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The Yoruba version of the Beck Hopelessness Scale: psychometric characteristics and correlates of hopelessness in a sample of Nigerian psychiatric outpatients

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Abstract

Background: Previous studies from the developed western countries have repeatedly demonstrated that hopelessness positively correlates with an increased risk of suicide in the context of chronic mental disorders such as schizophrenia and affective disorders. Despite this persistently strong association, the construct of hopelessness in terms of its factorial structure and correlates has not been explored among Nigerian psychiatric outpatients.

Objective: The aim of this present study is to examine the psychometric characteristics of the Yoruba language culturally adapted version of the Beck Hopelessness Scale in a cross-sectional sample of psychiatric outpatients in South-western Nigeria.

Method: The participants were 327 Nigerian adult outpatients receiving treatment for schizophrenia, bipolar and depressive disorders, consecutively recruited from the outpatient psychiatric clinics of a university teaching hospital in South-western Nigeria. The outpatients were recruited over a one year period. They completed the Yoruba translated version of the Beck Hopelessness Scale (BHS-Y), a sociodemographic and illness-related questionnaire, the Beck Depression Inventory-II (BDI-II). Their level of functioning was assessed with the Global Assessment of Functioning Scale (GAF), psychopathology was evaluated with the Positive and Negative Syndrome Scale (PANSS) and the level of disability measured with the World Health Organization Disability Assessment Schedule (WHODAS-II). Suicidality and confirmation of the diagnoses of schizophrenia, bipolar and depressive disorders were evaluated with the Mini International Neuropsychiatric Interview (MINI). The construct of hopelessness in terms of factorial structure, reliability, validity and correlates was explored. Exploratory Factor Analysis using Principal Component Analysis with Varimax rotation was used to examine the factorial structure of the BHS-Y. Internal consistency was examined with Cronbach's alpha, and the construct validity of the scale was assessed using correlational analyses with the MINI suicidality module, BDI-II, GAF and WHODAS-II domain scores. We also tested the hypothesis that a shortened version of the BHS-Y will possess psychometric properties similar to the 20 item version.

Results: Exploratory Factor Analysis using Principal Component Analysis with Varimax rotation showed that the construct of hopelessness among our outpatients was best explained by a 3 factor model. Reliability of the translated version of the scale was adequate as indicated by a Cronbach's alpha of 0.92. Construct validity was also satisfactory as reflected by the strong correlations with MINI suicidality, Beck Depression Inventory-II and Global Assessment of Functioning scores. The shortened 4 item single factor BHS-Y composed of items 8, 9, 13 and 15 demonstrated psychometric properties similar to those of the full item version.

Conclusion: The Beck Hopelessness Scale (Yoruba Version) demonstrated satisfactory reliability and validity and therefore may be useful in measuring the construct of hopelessness and in clinical suicide risk assessments among Nigerian psychiatric outpatients. There is the need for more studies to further explore the psychometric features and correlates of this scale among other Nigerian ethnic groups in addition to other medical patients' populations.

1. Introduction

Hopelessness is the individualized evaluation of pessimistic and negative anticipation in addition to the awareness of lack of control over the future [1]. Studies have associated

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hopelessness with the onset and outcome of diverse mental and physical health conditions such as the development of depression [1] and cardiovascular disorders such as atherosclerosis [2] and acute coronary syndrome [3]. In developed countries, several studies have been conducted on the construct of hopelessness, with a focus on the relationship among hopelessness, suicidal behavior, suicidal ideation and mental disorders such as depression and psychotic disorders [4–7]. Studies conducted in the Western developed countries have reported that for every completed suicide there were 10–20 as many attempted suicide [8,9]. Statistically, suicide was responsible for 1 million deaths in the year 2000, and it has been projected that it will account for 2.4% of the global burden of disease in 2020 [10]. The Global Burden of Disease study reported that the 13th leading cause of death worldwide in 2010 was suicide [11].

