ORIGINAL RESEARCH

Self-administered depression screening tool compared to structured clinical interviews: Implications for practice and research

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ABSTRACT

Background and objective: Nurses are at a higher risk for depression compared to the general public, thus requiring regular screening for depression. It remains unclear if a self-assessment screening tool may be recommended. The objective of this study was to compare a self-administered screening tool versus a clinician-guided interview.
Methods: Twenty-five nurses completed BDI-II and the SCID-5-RV. We used descriptive statistics and Pearson correlation for analyses.
Results: BDI-II identified 44% as screening positive for depression, and SCID-5-RV identified 40.0%.
Conclusions: Self-administered tools like BDI-II may be cost-effective for screening, while clinical interviews remain the diagnostic gold standard. Future research should focus on improving screening accuracy.

Key Words: BDI-II, Depression, Nurses, SCID-5

1. INTRODUCTION

Major Depressive Disorder (MDD) is one of the most common mental health disorders. Depressive disorders are precipitated by a myriad of genetic, social, environmental, and psychological factors.[1] Among adults 18 years and older in the United States (US), the incidence of an MDD episode in the past 12 months in 2021 was 8.3% or 21 million adults.[2] During the same period,[3] reported that the incidence of depressive disorders among nurses was 22%, more than twice that of the general population.[3] Nurses are at an exponentially higher risk for suboptimal psychological health, including depression, compared to other clinicians and the general public.[4–6] Nursing is very demanding, and nurses face multiple challenges within their professional roles. Their jobs are physically arduous, exposing them to infection risks, and, depending on their work setting, they may face a risk of being physically assaulted.[7] Melnyk et al.[8] reported that nurses generally have a poorer lifestyle and physical health than physicians and the general population. Furthermore, there is evidence that depression among nurses is associated with medical errors, thereby illuminating that suboptimal mental health among nurses may have long-reaching consequences.[8–10]

The high prevalence of depressive disorders among nurses highlights an urgent need for early detection and intervention. Mental health disorders, when left undiagnosed and untreated, can lead to significant impairment in work performance, reduced quality of life, and increased risks of adverse patient outcomes. Moreover, the stigma surrounding men-

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tal health in clinical professions prevents individuals from seeking the necessary support and treatment.[11] Research indicates that healthcare workers, including nurses, often hesitate to disclose their mental health concerns due to fears of professional repercussions, discrimination, or loss of licensure.[12] This hesitation underscores the importance of implementing systematic mental health screening measures tailored to clinicians' needs.

Screening for mental health disorders in clinicians, including nurses, is a critical step in fostering a healthier workforce and improving patient safety. While traditional screening measures exist, including structured clinical interviews and self-administered questionnaires, the feasibility, reliability, and effectiveness of these methods in nursing populations remain underexplored. Given the demanding schedules and high-stress environments of clinical practice, self-administered screening tools offer a practical solution by allowing nurses to assess their mental health independently. However, concerns persist regarding the accuracy of self-report measures compared to clinician-administered evaluations, particularly in settings where self-stigma and underreporting may be prevalent.

Thus, the purpose of this pilot study was to evaluate the concurrent criterion validity of the Beck Depression Inventory II (BDI-II) against the Structured Clinical Interview for DSM-5 Research Version (SCID-5-RV) as the gold standard. SCID-5 diagnoses closely correspond to DSM-5 diagnostic criteria.[13] Yet, there has been no established criterion validity between SCID-5 and self-report instruments, specially the BDI-II among nurses. The findings of this study may help inform clinicians and researchers with valid methods to screen or assess nurses for depressive disorders. Furthermore, this study has important implications for workforce mental health policies, occupational health programs, and future research to improve mental health screening practices among healthcare providers.

2. METHODS

This secondary analysis used data from a nursing workforce mental health sleep trial (ClinicalTrials.gov registry ID: NCT06079853). IRB approval was obtained from Columbia University Irving Medical Center institutional review board. We recruited 25 nurses from a large metropolitan hospital meeting the inclusion criteria of at least one year of RN experience and English proficiency. Exclusion criteria included extended medical leave within the past three months, pregnancy, and non-RN status. Participants completed an electronic survey via Qualtrics survey software, and a one-on-one Structured Clinical Interview for DSM-5 Research Version (SCID-5-RV). We collected demographic information and included the Beck Depression Inventory-II (BDI-II), a 21-item self-report measure assessing depressive symptoms over the past two weeks. The BDI-II has demonstrated high internal consistency ($alpha$ = 0.9) and strong psychometric properties.[14]

Next, each participant underwent a SCID-5-RV interview conducted by a Psychiatric Mental Health Nurse Practitioner (PMHNP). SCID-5-RV is a semi-structured diagnostic tool for DSM-5 disorders, requiring administration by a trained professional. It can be used with various populations, including psychiatric patients and community members, with administration times ranging from 30 to 180 minutes. Inter-rater and test-retest reliability for SCID-5 ranges from 0.60-0.90 with evidence of good internal consistency reliability.[15, 16] Each interview was held via Zoom; only the participant and PMHNP were present.

