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The Beck Hopelessness Scale: Factor structure, validity, and reliability in a non-clinical sample of student nurses in South-western Nigeria

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ABSTRACT

Background: The Beck Hopelessness Scale (BHS), as the most globally utilized measure of hopelessness, has been recognized to be very useful in the prediction of suicide. Its psychometric properties in terms of its factor structure, validity, and reliability have not been examined among Nigerian student nurses. The rate of suicide has previously been reported to be high among nurses and student nurses. **Objective:** The purpose of this study, is to explore the psychometric properties of the BHS in a non-clinical sample of student nurses (438), selected from four tertiary health care affiliated training institutions in South-Western Nigeria. The student nurses completed the BHS, in addition to the Rosenberg Self-Esteem Scale (RSES), the Patient Health Questionnaire-9 (PHQ-9), the General Health Questionnaire-12 (GHQ-12) and a sociodemographic questionnaire. **Results:** The BHS exhibited satisfactory reliability (Cronbach's alpha 0.89), while its convergent validity was supported via significant correlations with the GHQ-12 ($r = 0.724$, $P < 0.001$), PHQ-9 ($r = 0.749$, $P < 0.001$), and RSES ($r = -0.727$, $P < 0.001$). It also exhibited satisfactory discriminative concurrent criterion validity through its ability to reflect higher hopelessness scores in the student nurses with GHQ-12 and PHQ-9 scores above the cut off points. Exploratory factor analysis applying principal axis factoring indicates that the construct of hopelessness is best explained by a two-factor 18-item model. **Conclusions:** The BHS is a valid and reliable measure of hopelessne ss among Nigerian student nurses. The findings in this study indicate that there may be need to establish interventions that will reduce the severity of hopelessness among Nigerian student nurses through the screening for depressive symptoms and psychological distress.

KEY WORDS: Beck Hopelessness Scale, factor analysis, Nigerian student nurses, reliability, validity

INTRODUCTION

The Beck Hopelessness Scale (BHS) was developed by Beck and colleagues in 1974 to specifically and quantitatively measure hopelessness, a construct that had been initially regarded as impossible to empirically evaluate [1]. Currently, the most extensively utilized instrument for the assessment of hopelessness is the BHS [2]. The original psychometric characteristics of the BHS was described based on the data obtained from 294 individuals who had attempted suicide, and the authors reported a three-factor structure after subjecting the scale's 20 items to exploratory factor analysis (EFA) [1]. Despite the observation that the BHS has demonstrated satisfactory validity and reliability in an extensive number of studies involving clinical and non-clinical populations, there is still uncertainty regarding the factor structure of the scale [3].

The relationship of hopelessness with depression and suicidality has been well researched and documented [4-6]. One variable which has been permanently integrated into the measures for the evaluation of risk of suicide and suicidal behavior is hopelessness [7]. In several observational studies, hopelessness has been repeatedly recognized as the most dependable risk factor for suicidal behavior, either attempted or completed [8-10]. Studies have also demonstrated that the severity of hopelessness, and thus the risk of suicide can be ameliorated by employing psychological therapeutic techniques [11,12].

It has been reported that student nurses compared to other student populations may have a higher risk of suicide and suicidal behavior [13]. Suicide has also been identified as one of the five topmost contributors to mortality among nursing professionals, ranging from trainees to retirees [14]. Nursing education has been described to be associated with a number of unique stressors ranging from those related to factors associated with the individual student, to those related to their learning environment, and those that are patient-related [15]. Depression given its significant correlation with hopelessness has been reported to have a higher rate among student nurses comparison to other student populations [16]. This has been attributed to stressful factors associated with their educational training, such as the death of patients, proximity, and likelihood of contact with body fluids and the intensive nature of their training [15]. Stress among student nurses is now recognized as an international concern [17].

Globally, suicide accounted for one of the leading causes of mortality among the young adult population [18]. The students undergoing training to become professional nurses belong to the young adult population among whom suicide is now recognized as a major public health issue [18]. According to the World Health Organization, more than three-quarter of the global mortality from suicide occur in the developing countries in which more than 90% of the world's young adult population live [19]. The reduction of suicide is a complex process that requires multiple and equally complex approaches [20]. Indeed, an extensive electronic search of literature revealed that, the construct and correlates of hopelessness has not been explored among the population of Nigerian student nurses and no instrument has been validated as a measure of hopelessness in the general population of Nigerian students undergoing health-care training, or Nigerian student nurses in particular. Thus, we are of the opinion that a first step in this direction will be to explore the appropriateness of the BHS as a measure of hopelessness by examining its factorial structure, validity, and reliability in a non-clinical sample of Nigerian student nurses selected from four training institutions in South-western Nigeria. We hypothesized that the BHS would have statistically significant negative correlations with the Rosenberg Self-esteem Scale (RSES), and positive correlations with the 12-item General Health Questionnaire (GHQ-12), and the 9-item Patient Health Questionnaire (PHQ-9).