A recent retrospective evaluation of medico-legal deaths which are those that are sudden in nature, or those that occur in the context of violent and suspicious circumstances [12] in a South-eastern Nigerian tertiary hospital over a 20 year period showed suicide as the cause of death in only 5% of a total of 5033 autopsies performed during this period [13]. This is in the context of the observation that suicide statistics in the developing African countries has been characterized by lack of reliable data [14]. The most recent World Health Organization (WHO) report on suicide death per 100,000 put suicide rate in Nigeria at 6.1 per 100,000, which is relatively lower compared to the suicide rates in some developed and African countries; 10.3/100,000 in the United States, 23.4/100,000 in Russia, 17.9/100,000 in Hungary, 13.6/100,000 in France, 9.1/100,000 in Germany, 22.3/100,000 in Namibia, 21.5/100,000 in Cote d'Ivoire, 19.1/100,000 in Somalia, 18.9/100,000 in Zambia and 10.1/100,000 in Kenya [15]. The relatively lower suicide rate in Nigeria has been attributed to the fact that most completed suicide are not reported due to the negative socio-cultural attitude towards suicide [16]. Previous studies have reported positive correlations between psychotic and affective disorders and suicidal ideation and attempts among Nigerian psychiatric patients in South-western Nigeria [17–20].

In developed countries, the likelihood of suicide in patients with unipolar depression has been demonstrated to be 20 times the risk in the general population [21]. A recent meta-review showed that suicide mortality was 10 times greater compared with the general population in bipolar disorder and depression [22], and another recent population-based cohort of 919 patients with severe mental disorders reported a cumulative risk of suicide attempt of 26.3% for major depression, 23.8% for bipolar disorder and 13.1% for schizophrenia [23]. Due to the observation that individuals with psychiatric disorders have an elevated risk to engage in suicidal behaviour, suicide risk assessments are routinely practiced in treatment settings in developed countries [24]. Indeed, one factor that has been consistently present in the guidelines for the assessment of suicide risk is hopelessness [24], and the most reliable risk factor for attempted and completed suicide that has been reported in several empirical investigations is hopelessness [25–27]. No data is currently available on the correlates of hopelessness among Nigerian patients with psychiatric disorders.

Hopelessness has been described as the reflection of a cognitive style in which the hallmarks are negative and pessimistic attributions and expectations regarding the future [28]. To lend credence to this description, studies involving patients and healthy populations have suggested that the evaluation of hopelessness can be helpful in the identification of those at increased risk of suicide. Among psychiatric patients evaluated prospectively for 20 years, hopelessness was identified as the strongest determinant of completed suicide [5]. In a cross-sectional study, higher levels of hopelessness was able to differentiate those patients who had severally attempted suicide from those who had made only one attempt [29]. A longitudinal large community sample followed up over a period of 13 years showed that hopelessness predicted suicidal thoughts, suicide attempts and those who completed suicide [30]. Beevers and Miller in their study involving 121 depressed patients confirmed the predictive validity of hopelessness as an independent risk factor for attempted and completed suicide [31]. It was also found in another study to have longitudinally predicted the presence and duration of suicidal ideation [32]. According to research data, hopelessness is an adjustable risk factor, the severity of which can be reduced through the application of psychological treatments [33,34].

Cross-sectional studies have also suggested that hopelessness in patients with psychotic disorders correlated positively with reports of suicidality [35,36], and according to Beck and his colleagues, hopelessness compared to depression is a stronger predictor of eventual suicidal behaviour [37,38]. Beck and colleagues based on his cognitive theory of depression and research on attempted suicide developed the 20 item Beck Hopelessness Scale (BHS) in 1974 [39]. When the scale was administered prospectively, it was able to reflect changes in the patients' depressive states. Exploratory Factor Analysis with Principal Component Analysis revealed 3 factors; affective, motivational and cognitive dimensions of hopelessness.

