



ORIGINAL ARTICLE

The reliability of a short scale PHQ-2 for screening depression among Pakistani medical students.

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ABSTRACT... Objective: To investigate the reliability of a short scale i.e: PHQ-2 in medical students. **Study Design:** Cross-sectional Descriptive. **Setting:** Quaid-e-Azam Medical College, Bahawalpur. **Period:** 25-10-23 to 25-11-23. **Methods:** 159 Pakistani medical college students were selected through convenience sampling technique. Participants completed two scales, namely the Patient Health Questionnaire-2 (PHQ-2) and the Beck Suicide Ideation Scale (BSSI). The collected data from both scales were analyzed using SPSS version 21. The analysis included assessing the Cronbach's alpha coefficient for the Patient Health Questionnaire-2 (PHQ-2) scores and its items in comparison with the Beck Suicide Ideation Scale (BSSI). **Results:** The average PHQ-2 score observed was (2.14 ± 1.69) standard deviation). The Cronbach's alpha coefficient was $(\alpha = 0.72)$, indicating a high level of PHQ-2 internal items consistency. PHQ-2 showed a significant correlation with the Beck Suicide Ideation (BSSI) at $(r=.48)$, indicating good construct reliability. **Conclusion:** The PHQ-2 scale appeared as a reliable scale for screening depression and it can be used for assessing depression and suicidal ideations in academic settings of Pakistan. However, its complementation with PHQ-9 is recommended for clinical use.

Key words: Depression, Medical, PHQ-2, Reliability, Students.

INTRODUCTION

Depression remains one of the common although manageable psychiatric disorders in the world.¹ It stands as a prominent contributor to global disability, significantly adding to the overall burden of illness.² It features negative effects on one's thinking, feeling, and behavior in the form of low mood, pessimistic thoughts, and lack of interest in daily activities including personal, academic, work, social, and recreational aspects of life.³ Severe depression even leads to deliberate self-harm and suicidal ideations.⁴ Persistent preoccupations with committing suicide are described as suicidal ideation which often appears as wishes, contemplation, and preoccupations of dying.⁵ Statistics revealed that suicide is relatively high among 15-29 year olds making it the fourth leading cause of death in young adults.⁶ Males are more likely to die from suicide as compared to females.⁷ Most individuals with a history of suicidal attempts exhibit depression, making it a

robust predictor for subsequent suicidal attempts in the future.⁸

Globally, approximately 6.7-16.6% of the population experience depression, while the prevalence of depression among medical students surpasses 50%, significantly higher than the general population.⁹ Furthermore, depression is associated with suboptimal academic performance and a tendency toward social isolation among students in the field of Medical Sciences.¹⁰ A study in Pakistan by Zafar et al. reported a depression rate of 57.57% among medical students in Pakistan.¹¹ Whereas another study reported prevalence rates of suicidal ideations among students were 15.2%, attempted suicide 6.3%, death wishes 24.3%, and suicidal plans 6.8%.¹² Furthermore Published literature identified a strong association of depression with suicidal ideation among college students.¹³

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Probably the transition into a medical college environment can be a source of stress. Adopting changes, working towards academic goals, planning for the future, examination stress, and the distance from familial support frequently contribute to stress, anxiety, and depression among students.¹⁴

Considering the link between depression and suicide, the need for a concise and brief screening tool is crucial not only for identifying depression but also for predicting potential future suicidal ideations in students with diverse cultural backgrounds. Therefore, there is a requirement for a sensitive and brief diagnostic instrument that can be administered promptly.

A relatively novel scale, The Patient Health Questionnaire-2 (PHQ-2) is a short and reliable scale for screening depression in the general population.¹⁵ However, its reliability has not been confirmed among medical students in academic settings in Pakistan. This study was conducted to investigate the reliability of short scale i.e: PHQ-2 for screening depression among medical students.

METHODS

This study was conducted from October 2023 to November 2023. The study sought approval from the ethics review committee of the institution (2322/DME/QAMC) (20-11-23). The study sample size of 159 was determined by taking a 95% confidence interval (CI), 5% margin of error, and 11.65 % as prevalence of depression.⁹ The sample was collected by using a non-probability convenience sampling technique. The students of Quaid-e-Azam medical college were invited however the students who had not consented to the study were excluded. The participants completed the patient health questionnaire (PHQ-2) and the Beck Scale of Suicide Ideation (BSSI). It took approximately 10 min to complete both scales.