METHODS

Participants

The participants in this study were student nurses, who were selected from four nursing training institutions, each affiliated to a tertiary health-care facility (university teaching hospitals) in South-Western Nigeria. Each of the training institutions has an average of 140 students spread across three levels (years 1, 2, and 3). The students compulsorily reside within their official accommodations which are located within the grounds of the training institutions. During the period of data collection, the students were consecutively recruited in their hostels in the evenings, after the completion of their daily classroom activities and clinical rotations. After the objectives of the study, and the confidentiality of the data that will be gathered from them were explained to the students, the study research inventory consisting of a sociodemographic questionnaire, the BHS, the RSES, the PHQ, and the GHQ, were given to the students. All the questionnaires were to be subjectively completed. After an interval of a few days, the questionnaires were subsequently retrieved from them. The criteria for exclusion include current or previous history of a psychiatric or chronic medical disorder and/or refusal to give consent. The Ethical and Research Committees of each of the tertiary health-care institutions granted the approval for the study. Over a period of approximately 3 months, total number 506 students were recruited, but 68 of them were excluded from the analysis. Of the 68 students who were excluded, 4 currently were receiving treatment for psychiatric disorders, 12 were on treatment for medical disorders (asthma and sickle cell disease), 19 refused to give their consent, whereas 33 had incomplete data on either the BHS or the other study measures (11 students did not provide any respond to the entire items of the BHS; 12 of them failed to indicate any response on the entire PHQ-9, while 6 and 4 students did not complete the GHQ-12 and RSE, respectively). Thus, questionnaires from a total number of 438 presumably psychiatrically and medically healthy student nurses were available for analyses.

Measures

The students completed a sociodemographic questionnaire, in addition to the BHS, the RSES, PHQ-9, and the GHQ-12.

Sociodemographic questionnaire

This consisted of variables such the students' sex, age, religion, family type, and questions making enquiries about previous or current history of psychiatric or chronic medical disorders.

BHS

Hopelessness was quantified among the student nurses with the BHS [1]. The individual completing the scale responds true or false to each item. The scale's items are phrased such that the respondent either assents to a futuristically negatively worded statement or rejects a futuristically positively worded statement to get a score of one point per item. Out of the scale's 20 items, nine (items 1, 3, 5, 6, 8, 10, 13, 15, and 19) are positively worded and negatively scored, such that the respondent is awarded a point if they indicated "No" to any of these items. A total score that ranges between 4 and 8 reflects mild levels of hopelessness, while score range of 9-14 and 15-20 are indicative of moderate and severe levels of hopelessness, respectively [1]. The original version exhibited a three-factor structure (feeling in association with the future; loss of motivation; expectations of the future) after the items were subjected to EFA [1]. The total score ranges from 0 to 20, with higher levels of hopelessness indicated by higher scores on the scale.

RSES

The student nurses level of self-esteem was measured applying this 10 item scale, which assesses how worthy they perceive

themselves. They completed the scale by responding to the positive and negative self-evaluating statements on a 4 (0 to 3) point Likert format. Total score ranges from 0 to 30, with higher levels of self-esteem reflected by higher scores [21]. The RSE has been utilized as a self-esteem measuring tool in diverse Nigerian populations [22]. The scale has also been described to exhibit adequate psychometric qualities among adolescents and young adults in Nigeria [23].

PHQ-9

This 9-item questionnaire is a self-administered scale that was developed from the interviewer-based PRIME-MD [24], for the purpose of screening and evaluating the severity of depressive symptoms, with the individuals completing it putting into perspective the previous 2 weeks. The items are measured on a four-point scale (0-3) with greater severity of depressive symptoms reflected by higher total scores. The PHQ-9 has been reported to possess satisfactory reliability and validity among Nigerian adolescents and young adults [25].

GHQ-12

This scale was utilized to evaluate the level of psychological distress among the student nurses. It is a short, non-specific subjectively completed instrument, employed for the assessment of mental health wellbeing and as a screening tool for common mental health disorders [26]. Satisfactory psychometric properties in terms of its reliability, validity and its factorial structure have been documented among the Nigerian population [27]. The binary scoring system (0-0-1-1) was adopted. The total score range from 0 to 12, with higher levels of psychological distress reflected with higher cumulative scores on the scale.

Data analysis

The data analysis was done with the 21st version of the IBM SPSS (Statistical Product and Service Solutions) software. Mean ± standard deviation (SD) and frequency were used to depict the sociodemographic characteristics and scores on the study measures completed by the respondents. The overall internal consistency of the items of the BHS was evaluated with Cronbach's alpha. EFA with principal axis factoring (PFA) and Oblimin rotation was employed to identify the numbers of latent factors within the scale. We retained the factors with Eigenvalues >1 applying Kaiser's criteria [28]. Suitability of our data for EFA was examined with the Kaiser–Meyer–Olkins measurement of sampling adequacy [29]. Correlational analyses with the RSES, GHQ-12, and PHQ-9 were used to examine the construct (convergent) validity of the BHS. The discriminative concurrent criterion validity among the students was also examined by applying independent sample *t*-test to compare the scores on the BHS in relation to the cut off scores on the GHQ-12 (3 and above) [27] and PHQ-9 (5 and above) [30]. Linear regressions with 95% confidence interval were used to examine the extent to which the exploratory variables significantly influenced the score on the BHS among the student nurses. The exploratory variables in this study were the GHQ-12, the PHQ-9, and the RSES scores. The level of statistical significance was set at $P < 0.05$ and all statistical tests were two-tailed.