The BHS is an internationally recognized and widely utilized instrument and according to suicide experts is judged to be the most dependable predictor of suicide [40–42], and several studies have explored its psychometric characteristics across different clinical and nonclinical population in western countries [43–46]. Several studies have also corroborated the correlation between elevated BHS scores and suicidal behaviour [7,47]. Cross culturally psychometrically valid versions of the BHS are now available in Chinese [48], Taiwanese [46], Italian [49], Hungarian [50], Japanese [51], Turkish [52] and Xhosa language in South Africa [53]. The Yoruba speaking population in Nigeria is located in the South-western region of the country. This region is composed of 6 States namely; Osun, Lagos, Oyo, Ekiti, Ogun and Ondo states, with a population of almost 30

million in the last national census [54]. The prevention of suicide is a complex task that requires multiple levels of intervention [50]. Therefore, we are of the opinion that an initial step towards the prevention of suicide among patients with psychiatric disorders in South-western Nigeria will be through the availability of a reliable and valid culturally adapted screening instrument that can be helpful in identifying those individuals who are at a high risk of engaging in suicidal behaviour. An electronic literature search showed that no study has previously examined the construct of hopelessness either among Nigerian patients with psychiatric or medical disorders in terms of its factorial structure and correlates, given the strong association between hopelessness and suicide [35,55]. The aim of this study is to perform a Yoruba Language adaptation of the BHS and examine the validity and internal consistency of the scale among psychiatric outpatients in a university teaching hospital in South-western Nigeria. We also attempted to explore the psychosocial correlates of hopelessness among our sample of Nigerian psychiatric outpatients. In addition, we hypothesized that the shortened version of the BHS-Y extracted from the 20 item culturally adapted version will exhibit psychometric properties similar to the full item version.

2. Materials and methods

2.1. Sample

This was a cross-sectional study and the participants were outpatients receiving treatment in the psychiatric clinics of the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), a tertiary referral center located in Ile-Ife, Osun state, one of the states in South-western Nigeria. The 1000 bedded hospital is one of the first generation of teaching hospitals established by the Federal Government of Nigeria. As a result of its strategic location, the OAUTHC has an extensive catchment area including the whole of Osun state and other states in the South-western region of the country. The psychiatric outpatients' clinics take place twice a week with an average of 60 to 70 patients per clinic. The frequency of the follow-up outpatient clinic evaluation of our study participants varies individually among them and is determined mainly by the improvements or deteriorations in the severity of their psychopathologies and functioning. Patients aged 18 and above were consecutively recruited over a year period between July 2013 and June 2014. On the basis of our outpatients' population per clinic, a one year period of recruitment will give us the opportunity to interact with those who diligently present for their outpatient follow-up evaluation. To be eligible for inclusion, the outpatients must be able to speak and understand Yoruba language, which is the main language in South-western Nigeria. In terms of educational level, the outpatients must have a minimum of elementary education. The South-western region of Nigeria has the highest literacy rate compared to the other geopolitical regions of the country [56]. Those with comorbid chronic medical illnesses, patients with organic mental disorders, patients who are mentally retarded, individuals who refused to consent and those who were psychopathologically too disturbed to consent were excluded. Approval for the study protocol was obtained from the Institution's Ethical and Research Committee. A total number of 5 researchers were involved with the recruitment of outpatients during the study. On each clinic day after the purpose of the study has been explained to the outpatients and their informed consent obtained, they were ushered into a consulting room for privacy following which the study measures were completed. During the period of recruitment, 27 of our outpatients refused to give consent, 39 outpatients receiving treatment for organic disorders such as dementia and epilepsy were excluded, and 55 of our outpatients were psychopathologically too disturbed to give consent while we had to exclude 23 patients who were receiving treatment for other comorbid medical disorders such as diabetes mellitus. A total of 327 outpatients participated in this study.

2.2. Assessment

The study participants completed a research inventory which consists of a sociodemographic and illness-related questionnaire, the Beck Hopelessness Scale-Yoruba version, the Beck Depression Inventory-II. Their functioning was evaluated with the Global Assessment of Functioning Scale, the severity of the level of psychopathology was assessed with the Positive and Negative Syndrome Scale and the World Health Organization Disability Assessment Schedule-II was used to explore their level of disabilities in different areas of functioning.

2.2.1. Sociodemographic and illness-related questionnaire

This was specifically designed for the study and contains details such as age, gender, diagnosis, marital status, and number of years of education, age at onset of illness, previous history of suicidal attempts, family history of psychiatric disorders, number of previous suicidal attempts and how long ago the last suicidal attempt was. Our sociodemographic and illness related variables were selected on the basis of the sociodemographic factors that have been reported to be associated with hopelessness in previous studies [29,50,57,58].

