Assessing the Reliability and Validity of PHQ-9 Depression Scale Among Mexican Medical Students, 2018

HELEN LIANG, IVY ZHAO
School of Global Public Health, New York University, New York, NY, USA

Background

- Major Depressive Disorder (MDD) is a growing public health concern and one of the leading causes of disability. The symptoms of MDD can be characterized by lowering of mood, reduction of energy, reduced capacity for enjoyment, disturbed appetite, unresponsive mood, and other physical symptoms[1]. Mental disorders are indiscriminate and can affect all types of individuals, but those who have endured trauma or major life events may be more vulnerable.
- The Patient Health Questionnaire (PHQ-9) with a 9-item depression module is a tool to identify and measure the severity of depression. It consists of 9 criteria on which the diagnosis of DSM-IV depression is based on and allows for a two-step measure where more questions were asked to establish depression diagnosis when scores are high[2]. Thus, it serves as a dual-purpose tool for both diagnosing depressive disorders and grading the severity of depressive symptoms.
- This study will provide key contributions to understand the PHQ-9 depression scale's psychometric properties and its effectiveness in diagnosing depression. Reliability analysis will be conducted to assess the internal consistency of the PHQ-9 in measuring depressive symptoms over time. Validity analysis will also be conducted based on face, content, construct, and criterion validity.

Study Objective

- The main objective of this study is to assess the reliability and validity of the 9-item PHQ-9 depression scale among medical students at a private Mexican university.

Methods

- The dataset was sourced from a cohort of 776 Mexican medical students in 2014 from a private Mexican university who completed assessments using the PHQ-9, GAD-7, and the Epworth Sleepiness Scale. Initially, 1200 medical students were randomly selected from a total of 4520 students enrolled with a 64.6% response rate.
- Reliability was assessed by examining the internal consistency of the PHQ-9 through Cronbach's alpha. Face validity was checked as an informal way of content validity, content validity was checked by examining literature review, construct validity was evaluated using factor analysis, and criterion validity was assessed using pairwise correlation analysis.

KEY MESSAGES

(1) The 9-item PHQ-9 depression scale has been verified to be both reliable and valid according to our analyses, thus it can be used as a tool for screening and early intervention in mental health disorders among medical students.

(2) The PHQ-9 depression scale demonstrated an excellent internal consistency reliability with a Cronbach's alpha of 0.8097.

(3) Face, content, construct, and criterion validity have been validated through existing literature, factor analysis, and pairwise correlation analysis.

Table 3. Factor Analysis of the PHQ-9 Depression Scale Among Mexican Medical Students at a Private Mexican University (N=776), 2018

Statement	Factor 1 Negative Emotions/Thoughts
Little interest or pleasure in doing things	0.5222
Feeling down, depressed, or hopeless	0.6914
Trouble falling or stay asleep, or sleep too much	0.5682
Feeling tired or having little energy	0.6161
Poor appetite or overeating	0.6052
Feeling bad about yourself - or that you are a failure or have let yourself or your family down	0.7045
Trouble concentrating on things, such as reading the newspaper or watching television	0.5989
Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual	0.5407
Thoughts that you would be better off dead or of hurting yourself in some way	0.4191
Eigenvalue	3.1424
Cronbach's α	0.8097

Results

- The study sample consists of 776 medical students from a private Mexican university in 2018, with a balanced gender distribution. The mean age of participants is 20.22 years old (SD=1.79, range=12-31). The participants are primarily in their first year (35.44%), with an even spread across other academic years. In terms of physical characteristics, the mean height is 1.69 meters (SD=0.09), and the mean weight is 67.66 kg (SD=13.72).
- The internal consistency reliability for the PHQ-9 depression scale is excellent because the Cronbach's alpha is 0.8097 and the scale retained all 9 items in the final scale.
- Face validity was checked as an informal way of content validity.
- Content validity was checked by verifying that the scale items of PHQ-9 align with existing studies[2].
- Construct validity of the PHQ-9 depression scale is assessed using factor analysis and one factor ("Negative Emotions/Thoughts") containing all 9 items is selected according to the scree plot and the Kaiser-Guttman rule (eigenvalue = 3.1424 > 1.00).
- Criterion validity of the PHQ-9 depression scale is assessed using pairwise correlation analysis between PHQ-9 and other potential related factors such as the GAD-7 Anxiety Scale (r=0.6796) and the Epworth Sleepiness Scale (r=0.3884).

Discussion

- The PHQ-9 depression scale is both reliable and valid according to our analyses.
- The PHQ-9 is a highly standardized instrument and used in diverse settings (e.g., clinical, research, etc.), making it easy to administer and score.
- The validity of the PHQ-9 can vary among different cultural and ethnic groups due to varying expressions of depressive symptoms. As a self-report tool, self-report bias can occur, resulting in underreporting or overreporting.
- Our study may not be generalizable to other samples or populations since we focused on a specific sample (Mexican medical students).
- The PHQ-9 depression scale should be used in conjunction with clinical interviews and diagnostic assessments to provide a fuller picture on depression diagnosis.
- Integrating PHQ-9 for different cultural contexts can ensure accuracy and inclusivity in depression diagnosis.

References

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