RESULTS

Sociodemographic and Study Measure Details of the Student Nurses ($N = 438$)

The female students constituted 87.4% of the total sample. As shown in Table 1, majority (90.2%) of the students belonged to the Yoruba ethnic group which is the main ethnic group in South-western Nigeria. A larger proportion of them was Christians (83.1%) and had monogamous family background (86.5%). Their mean age was 20.29 ± 2.41. The mean score on the BHS (18 items) was 4.02 ± 4.30. The mean score on the RSE was 20.80 ± 4.40 while the mean scores on the GHQ-12 and PHQ-9 were 2.67 ± 2.64 and 5.17 ± 4.09, respectively.

Psychometric Characteristics and Factor Structure of the BHS among the Student Nurses

Table 2 shows that the overall internal consistency (Cronbach's alpha 0.89) of the 18-item BHS. We had to eliminate item 4, "I can't imagine what my life would be like in 10 years," and 18, "The future seems vague and uncertain to me," due to item total scale correlations values <0.30 which indicates that among our respondents, these 2 items do not correlate very well with the overall scale [29]. The corrected item-to-scale correlations of the 18 items ranged from 0.366 to 0.717. EFA applying PFA with Oblimin rotation yielded two factors (Factor 1: Negative anticipation regarding the future and, Factor 2: Positive anticipation regarding the future) which accounted cumulatively for a variance of approximately 43%. The items that constituted Factor 1 (10 items/Eigenvalue 6.23) and 2 (8 items/Eigenvalue 1.50) had satisfactory Cronbach's alpha of 0.82 and 0.80, respectively.

Table 1: Sociodemographic characteristics of the nursing students (N=438)

Variable	Frequency (%)
Sex	
Male	55 (12.6)
Female	383 (87.4)
Ethnicity	
Yoruba	595 (90.2)
Igbos	30 (6.8)
Hausa/others	13 (3.0)
Religion	
Christians	364 (83.1)
Islam	74 (16.9)
Family type	
Monogamous	379 (86.5)
Polygamous	59 (13.5)
Age (years) (Mean±SD [Range])	20.29±2.41 (17-40)
BHS-18 (Mean±SD [Range])	4.02±4.30 (0-16)
RSE (Mean±SD [Range])	20.80±4.40 (10-30)
PHQ-9 (Mean±SD [Range])	5.17±4.09 (0-19)
GHQ-12 (Mean±SD [Range])	2.67±2.64 (0-12)

BHS-18: Beck Hopelessness Scale-18, RSE: Rosenberg Self-esteem, PHQ-9: Patient Health Questionnaire-9, GHQ-12: General Health Questionnaire-12, SD: Standard deviation

Table 2: Psychometric characteristics and factor structure (PFA with Oblimin rotation) of the BHS among the student nurses

Item	Mean±SD	Item-total correlations	Factor 1	Factor 2
17. It is very unlikely that I will get any real satisfaction in the future.	0.15±0.36	0.560	0.745	-
11. All I can see ahead of me is unpleasantness rather than pleasantness	0.13±0.34	0.572	0.679	-
12. I don't expect to get what I really want	0.18±0.39	0.533	0.651	-
9. I just can't get the breaks, and there is no reason I will in the future	0.28±0.45	0.430	0.603	-
13. When I look ahead to the future, I expect that I will be happier than now	0.06±0.25	0.717	0.587	-
14. Things don't just work out the way I want them to	0.41±0.49	0.465	0.552	-
20. There is no use in really trying to get anything I want because I probably won't get it	0.14±0.35	0.536	0.541	-
16. I never get what I want, so it is foolish to want anything	0.15±0.35	0.537	0.533	-
2. I might as well give up because there is nothing I can do about making things better for myself	0.13±0.33	0.460	0.492	-
7. My future seems dark to me	0.26±0.44	0.467	0.483	-
8. I happen to be particularly lucky, and I expect to get more of the good things in life than the average person	0.07±0.25	0.681	-	0.711
6. In the future, I expect to succeed in what concerns me the most	0.04±0.19	0.398	-	0.678
1. I look forward to the future with hope and enthusiasm	0.35±0.19	0.424	-	0.666
3. When things are going badly, I am helped by knowing they cannot stay that way forever	0.06±0.23	0.366	-	0.605
5. I have enough time to accomplish the things I want to do	0.08±0.27	0.448	-	0.600
15. I have great faith in the future	0.11±0.32	0.607	-	0.569
10. My past experiences have prepared me well for the future	0.65±0.25	0.467	-	0.447
19. I can look forward to more good times than bad times	0.09±0.29	0.505	-	0.428
Eigenvalue			6.23	1.50
Percentage of total variance explained			34.6	8.1
Cronbach's alpha			0.82	0.80
KMO measure of sampling adequacy		0.89		