2.2.2. Beck Hopelessness Scale (BHS)

The BHS was scale developed by Aaron Beck and colleagues in 1974 [39]. It was based on Beck's cognitive theory of depression and his research on suicide. The BHS is composed of 20 true-false items and Beck originally applying Exploratory Factor Analysis described that the scale has 3 factors: feeling in association with the future (affective aspect); loss of motivation (motivation aspect) and expectations of the future (cognitive aspect). The individual completing the scale is required to make a choice about how

each item describes his or her perspective regarding the future during the previous week, including the day the scale is being completed. The response format is dichotomous, if the individual agrees with an item he/she should indicate true; otherwise he/she should indicate false. The wordings of each statement are such that an individual either aggress with a pessimistic statement or disagrees with an optimistic statement to score one point per item. Score ranges from 0 to 20, with higher scores indicative of higher levels of hopelessness. Seven of the scale's items are scored in a reverse format (items 1, 5, 6, 8, 13, 15, and 19). Mild hopelessness is indicated by a score range of 4 to 8, while moderate and severe hopelessness are indicated by score range of 9–14 and 15–20 respectively. Individuals who scored 9 or higher on the BHS have been shown to be eleven times more likely to engage in suicidal behaviors compared to those with lower scores [37]. After receiving approval from the authors of the scale, we created the Yoruba version of the BHS based on the internationally accepted methodology for the cultural adaptation of patient reported measures [59]. The first thing we performed was a forward translation, in which the original version was translated from English language to Yoruba language; the aim at this stage was to ensure that the Yoruba translation semantically and theoretically matched the original English version. The forward translation was performed independently by 2 linguists in the Department of Foreign Languages, Faculty of Arts of the Obafemi Awolowo University, Ile-Ife. Afterwards, both translators and the authors carefully examined the translated scale's items for clarity, cultural relevance and any divergent opinions were discussed. Secondly, a backward translation was performed in which the Yoruba version of the BHS was translated back into English language by 2 other translators who were not involved in the forward translation stage. The English version produced after the backward translation was then compared to the original English version, resulting in the final version of the semantically and culturally similar Yoruba version of the BHS. Thirdly, 10 of our clinically stable outpatients were invited to complete the Yoruba version of the Beck Hopelessness Scale (BHS-Y) and were told to present their comments and suggestions. There were no disputed or confusing items and the patients were able to understand and complete the scale without any difficulty. It has been argued that completing questionnaires that are lengthy in the context of clinical settings can be time consuming and this can adversely influence the respondent's willingness, in addition, it can be a daunting task for some severely disturbed anxious and depressed patients to fill a questionnaire that will take 20 to 30 minutes to complete [57]. Studies have also previously indicated that some questionnaires can be reduced significantly without any adverse distortion to the original psychometric qualities of the instrument [60,61]. We therefore decided to test the hypothesis that a shortened version of the BHS-Y extracted from the 20 item BHS-Y will possess adequate construct validity and internal consistency similar to the full item version of the scale, since it was suggested by Aish and colleagues that most of the BHS items evaluate hopelessness along a single construct [43].

2.2.3. Mini International Neuropsychiatric Interview (MINI)

The MINI [62], is a brief structured interview designed for the major Axis I psychiatric disorders in both the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* [63] and the 10th edition of the *International Classification of Diseases and Disorders* [64]. There are two aspects to the MINI; the current (for present symptoms) and lifetime (for retrospective diagnosis) aspects. We used the lifetime aspect to confirm the diagnosis of schizophrenia and the previous episodes of mania and depression in the outpatients receiving treatment for affective disorders. The MINI suicidality module section evaluates the risk of suicide in the past one month based on a number of questions; In the past one month did you: *Think that you would be better off dead or wish you were dead (1 point)*, *Want to harm yourself (2 points), Think about suicide (6 points), Have a suicide plan (10 points), Attempt suicide (10 points)*; In your lifetime: *Did you ever make a suicide attempt (4 points)*. An aggregate MINI suicidality module score was obtained for each outpatient by totaling the points in all the questions. Low suicide risk is indicated by 1 to 5 points, while moderate and high suicide risks are indicated by 6 to 9 and 10 and above points respectively. The outpatients were categorized into the 3 suicide risk groups on the basis of their aggregate scores. The English version of the MINI has been employed extensively to confirm the diagnoses of psychotic and affective disorders in previous studies involving psychiatric patients in our center and other centers in Nigeria [65–69].

