



Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care

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Abstract Topic : Non-dialysis CKD

Reliability, validity, and measurement invariance of the PHQ-8 in adults with chronic kidney disease: findings from Austrian population-based surveys

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Objectives : Chronic kidney disease (CKD) represents a long-term health condition that is frequently accompanied by substantial psychosocial burden. Depressive symptoms are common among individuals with CKD and are associated with poorer treatment adherence, reduced quality of life, and unfavorable clinical outcomes. The Patient Health Questionnaire (PHQ-8) is widely applied to screen for depressive symptoms in epidemiological and clinical research. However, evidence regarding its psychometric performance in individuals living with CKD, particularly in general population samples, remains limited. This study examines the factorial structure and measurement equivalence of the PHQ-8 among adults with a self-reported history of CKD in Austria.

Methods : The analysis used data from two nationally representative health surveys conducted in Austria in 2014 and 2018/2019, including 31,232 adult respondents. Among them, 571 individuals (1.8%) reported a previous diagnosis of CKD. Structural validity of the PHQ-8 was investigated using confirmatory factor analysis (CFA). In addition, multiple indicators multiple causes (MIMIC) modeling was applied to test for potential differential item functioning (DIF) associated with sex, age, and household income.

Results : The commonly applied single-factor model comprising eight items showed an acceptable fit to the data which further improved after addition of one error covariance between items 1 and 2 (RMSEA= 0.053, TLI=0.942, CFI=0.961, SRMR=0.033) (Fig.1). DIF was found for items 3/5/7 regarding age and for item 7 regarding income. The associations of age and income with depressive symptoms differed slightly between models accounting ($\beta_{\text{age}}=0.056$, $\beta_{\text{income}}=-0.224$) and models not adjusting for DIF ($\beta_{\text{age}}=0.061$, $\beta_{\text{income}}=-0.212$).

Conclusions : Overall, the findings support the use of the PHQ-8 as a structurally valid instrument for assessing depressive symptoms among individuals with CKD in population-based research. Nevertheless, comparisons across demographic categories may be affected by item-level measurement differences. Applying latent variable approaches can improve the validity of comparisons and strengthen the interpretation of results in epidemiological and clinical studies.

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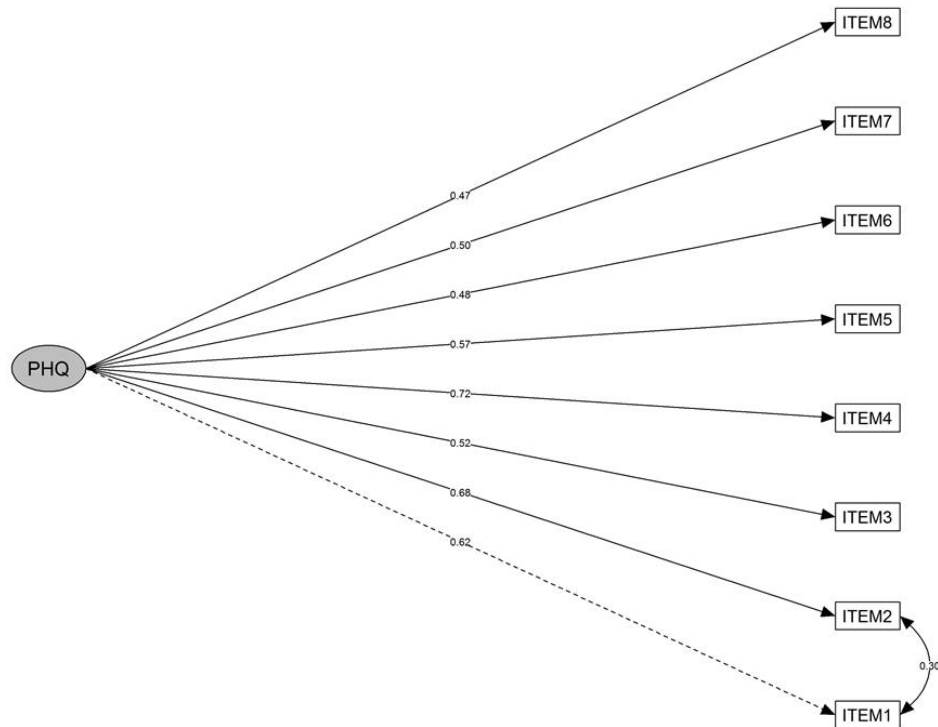


Fig. 1: Factor structure of the PHQ-8 in individuals with chronic kidney disease residing in Austria (numbers displayed on the straight and curved arrows signify completely standardized factor loadings and covariances, respectively; Austrian Health Interview Survey, 2014, 2018/2019, n=571; All factor loadings/covariances were significant at $p < 0.001$)