Overall Cronbach's alpha=0.89, KMO: Kaiser–Meyer–Olkins, PFA: Principal axis factoring

Correlational Analyses (Construct Validity) of the 18 Item BHS among the Student Nurses

The construct validity of the BHS based on the correlations with the RSES, GHQ-12 and PHQ-9 is shown in Table 3. Among the student nurses, hopelessness exhibited significant positive correlations with scores on the GHQ-12 ($r = 0.721$, $P < 0.01$) and PHQ-9 ($r = 0.746$, $P < 0.01$) and significant negative correlations with RSES ($r = -0.731$, $P < 0.01$).

Table 3: Construct validity of the BHS among the student nurses

Variable	1	2	3	4
BHS	1			
GHQ-12	0.721**	1		
PHQ-9	0.746**	0.730	1	
Self-esteem	−0.731**	−0.740**	−0.721**	1

**$P<0.001$. BHS: Beck Hopelessness Scale, PHQ-9: Patient Health Questionnaire-9, GHQ-12: General Health Questionnaire-12

Discriminative Concurrent Criterion Validity of the BHS-18 among the Student Nurses

Applying independent sample *t*-test analysis, the BHS, as shown in Table 4 was able to reflect statistically significant higher hopelessness scores among the respondents with GHQ-12 scores of 3 or greater ($P < 0.001$) and those with PHQ-9 scores of 5 or higher ($P < 0.001$). These cut off scores reflect potential psychiatric morbidity and possible depressive disorder according to the GHQ-12 [27] and the PHQ-9 [30], respectively. The table also indicates the effect size regarding the group differences.

Table 4: Discriminative concurrent criterion validity of the BHS among the student nurses

Variable	*N* (%)	Mean±SD	*P* value	*t* value	Cohen's *d*
GHQ-12≤2	247 (56.4)	1.58±1.68	<0.001	−17.698	1.62
GHQ-12≥3	191 (43.6)	7.18±4.59			
PHQ-9≤4	263 (60.0)	1.48±1.38	<0.001	−22.084	1.97
PHQ-9≥5	175 (40.0)	7.85±4.36			

BHS: Beck Hopelessness Scale, PHQ-9: Patient Health Questionnaire-9, GHQ-12: General Health Questionnaire-12, SD: Standard deviation

Linear Regression Model

Table 5 shows that the score on the 18 item BHS among the student nurses was significantly predicted by the combinations of the RSES, PHQ-9 and GHQ-12 scores. The first model of the stepwise regression method, included the PHQ-9 ($R^2 = 0.557$, adjusted $R^2 = 0.556$), the second model included the PHQ-9 and RSES ($R^2 = 0.635$, adjusted $R^2 = 0.633$), while the third and final model included the PHQ-9, RSES and, the GHQ-12 ($R^2 = 0.656$, adjusted $R^2 = 0.654$). The standardized coefficients indicate that aggregately, these three variables explained approximately 66% of the variance in the 18 item BHS among the student nurses. It can also be observed, that the largest variance was contributed by the PHQ-9 score (approximately 56.0%). Thus, the linear regression model predicting the BHS-18 score among the student nurses is 0.375 * PHQ-9 + (−0.289) * RSE + 0.394 * GHQ-12 + 7.047 (Constant).

DISCUSSION

We examined the psychometric characteristics of the BHS in terms of its factor structure, validity, and reliability in a

Table 5: Linear regression analysis (stepwise method) showing the factors that predicted the BHS among the student nurses

Model	Unstandardized coefficient		Standardized coefficient		*P* value	95% Confidence interval
	B	Standard error	Beta	*t*		
1. (Constant)	0.031	0.221	-	0.160	0.873	−0.465-0.403
PHQ-9	0.783	0.033	0.746	23.398	<0.001	0.718-0.849
R^2=0.557	Adjusted R^2=0.556 Variance=56%					
2.(Constant)	9.756	1.035	-	9.428	<0.001	7.722-11.789
PHQ-9	0.478	0.044	0.456	10.896	<0.001	0.392-0.565
Self-esteem	−0.395	0.041	−0.403	−9.641	<0.001	−0.495-(−0.314)
R^2=0.635	Adjusted R^2=0.633 Variance=64%					
3.(Constant)	7.047	1.130	-	6.238	<0.001	4.827-9.267
PHQ-9	0.375	0.047	0.357	7.968	<0.001	0.282-0.467
Self-esteem	−0.289	0.045	−0.295	−6.497	<0.001	−0.379-(−0.202)
GHQ-12	0.394	0.075	0.242	5.244	<0.001	0.247-0.542
R^2=0.656	Adjusted R^2=0.654 Variance=66%					