2.2.4. Beck Depression Inventory-II (BDI-II)

All the participants completed the 21-item self administered BDI-II [70], which consists of a series of questions relating to specific symptoms of depression over the previous seven days. Each question is graded from 0 to 3, yielding a maximum score of 63. Adequacy of psychometric properties has been described among Nigerian adults [71] and adolescents [72]. Our outpatients were literate enough to complete the English version of the Beck Depression Inventory-II, since the least educated among them had some elementary education. In present Nigeria, the Southwestern geopolitical zone inhabited by Yoruba Language speakers has the highest literacy rate compared to other parts of the country, following the free education programme introduced in the region in 1955 [56].

2.2.5. Global Assessment of Functioning Scale (GAF)

Participants were administered the observer-rated rating of patients' level of functioning on a 100 point scale, with higher points indicating a higher level of functioning and more positive mental health [63]. The scale has been employed in previous studies to evaluate functioning among Nigerian psychiatric outpatients [73]. The scale has also demonstrated a negative correlation between

hopelessness and functioning in patients with psychotic disorders [74].

2.2.6. Positive and Negative Syndrome Scale (PANSS)

The patients receiving treatment for schizophrenia completed this interviewer administered structured interview that evaluates patients on 30 items comprised of 7 positive (P1–P7) and 7 negative (N1–N7) symptoms of schizophrenia as well as a general (G1–G16) psychopathology scale. Rating is on a 1–7 Likert scale, with higher rating indicative of higher psychopathology [75]. Several studies have used this scale to measure the level of psychopathology among Nigerian patients with schizophrenia [69,73]. Previous studies have reported associations between some of the PANSS subscales and hopelessness among patients with schizophrenia [76].

2.2.7. World Health Organization Disability Assessment Schedule-II (WHODAS-II)

The outpatients also completed the self administered version of the WHODAS-II. The WHODAS-II consists of 36 Likert scored questions, subdivided into six domains; Understanding and communicating, Getting around, Self care, Getting along with people, Life activities and Participation in Society. The WHODAS-II was used in the assessment of disability in a Nigerian survey of mental health and wellbeing [77]. Each item on the WHODAS-II requests the individual to rate how much difficulty he or she has experienced in specific areas of functioning during the preceding 30 days. We applied the simple approach in computing the summary scores for the WHODAS-II domains in which the scores assigned to each of the items – "none" (1), "mild" (2), "moderate" (3), "severe" (4), and "extreme" (5) were summed up. According to the WHODAS-II manual, the simple summation of the scores of the items across all the 6 domains is adequate to describe the degree of functional limitations, and this approach is said to be practical and preferable in busy clinical settings [78]. Studies have reported positive correlations between hopelessness and disability in adult patients with psychotic and affective disorders [79].

2.3. Statistical analysis

Data analysis was performed with the SPSS for Windows, 16th version. Descriptive statistics such as mean with standard deviation, frequency and range were used to depict the outpatients' sociodemographic and illness-related details. We used Shapiro-Wilk's test to examine for normality of data distribution and due to the non-normality of the distribution, non parametric tests were used for correlational analyses. The factorial structure of the Yoruba version of the Beck Hopelessness Scale was examined with Exploratory Factor Analysis using Principal Component Analysis with Varimax rotation applying Kaiser's criteria of keeping factors with Eigen-values greater than 1 [80]. Appropriateness of data for factorial exploration was tested using the Kaiser-Meyer-Olkins (KMO) measurement of sampling adequacy [81]. The internal consistency of the Beck Hopelessness Scale-Yoruba version (BHS-Y) was evaluated by calculating the Cronbach's alpha, a reliability coefficient. The construct validity of the BHS-Y was explored using correlational analyses with the MINI suicidality module, BDI-II, WHODAS-II domains and GAF scores. A linear regression model using 95% Confidence Interval was created to determine the extent to which certain variables determine the BHS-Y scores. Group differences in BHS-Y mean scores in relation to the categorical sociodemographic and illness-related variables were assessed with Mann–Whitney (U) and Kruskall-Walis (H) test. The outcome variable in this study was the BHS-Y score. All tests were 2-tailed and p value ≤ 0.05 was considered statistically significant.