Descriptive statistics were used to analyze demographics (e.g., age, race, gender, years of experience, marital status) and the prevalence of depressive symptoms. We conducted the following analyses: 1) ROC analysis with area under the curve (AUC) to assess discriminative ability of BDI-II scores against SCID-5-RV MDD diagnosis; 2) sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) at the standard BDI-II cutoff of $\geq$ 14;[17] 3) Cohen's kappa (k) to assess the agreement between BDI-II classification and SCID-5-RV diagnosis; 4) Mann-Whitney U test to compare BDI-II scores with MDD and non-MDD groups confirmed by SCID-5-RV.

3. FINDINGS

3.1 Demographic characteristics

The sample consisted of 25 nurses (see Table 1). The mean age was 45.20 years (SD = 11.61), with an average of 18.04 years of experience (SD = 12.47). Most participants were female (n = 21), White (n = 16), and married or partnered (n = 17). Fourteen had a bachelor's degree, seven had a master's degree, and the remainder held an associate degree or diploma.

3.2 BDI-II scores

The BDI-II demonstrated high internal consistency (Cronbach's alpha = 0.87). Table 1 shows that the mean score was 11.32 (SD = 8.59). Males had slightly higher scores than females (12.75 vs. 11.05), though the difference was not statistically significant. White participants had the highest mean score (M = 12.44, SD = 8.90), while Asian participants had the lowest (M = 8.00, SD = 8.90). Differences by marital status and education level were also nonsignificant.

Table 1. Demographic characteristics and depression scores

	Mean (SD) and N	BDI-II Mean (SD)
Age	45.20 (11.61)	
Years of experience	18.04 (12.47)	
Gender		
Total	25	11.32 (8.59)
Male	4	12.75 (12.04)
Female	21	11.05 (8.14)
Race		
White	16	12.44 (8.9)
Asian	3	8.00 (8.9)
Black	2	11.50 (10.61)
Other	4	9.33 (11.02)
Marital Status		
Married/Partnered	17	12.53 (9.37)
Divorced	5	7.40 (6.11)
Single	3	11.00 (7.55)
Education		
Associate degree/diploma	4	6.50 (8.43)
Bachelor	14	14.29 (8.93)
Master	7	8.14 (6.23)

3.3 SCID-5-RV diagnoses

Twenty-four participants completed the SCID-5-RV. Six did not meet the criteria for any diagnosis. More than half (54%) endorsed depressive symptoms (lifetime and/or current). Ten of 25 participants (40.0%) received a MDD diagnosis. Seven had insomnia disorder, four had a history of or current ADHD, three had alcohol use disorder, and two had cannabis use disorder. Anxiety disorders were prevalent, with seven participants endorsing various forms.

3.4 Diagnostic accuracy: ROC curve analysis

To evaluate the criterion validity of BDI-II scores against SCID-5-RV diagnosis of MDD, we conducted a Receiver Operating Characteristic (ROC) analysis. The area under the ROC curve (AUC) was 0.760 (95% CI: 0.557-0.963), indicating fair to good discriminative ability of the BDI-II to identify MDD as diagnosed by the SCID-5-RV. An AUC of 0.76 indicates that a randomly selected participant with MDD had a 76% probability of obtaining a mean score of 14 or more on the BDI-II than a participant without MDD. At the cutoff threshold of 14, the BDI-II demonstrated 60.0% sensitivity, 73.3% specificity, PPV of 60.0% and NPV of 73.3 (see Tables 2, 3 and 4).

Table 2. Descriptive statistics by SCID-5-RV diagnostic group

	SCID+ MDD (n = 10)	SCID– No MDD (n = 15)	Total (N = 25)
BDI-II M (SD)	15.60 (8.15)	8.47 (7.86)	11.32 (8.59)
BDI-II Median	17.0	5.0	9.0
BDI-II Range	5–30	1–22	1–30
Minimal BDI-II (0–13), n (%)	4 (40.0)	11 (73.3)	15 (60.0)
Mild BDI-II (14–19), n (%)	4 (40.0)	2 (13.3)	6 (24.0)

Table 3. Diagnostic accuracy of BDI-II at standard cut-off of 14 for Predicting SCID-5-RV MDD diagnosis

BDI-II Threshold	Sensitivity	Specificity	PPV	NPV
≥ 14 (Beck et al., 1996)	0.600	0.733	0.600	0.733

Table 4. 2x2 Contingency Table: BDI-II (≥ 14) versus SCID-5-RV MDD Diagnosis

	SCID-5-RV MDD+	SCID-5-RV MDD–
BDI-II ≥14 (Screen+)	TP = 6	FP = 4
BDI-II <14 (Screen–)	FN = 4	TN = 11

3.5 Categorical agreement: Cohen's kappa

Diagnostic agreement between BDI-II (cut-off of 14) with SCID-5-RV MDD diagnosis was fair, with kappa = 0.333.