BHS: Beck Hopelessness Scale, PHQ-9: Patient Health Questionnaire-9, GHQ-12: General Health Questionnaire-12

cross-sectional non-clinical sample of Nigerian student nurses. The subjection of 18 items of the BHS to EFA applying PFA with Oblimin rotation yielded a two-factor structure among the student nurses. Factors 1 and 2 consisted of 10 and 8 items, respectively. The items that constituted the factors had adequate internal consistencies (Factor 1: Cronbach's alpha 0.82; Factor 2: Cronbach's alpha 0.80). After critically scrutinizing the phrasing of each of the items in the two factors, Factor 1 was labeled, "Negative anticipation regarding the future," while Factor 2 was labeled, "Positive anticipation regarding the future." Previous studies involving various non-clinical samples have also reported a two-factor structure of the BHS. Similar to what we observed regarding the factorial structure of the BHS among the Nigerian student nurses, Steed (2001) reported a two-factor 16-item model of the scale in a cross-sectional sample of 544 undergraduate students in the United States following PFA method of EFA [31]. Steed, initially extracted a four-factor model that could not be meaningfully interpreted, but subsequently extracted a clarified two-factor model following the elimination of four of the scale's items [31]. Pompili *et al*. in a study that involved 340 Italian university students, also reported a two-factor model of the BHS, after applying a similar factor analytic method, although compared to our factor model, their model consisted of only 11 items [32]. The factor structure of the BHS among the Nigerian student nurses was also similar to what Tanaka *et al*. described regarding the scale's structure in a non-clinical sample of 154 adults in Japan, the authors applying principal component analysis with oblique rotation reported a two-factor model composed of 18 items [33]. Our BHS model shares an interesting similarity with the Japanese model regarding the number of items that constituted each factors (Factors 1 and 2 contained 10 and 8 items, respectively). Other authors have reported a 1 model factorial structure [3,34,35], while others have reported a 3-factor model [36,37]. Mystakidou *et al*., reported a 1-factor model composed of only 12 items in a cross-sectional sample of oncological patients in Greece [34], while Aish *et al*., indicated a one-factor 4-item model among 324 individuals who had attempted suicide in Sweden [3]. A 20-item three-factor model structure was exhibited by the BHS in samples of acquired immune deficiency syndrome patients in the USA [36]. Despite, the differences in sample characteristics, we would like to point out that the only study in Nigeria to have examined the psychometric properties of the BHS (which was culturally translated into Yoruba language, the dialect in South-west Nigeria) was conducted in a clinical sample of outpatients receiving treatment for psychiatric disorders in a university teaching hospital [38]. The authors reported that the BHS exhibited a three-factor model on subjecting the scale's items to EFA [38]. One feature that has been consistent with all the previous studies regarding the factor structure of the BHS is that none of them had been able to replicate what was described by Beck *et al*. (1974) who originally developed the scale [3]. The reason for the varied observations, regarding the factor structure of the BHS among the studies has been attributed to the differences in the factor extraction methods, the populations studied (clinical and non-clinical), difference in sample sizes and the various language translations [39]. Although it has been suggested that language and cultural settings may to some extent influence the psychometric characteristics of a scale [40], the respondents in this study completed the BHS in English Language, which is the language of communication in all the training institutions and the language in which the original version was developed.

Among the student nurses, the items of the BHS exhibited satisfactory internal consistency (reliability) with a correlation coefficient Cronbach's alpha of 0.89, a value above 0.70 is generally regarded as acceptable regarding the reliability of a scale's items [41]. The examination of the reliability of the BHS across seven different cross-sectional groups by Aiken in 2002, revealed consistently satisfactory Cronbach's alpha values ranging from 0.82 to 0.93 [42]. The Cronbach's alpha value among the Nigerian student nurses is relatively similar to what was reported by the original developers of the scale (0.93) [1], despite the differences in the sociodemographic profiles of their sample which consisted mainly of psychiatric patients. In addition, the Cronbach's alpha of the BHS among the

Nigerian student nurses is also similar to what has been reported among other non-clinical samples such as Chinese adolescents (Cronbach's alpha 0.85) [43], undergraduate students in the United States (Cronbach's alpha 0.88) [31], and in community samples in South Africa (Cronbach's alpha 0.89) [44], Hungary (Cronbach's alpha 0.91) [20], and in Japan (Cronbach's alpha 0.86) [45]. We can, therefore, infer that the BHS is a reliable tool for the evaluation of hopelessness among our sample of Nigerian student nurses.