3. Results

3.1. Sociodemographic and illness related data

Table 1 shows the sociodemographic and illness-related characteristics of our participants. Females accounted for 58.1%. The mean age of the respondents was 41.39 (SD 12.97) and most (48.6%) were married. The majority (65.1%) of the outpatients were receiving treatment for schizophrenia. The mean age of onset of illness was 29.63 (SD 11.27). Eleven percent of our sample had previously attempted suicide while 15% indicated positive family history of a psychiatric disorder. For those with previous suicidal attempts, the mean number of attempts was 1.20 (SD 0.88). According to the aggregate MINI suicidality module scores, we categorized 63.6% of our outpatients as low suicide risk, 29.1% as moderate suicide risk and 7.3% as high suicide risk. The mean score on the BHS-Y scale was 3.55 (SD 4.45) while the mean MINI module suicidality and BDI-II scores were 3.32 (SD 4.08) and 7.86 (SD 10.91) respectively. The WHODAS II mean scores for the Understanding and Communication, Getting Around, Self Care, Getting along with people, Life activities and Participation in Society domain scores were 9.27 (SD 4.66), 7.04 (SD 3.50), 5.55 (SD 3.12), 7.51 (SD 3.80), 5.67 (SD 3.10) and 12.51 (SD 6.46) respectively.

3.2. Mean and mean rank differences in BHS-Y scores

Mean rank differences in the BHS-Y score in relation to the categorical sociodemographic and illness-related variables are depicted in Table 2. Mann–Whitney (U) test showed that there were statistically significant differences in BHS-Y means scores between those who had and had not attempted suicide in the past ($U = 2752.5$, $p < 0.001$), those with and without family history of psychiatric disorders ($U = 5303$, $p = 0.012$). Kruskal-Wallis (H) test showed that there was a statistically significant difference in BHS-Y score among the different categories of marital statuses, $H = 7.304$, $p = 0.026$, with a mean rank score of 161.98 for the

Table 1
Sociodemographic and illness-related characteristics (n = 327).

Variable	Mean (SD)/Frequency(%)/ [Range]
Gender:	
Male	137 (41.9%)
Female	190 (58.1%)
Age	41.39 (12.97) [18–83]
Marital status:	
Single	130 (39.8%)
Married	159 (48.6%)
Divorced/separated	38 (11.6%)
No of years of education	11.51 (4.12) [5–23]
Diagnosis:	
Schizophrenia	213 (65.1%)
Bipolar disorder	62 (19.0%)
Depression	52 (15.9%)
Age at onset of illness	29.63 (11.27) [15–75]
Attempted suicide in the past:	
Yes	36 (11.0%)
No	291 (89.0%)
Family history of psychiatric disorder:	
Yes	49 (15.0%)
No	278 (85.0%)
No of previous suicidal attempts [α]	1.20 (0.88) [1–4]
Duration of last suicidal attempt (months) [α]	41.28 (47.68) [2–180]
MINI categorization:	
Low suicide risk	208 (63.6%)
Moderate suicide risk	95 (29.1%)
High suicide risk	24 (7.3%)
Beck Hopelessness Score	3.55 (4.45) [0–20]
MINI suicidality score	3.32 (4.08) [0–19]
Beck Depression Inventory score	7.86 (10.91) [0–50]
Global Assessment of Functioning score	66.42 (17.64) [35–98]
WHODAS understanding	9.27 (4.66) [6–25]
WHODAS getting around	7.04 (3.50) [5–20]
WHODAS self care	5.55 (3.12) [4–19]
WHODAS getting along	7.51 (3.80) [4–20]
WHODAS life activities	5.67 (3.10) [4–20]
WHODAS participate in society	12.51 (6.46) [0–34]
PANSS Positive[§]	8.96 (3.22) [7–22]
PANSS Negative[§]	7.93 (2.12) [7–20]
PANSS General[§]	19.23 (6.19) [7–46]