Scales

Patient Health Questionnaire-2 (PHQ-2)

The PHQ-2 is a short scale for screening depression. It is a short version of the Patient

Health Questionnaire-9 (PHQ-9). It consisted of two items, Item.no.1: no or little interest or pleasure in usual activities and Item.no.2: Low or depressed mood. Its total scores range from 0-6. Its cut-off score is 3 for screening depression.^{16,17} Beck Scale of Suicide Ideation (BSSI)

The BSSI consists of 19 items. It is self-reporting type scale that measures the presence of suicidal ideation in the last week. The items are rated based on a Likert like scale from 0 to 2 and the maximum score is 38. Higher scores indicate a high risk of suicidal ideations.¹⁸

Data Analysis

Data analysis was done by SPSS.ver.21. Descriptive statistics like age and gender were determined. The mean and standard deviation (SD) of scores from both scales were calculated. Cronbach's alpha coefficient was estimated to determine the internal consistency of the Patient Health Questionnaire (PHQ-2). Additionally, correlations were assessed between the short scale, Patient Health Questionnaire (PHQ-2), and the Beck Scale of Suicide Ideation (BSSI). P-value ($P \leq 0.05$) was taken as statistically significant.

RESULTS

The average age of study participants was 21.52 ± 1.04 . Out of total 159 participants, 85(53.4%) were males while 74(46.5%) were females. The sample description concerning age and gender is shown in Table-I.

The average PHQ-2 score observed was (2.14 ± 1.69 standard deviation). Item.no. 1 yielded a mean score of 1.24 ± 0.93 SD, while item no. 2 had an average score of 1.02 ± 0.90 SD). The internal consistency calculated by Cronbach alpha for the PHQ-2, stood at $\alpha = .72$. The inter correlations among the items demonstrated a coefficient of $r = 0.597$ and item-total correlations were significant ranging between $r = 0.890$ and $r = 0.897$ ($p < 0.01$). Notably, the PHQ-2 exhibited a high correlation of $r = 0.68$ with the Beck Suicide Ideation (BSSI) at ($p < 0.01$). It appeared in contrast to a study that reported the correlation of PHQ-2 with BSSI at .33. The scoring and correlation of PHQ-2 with BSSI are shown in

Table-II.

Sample Description	Mean	Standard Deviation (SD)
Age	21.52	1.04
Gender	(N)	(%)
Male	85	53.4
Female	74	46.5

Table-I. Sample description with respect to age and gender (n=159)

Measure	Mean ± SD	Item 1 (Mean SD)	Item 2 (Mean SD)
PHQ-2 Score	2.14 ± 1.69		
Item no 1		1.24 ± 0.93	
Item no 2			1.02 ± 0.90
Cronbach Alpha (PHQ-2)	$\alpha = 0.72$		
Inter-Item Correlation (r)		0.597*	
Item-Total Correlation (r)		0.890 - 0.897*	
Correlation with BSSI (r)			0.48*

Table-II. Scorings and correlations of PHQ-2 with BSSI

*p < 0.05, PHQ= patient health questionnaire, BSSI= beck scale of suicidal ideation

DISCUSSION

This study aimed to assess the reliability of a short scale i.e: PHQ-2 scale for screening depression in medical students. The internal consistency, measured by Cronbach's alpha coefficient of the PHQ-2 within our sample, was found to be 0.72. While this value is acceptable for being reliable however it falls short of the desired coefficient value of 0.80, which is deemed suitable for clinical use. This finding aligns with existing research, where studies have reported Cronbach's alpha coefficient for the PHQ-2 ranging from 0.72 to 0.76 and test-retest reliability ranging between 0.70 and 0.82 (18). Another study reported a Cronbach's alpha coefficient of 0.74 and test-retest reliability of 0.76.¹⁹

Our results revealed a positive correlation (r

= 0.48) between PHQ-2 and the Beck Scale of Suicide Ideation (BSSI), indicating a significant association between depression and suicidal ideation. This result supports the reliability of the PHQ-2, suggesting its potential utility in measuring suicidal ideation. Our findings align with previous research, where substantial correlations were reported in other studies between PHQ-2 and BSSI. For example, a study reported that PHQ-2 is associated with BSSI at $r = 0.33$.²⁰

Moreover, our reported result falls within the range observed in previous studies, indicating an association between PHQ-2 and BSSI within non-clinical samples ($r = 0.21-0.59$).^{21,22,23}

CONCLUSIONS

The findings from our study offer insights into the reliability of the short scale i.e, PHQ-2 in Pakistani medical students. The PHQ-2 emerges as a reliable tool for screening depression. While the internal consistency is reasonably high and the correlation with a relevant scale, the Beck Suicide Ideation Scale (BSSI), is robust, it is worth noting that it did not reach the desired threshold, emphasizing its potential complementation with the PHQ-9.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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



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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Bushra Ijaz	Data analysis, data interpretation.	
3	Musarrat Jahan	Questionnaire designing, data input, Study design.	
4	Sana Baber	Literature search, data collection, drafting, Critical revision.	
5	Ahmad Khan Abbasi	Literature search, data collection, drafting.	
6	Yasir Bashir	Literature search, data collection, drafting, revision.	