Despite the elimination of 2 of the scale's items (4 and 18) due to their low item-total correlations (<0.30), the BHS still demonstrated a satisfactory level of validity. The construct (convergent) validity of the 18 item BHS among the Nigerian student nurses was supported through its statistically significant positive correlations with the PHQ-9, the GHQ-12 and negative correlations with the RSES. Previous studies have consistently demonstrated statistically significant positive correlations between BHS and scales for the assessment of depressive symptoms when evaluating individuals with depressive disorders [46,47]. The significant positive correlation between the BHS and the GHQ-12 among our study participants further confirms our hypothesis regarding these two variables. Hopelessness was associated with a higher level of psychological distress among the student nurses. The strength and the direction of the correlation between the BHS and the self-esteem scale also provide additional support for the convergent validity of the BHS among the Nigerian student nurses. The negative correlation observed between hopelessness and self-esteem was also reported in an exploratory study of adolescents and young adults in Turkey that examined the relationship among self-esteem, hopelessness and other psychosocial variables [48]. We also attempted to see if the BHS will express the ability to identify those student nurses with scores on the GHQ-12 and PHQ-9 above the cut off scores of 3 [27] and 5 [30] respectively. The BHS demonstrated satisfactory discriminant concurrent criterion validity in relation to the GHQ-12 and the PHQ-9 scores among the Nigerian student nurses. The Nigerian student nurses whose scores on the GHQ-12 (3 and above) were indicative of the possibility of psychiatric morbidity and those whose scores on the PHQ-9 indicates possible depressive disorder (5 and above) had significantly higher scores on the BHS. Based on these observations, we can conclude to a reasonable degree, that the BHS among Nigerian student nurses is a valid measure of hopelessness. The findings regarding the discriminant validity of the BHS among the student nurses was rather interesting, despite been a non-clinical sample, we still noted that a percentage of them (43.6% and 40.0%, respectively) reported scores on the GHQ-12 and PHQ-9 that suggested psychological distress and depressive disorder.

A total score of 9 and above, on the complete item BHS, has been demonstrated to be associated with an increased likelihood (11 times) of engaging in suicidal behavior compared to those with lower scores [49]. Although the total possible score on the BHS in this study after the elimination of 2 items was 18. Due to this, there is the need for additional studies to explore the cut-off scores on the BHS that will statistically predict those student nurses who are at a higher risk of suicide. In terms of normative data, the mean BHS score we noted in the non-clinical sample of the Nigerian student nurses in this study was 4.02 ± 4.30. This value is relatively comparable to what was reported by Lawoko and Soares (2002), who examined hopelessness among the parents of patients with congenital heart disease (mean BHS 4.50) and parents of healthy children (mean BHS 3.80) in Sweden [50]. The mean BHS we observed in this study was relatively higher to what was reported among 108 undergraduate and graduate college students (mean BHS 2.8) in the USA [51], but lower (mean BHS 8.6) to what was reported by Tanaka *et al*. among community residential individuals in Japan [45].

Our study is not without some limitations. One limitation is that we focused only on non-clinical student nurses in South-western Nigeria, which is one of the country's six geopolitical regions, the generalization of our findings to the student nurses, other health-care trainees and young adult population in other regions is thus limited. In addition, our methodology which is cross-sectional in nature puts a limit on the causal clarification of the relationships between the BHS and the other study variables. An additional limitation of our study was that the gender distribution among our study participants was rather skewed toward the female gender, but we observed that there were no statistically significant differences in the mean BHS between the male (3.67 ± 3.69) and the female (4.09 ± 4.38) student nurses ($t = -1.148$, $P = 0.254$). This is the typical gender distribution in all the schools of nursing in South-western Nigeria, with a significant majority of the students been females. Another limitation in this study was that we excluded those student nurses with psychiatric and medical disorders, although their proportions compared to the whole sample size was small. One other methodological-based limitation in our study was due to the confidentiality that we attached to the information that we collected from the students; this incapacitated our ability to isolate those with scores on the GHQ-12 and PHQ-9, that were suggestive of psychological distress and possible depressive disorder and referred them for further evaluation and treatment. Notwithstanding these limitations, our current observation regarding the psychometric characteristics of the BHS has provided preliminary evidence that it is a valid and reliable measure of hopelessness among Nigerian student nurses.

The strength of our study is that this is the first study in Nigeria to examine the feasibility of the BHS, as an instrument for the evaluation of hopelessness in a non-clinical young adult sample of Nigerian student nurses. Our findings are in accordance with the results in published literature, which shows that individuals with higher levels of hopelessness are more likely to experience greater severity of depressive symptoms [52], psychological distress [53] and reduced self-worth [54]. We are of the opinion that there is the need to further examine the relationship between hopelessness and other psychosocial variables among the Nigerian nursing population (students and professionals). A cross-sectional study that involved 120 nurses working in different sectors of a tertiary health care facility in the USA revealed that level of hopelessness was determined by burnout and a number of psychological defense mechanisms [55].

CONCLUSION

There is the need to put into place screening procedures that will enable the identification of Nigerian student nurses with high levels of hopelessness. Furthermore, on the basis of our observation that a percentage of the student nurses appear to be psychologically distressed or potentially have depressive disorders, measures may also need to be instituted in the training institutions to facilitate the recognition of such students. Additional studies are still needed to further examine the reliability and validity of the BHS among other non-clinical populations in Nigeria.