3.6 Group comparison of BDI-II scores

Given the small sample size (N = 25) and non-normal distribution, a Mann-Whitney U test was used to compare BDI-II total scores between participants meeting SCID-5-RV criteria for MDD and those who did not. The BDI-II mean scores were significantly higher among the participants who had an SCID-5-RV confirmed MDD diagnosis (Mdn = 17.0), compared to the participants who did not have the MDD diagnosis on SCID-5-RV, U = 114, p = .032, r = 0.76.[18] This corroborates the ROC analysis. The participants with SCID-5-RV diagnosis had higher mean scores on the BDI-II than those without the MDD diagnosis on SCID-5-RV.

3.7 Case-level analysis of discrepancies

Among those screening negative on BDI-II but positive on SCID-5-RV, all denied current symptoms but had a history of depression. One participant denied any depressive history in SCID-5-RV but endorsed symptoms on BDI-II. Two participants endorsed anxiety symptoms on SCID-5-RV but reported depressive symptoms on BDI-II.

4. Discussion

We evaluated the criterion validity of the BDI-II against the SCID-5-RV for a MDD diagnosis in 25 nurses who volunteered to participate in our study. The BDI-II showed fair to good discriminating validity (AUC = 0.760, 95% CI [0.557, 0.963]). BDI-II also showed good agreement with SCID-5-RV MDD diagnosis as measured with Kappa (k = 0.333). Furthermore, the mean scores on BDI-II were significantly higher in the participants who were diagnosed with MDD on the SCID-5-RV interview as compared to the participants who were not diagnosed with MDD on the interview. These findings suggest that it is appropriate to use BDI-II as a screening tool in the nursing population.

We attribute this finding to three different circumstances. One, depressed mood varies daily, and the person who endorsed depressive symptoms on the day they completed the survey did not feel the same on the day they were interviewed. Secondly, the variability may be due to a person's comfort level with discussing their mood with a live mental health professional rather than entering electronic data into a computer. There is evidence of social desirability bias when disclosing private information in survey research.[19] Finally, SCID-5-RV includes historical content. So, if a person has a significant history of depression yet is successfully being treated, they may screen negative for depressed mood on the BDI-II but positive with the SCID-5-RV interview.

From a policy perspective, the findings of this study highlight the need for standardized mental health screening protocols for healthcare professionals. Hospitals and healthcare institutions should incorporate routine mental health assessments into occupational health programs, ensuring clinicians receive timely support. Additionally, policies should focus on reducing stigma and promoting mental health awareness within the healthcare sector, emphasizing that seeking help does not equate to professional weakness or incompetence. From a research standpoint, future studies should aim to refine mental health screening tools to enhance their accuracy and reliability in clinician populations. Combining self-administered measures and clinician-administered interviews may offer the best approach to capturing a comprehensive picture of a nurse's mental health. Moreover, longitudinal studies are needed to evaluate how mental health status changes over time and how screening measures can be optimized to detect early signs of distress before they escalate into severe disorders.

In clinical practice, implementing a tiered screening approach that combines self-assessment tools with targeted follow-ups by mental health professionals may improve depression detection rates among nurses. Primary care providers and occupational health teams should collaborate with psychiatric professionals to establish referral pathways for nurses identified as at risk. Additionally, leveraging digital health technologies, such as mobile applications and telehealth screenings, could enhance accessibility and convenience for busy clinicians.

Limitations

This study was conducted at a single hospital with a small convenience sample, limiting generalizability. The 95% CI is wide, indicating uncertainty. In addition, the score range on the BDI-II was limited to 1-30, which means they were concentrated in the mild to moderate levels, with no participant in the severe level. Furthermore, given the small sample size, the results have to be interpreted with caution. Future research should use longitudinal designs and larger, diverse samples to assess depression screening methods over time.

5. Conclusion

The BDI-II demonstrated fair to good discriminative validity against SCID-5-RV MDD diagnosis, with the standard cut-off ≥ 14 with 60% sensitivity, 73.3% specificity, and a fair categorical agreement ($\kappa = 0.333$). These findings support the use of the BDI-II as a screening tool for MDD, while keeping in mind the small sample size and restricted score range.

Addressing mental health among nurses requires a multifaceted approach that integrates effective screening, supportive workplace policies, and access to mental health resources. Ensuring that nurses have access to accurate, timely, and non-stigmatizing mental health screening will be vital for individual well-being and overall patient care quality. Future research should explore hybrid approaches to improve screening accuracy and ensure timely mental health support for nurses.

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Authors Contributions

Dr. de Jacq was responsible for data collection, data analysis and interpretation, and writing and revising the final manuscript. Dr. Norful was responsible for study conceptualization and design, acquisition of funding and resources, data collection, data analysis and interpretation, and writing and revision of final manuscript. All authors read and approved the final manuscript. Both authors contributed equally to the manuscript.

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