbody, Daphna Harel, John P. A. Ioannidis, Sarah Markham, Scott B. Patten, Simone N. Vigod, Roy C. Ziegelstein, Andrea Benedetti, Brett D. Thombs, On behalf of the DEPRESsion Screening Data (DEPRESSD) PHQ Collaboration.

Patient-reported outcome measures (PROMs), such as the Patient Health Questionnaire (PHQ-9, PHQ-8, and PHQ-2), are widely used to monitor depression symptoms over time. In measurement-based care, clinicians need to determine whether changes in questionnaire scores represent true clinical improvement rather than random measurement error.

Our study aimed to estimate the Minimal Detectable Change (MDC), the smallest change that exceeds measurement error, for the PHQ-9, PHQ-8, and PHQ-2 using a large international individual participant data meta-analysis and to examine whether MDC varies by age, sex, healthcare setting, or prevalence of major depression.

We analyzed data from 48 studies (44,085 participants). Our main findings were that the estimated MDC with 95% confidence (MDC95) was 5.72 points (≈6 points) for the PHQ-9, 5.51 points for the PHQ-8 and 2.26 points for the PHQ-2; MDC was highest among medical inpatients (PHQ-9 ≈6.5 points); MDC increased by about 0.4 points for every 10% increase in the proportion of participants in a study with major depression; Age and sex had little or no influence on MDC; Considerable variation existed across studies, suggesting that higher thresholds may be appropriate in some clinical settings.

This study provided robust evidence that an approximately 6-point change on the PHQ-9 is needed to confidently identify true change beyond measurement error in most clinical settings. Higher thresholds may be appropriate in specialty mental healthcare. These findings support the use of MDC estimates for the PHQ-9, PHQ-8, or PHQ-2 alongside patient-reported improvement to guide treatment decisions and interpret changes in depression symptoms.

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