REFERENCES

1. Beck AT, Weissman A, Lester D, Trexler L. The measurement of pessimism: The hopelessness scale. J Consult Clin Psychol 1974;42:861-5.
2. Velting DM. Personality and negative expectations. Trait structure of the Beck Hopelessness Scale. Pers Indiv Dif 1999;26:913-21.
3. Aish AM, Wasserman D, Renberg ES. Does Beck's Hopelessness Scale really measure several components? Psychol Med 2001;31:367-72.
4. Meites TM, Deveney CM, Steele KT, Holmes AJ, Pizzagalli DA. Implicit depression and hopelessness in remitted depressed individuals. Behav Res Ther 2008;46:1078-84.
5. Beevers CG, Miller IW. Perfectionism, cognitive bias, and hopelessness as prospective predictors of suicidal ideation. Suicide Life Threat Behav 2004;34:126-37.
6. Smith JM, Alloy LB, Abramson LY. Cognitive vulnerability to depression, rumination, hopelessness, and suicidal ideation: Multiple pathways to self-injurious thinking. Suicide Life Threat Behav 2006;36:443-54.
7. Bryan CJ, Rudd MD. Advances in assessment of suicide risk. J Clin Psychol 2005;62:185-200.
8. Cochrane-Brink KA, Lofchy JS, Sakinofsky I. Clinical rating scales in suicide risk assessment. Gen Hosp Psychiatry 2000;22:445-51.
9. MacLeod AK, Tata P, Tyrer P, Schmidt U, Davidson K, Thompson S. Hopelessness and positive and negative future thinking in parasuicide. Br J Clin Psychol 2005;44:495-504.
10. McMillan D, Gilbody S, Beresford E, Neilly L. Can we predict suicide and non-fatal self-harm with the Beck Hopelessness Scale? A meta-analysis. Psychol Med 2007;37:769-78.
11. Kuyken W. Cognitive therapy outcome: The effects of hopelessness in a naturalistic outcome study. Behav Res Ther 2004;42:631-46.
12. Williams JM, Crane C, Barnhofer T, Duggan D. Psychology and suicidal behaviour. In: Hawton K, editor. Prevention and Treatment of Suicidal Behaviour: From Science to Practice. Oxford: Oxford University Press; 2005. p. 71-90.
13. Goetz CS. Are you prepared to S.A.V.E. your nursing student from suicide? J Nurs Educ 1998;37:92-5.
14. Peipins LA, Burnett C, Alterman T, Lalich N. Mortality patterns among female nurses: A 27-state study, 1984 through 1990. Am J Public Health 1997;87:1539-43.
15. Higginson R. Fears, worries and experiences of first-year pre-registration nursing students: A qualitative study. Nurse Res 2006;13:32-49.
16. Bramness JG, Fixdal TC, Vaglum P. Effect of medical school stress on the mental health of medical students in early and late clinical curriculum. Acta Psychiatr Scand 1991;84:340-5.
17. Burnard P, Edwards D, Bennett K, Thaibah H, Tothova V, Baldacchino D, *et al.* A comparative, longitudinal study of stress in student nurses in five countries: Albania, Brunei, the Czech Republic, Malta and Wales. Nurse Educ Today 2008;28:134-45.
18. Patton GC, Coffey C, Sawyer SM, Viner RM, Haller DM, Bose K, *et al.* Global patterns of mortality in young people: A systematic analysis of population health data. Lancet 2009;374:881-92.
19. Preventing Global Suicide: A Global Imperative. Geneva: World Health Organization; 2014. Available from: http://www.who.int/mental_health/Suicide-prevention/world_report_2014/en/. 2014. [Last accesse on 2016 May 15].
20. Perczel FD, Sallai J, Rozsa S. Adaptation of the Beck Hopelessness Scale in hungary. Psychol Top 2010;19:307-21.
21. Rosenberg M. Society and the Adolescent Self-image. Princeton, NJ: Princeton University Press; 1965.
22. Loto OM, Adewuya AO, Ajenifuja OK, Orji EO, Ayandiran EO, Owolabi AT, *et al.* Cesarean section in relation to self-esteem and parenting among new mothers in southwestern Nigeria. Acta Obstet Gynecol Scand 2010;89:35-8.
23. Okoiye OE, Nwoga AN, Onah AT. Moderating effect of cyber bullying on the psychological well-being of in-school adolescents in Benin, Edo State, Nigeria. Eur J Sustain Dev 2015;14:109-18.
24. Spitzer RL, Williams JB, Kroenke K, Linzer M, deGruy FV 3rd, Hahn SR, *et al.* Utility of a new procedure for diagnosing mental disorders in primary care. The PRIME-MD 1000 study. JAMA 1994;272:1749-56.
25. Adewuya AO, Ola BA, Afolabi OO. Validity of the patient health questionnaire (PHQ-9) as a screening tool for depression amongst Nigerian university students. J Affect Disord 2006;96:89-93.
26. Goldberg DP, Gater R, Sartorius N, Ustun TB, Piccinelli M, Gureje O, *et al.* The validity of two versions of the GHQ in the WHO study of mental illness in general health care. Psychol Med 1997;27:191-7.
27. Gureje O. Reliability and the factor structure of the Yoruba version of the 12-item General Health Questionnaire. Acta Psychiatr Scand 1991;84:125-9.
28. Cattell RB. The scree test for the number of factors. Multivariate Behav Res 1966;1:245-76.
29. Field A. Discovering Statistics Using SPSS. 3rd Rev ed. London: Sage; 2009. p. 856.
30. Kroenke K, Spitzer RL. The PHQ-9: A new depression diagnostic and severity measure. Psychiatr Ann 2002;32:509-21.
31. Steed L. Further validity and reliability evidence for Beck Hopelessness Scale scores in a nonclinical sample. Educ Psychol Measur 2001;61:303-16.
32. Pompili M, Tatarelli R, Rogers JR, Lester D. The Hopelessness Scale: A factor analysis. Psychol Rep 2007;100:375-8.
33. Tanaka E, Sakamoto S, Ono Y, Fujihara S, Kitamura T. Hopelessness in a community population: Factorial structure and psychosocial correlates. J Soc Psychol 1998;138:581-90.
34. Mystakidou K, Parpa E, Tsilika E, Pathiaki M, Hatzipli I, Galanos A, *et al.* The experience of hopelessness in a population of Greek cancer patients receiving palliative care. Int J Soc Psychiatry 2008;54:262-71.
35. Chang EC, D'Zurilla TJ, Maydeu-Olivares A. Assessing the dimensionality of optimism and pessimism using a multimeasure approach. Cogn Ther Res 1994;18:143-60.
36. Rosenfeld B, Gibson C, Kramer M, Breitbart W. Hopelessness and terminal illness: The construct of hopelessness in patients with advanced AIDS. Palliat Support Care 2004;2:43-53.
37. Dyce JA. Factor structure of the Beck Hopelessness Scale. J Clin Psychol 1996;52:555-8.
38. Aloba O, Akinsulore A, Mapayi B, Oloniniyi I, Mosaku K, Alimi T, *et al.* The Yoruba version of the Beck Hopelessness Scale: Psychometric characteristics and correlates of hopelessness in a sample of Nigerian psychiatric outpatients. Compr Psychiatry 2015;56:258-71.
39. Boduszek D, Dhingra K. Construct validity of the Beck Hopelessness Scale (BHS) among university students: A multitrait-multimethod approach. Psychol Assess 2016;28:1325-30.
40. Swanepoel I, Kruger C. Revisiting validity in cross-cultural psychometric test development: A systems-informed shift towards qualitiative research design. S Afr J Psychiatry 2011;17:10-5.
41. Gliner JA, Morgan GA. Research Methods in Applied Settings: An Integrated Approach to Design and Analysis. Mahwah, NJ: Lawrence Erlbaum Associates; 2000.
42. Aiken LR. Psychological Testing and Assessment. New York: Allyn & Bacon; 2002.
43. Shek DT. Measurement of pessimism in Chinese adolescents: The Chinese hopelessness scale. Soc Behav Pers 1993;21:107-12.
44. Edward DJ, Steele GI. Development and validation of the Xhosa translation of the beck inventories: 3. Concurrent and convergent validity. J Psychol Afr 2008;18:227-36.
45. Tanaka E, Sakamoto S, Ono Y, Fujihara S, Kitamura T. Hopelessness in a community population in Japan. J Clin Psychol 1996;52:609-15.
46. Nissim R, Flora DB, Cribbie RA, Zimmermann C, Gagliese L, Rodin G. Factor structure of the Beck Hopelessness Scale in individuals with advanced cancer. Psychooncology 2010;19:255-63.
47. Steer RA, Iguchi MY, Platt JJ. Hopelessness in i.v. drug users not in

treatment and seeking HIV testing and counselling. Drug Alcohol Depend 1994;34:99-103.
48. Karatas Z. Self-Esteem and hopelessness, and resiliency: An exploratory study of adolescents in Turkey. Int Educ Stud 2011;4:84-91.
49. Beck AT, Brown G, Berchick RJ, Stewart BL, Steer RA. Relationship between hopelessness and ultimate suicide: A replication with psychiatric outpatients. Am J Psychiatry 1990;147:190-5.
50. Lawoko S, Soares JJ. Distress and hopelessness among parents of children with congenital heart disease, parents of children with other diseases, and parents of healthy children. J Psychosom Res 2002;52:193-208.
51. Brackney BE, Westman AS. Relationships among hope, psychosocial development, and locus of control. Psychol Rep 1992;70:864-6.
52. Zhang J, Li Z. The association between depression and suicide when hopelessness is controlled for. Compr Psychiatry 2013;54:790-6.
53. Chimich WT, Nekolaichuk CL Exploring the links between depression, integrity, and hope in the elderly. Can J Psychiatry 2004;49:428-33.
54. Fanaj N, Melonashi E, Shkëmbi F. Self-esteem and hopelessness as predictors of emotional difficulties: A cross-sectional study among adolescents in Kosovo. Proc Soc Behav Sci 2015;165:222-33.
55. Pompili M, Rinaldi G, Lester D, Girardi P, Ruberto A, Tatarelli R. Hopelessness and suicide risk emerge in psychiatric nurses suffering from burnout and using specific defense mechanisms. Arch Psychiatr Nurs 2006;20:135-43.

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