[α] 36 (11.0%) outpatients who had previously attempted suicide.
[§] 213 (65.1%) outpatients receiving treatment for schizophrenia.

single and never married, 156.62 for those who are married and 201.79 for the divorced/separated. Statistically significant differences in BHS-Y was also observed among the MINI suicidality module categories, H = 172.335, $p < 0.001$, with a mean rank score of 299.31 for the high risk categories, and mean rank scores of 239.26 and 114.01 for the moderate and low suicide risk categories respectively. Tukey's post-hoc analyses revealed that the BHS-Y mean score for the divorced/separated was significantly higher compared to the married and single among the outpatients. According to the aggregate MINI suicidality module score, Tukey's test revealed that for those categorized as high suicide risk the BHS-Y mean scores was significantly higher than the other 2 categories, with the moderate suicide risk category having a significantly higher BHS-Y mean score compared to the low suicide risk category.

3.3. Descriptive and psychometric details of the BHS-Y (n = 327)

Table 3 shows the Yoruba language translation of each item. It can also be seen that the scale has satisfactory internal consistency (Cronbach's alpha 0.92). The corrected item-to-scale correlation ranged from 0.44 to 0.77, and the deletion of any of the items will not significantly alter the Cronbach's alpha.

3.4. Principal component analysis with Varimax rotation

Exploratory Factor Analysis applying Principal Component Analysis (PCA) with Varimax rotation (Table 4) yielded 3 factors with factor 1, 2, and 3 accounting for 24.52%, 16.22% and 14.48% of the total variance respectively. The adequacy of our sample is indicated by a Kaiser-Meyer-Olkins Measure of Sampling Adequacy of 0.869. Prior to factor analysis, we checked for multicollinearity among the BHS-Y scale items. All the items in the BHS-Y correlated fairly well and none of the correlation coefficients were particularly large, we therefore had no reason to eliminate any of the scale's items.

3.5. Construct validity (Correlational analyses) of the BHS-Y

The construct validity of the BHS-Y in terms of its correlation with certain variables is shown in Table 5. We eliminated the pessimism item from the BDI-II before we conducted the correlational analyses with the BHS-Y, in order to avoid the inflation that the item will contribute to the correlation. There were significant positive correlations between BHS-Y and the MINI suicidality module ($r = 0.786$, $p < 0.001$) and BDI-II ($r = 0.602$, $p < 0.001$) scores, while modestly significant negative correlations were observed between BHS-Y and GAF scores ($r = -0.503$, $p < 0.001$) and the time of last attempt at suicide ($r = -0.422$, $p = 0.010$). There was a statistically significant positive correlation between the BDI-II and the MINI suicidality score ($r = 0.558$, $p < 0.001$). The BHS-Y had modest positive correlations with all the 6 domains of the WHODAS-II.

3.6. Linear regression model

Table 6 shows the linear regression model indicating the percentage of the variance taken up at each step as each variable is added into the model. In the final model the multiple correlation coefficient was 0.83, indicating that approximately 69% ($R^2 = 0.689$) of the variance of the total BHS-Y score can be accounted for by the linear combination of MINI suicidality module, BDI-II and GAF scores. The regression equation predicting the BHS-Y score is; $-0.049 * GAF\ score + 0.080 * BDI\text{-}II\ score + 0.646 * MINI\ suicidality\ module\ score + 4.072$. The linear regression

Table 2
Mean and mean rank differences in BHS-Y scores in relation to sociodemographic and illness related variables.

Variable	N (%)	Mean (SD)	Mean rank	Mann–Whitney (U)/Kruskal-Wallis (H) test	*p* Value
Diagnosis:					
Schizophrenia	213(65.1%)	3.29 (4.22)	157.98	H = 3.702	0.157
Bipolar disorder	62(19.0%)	4.58 (5.35)	183.83		
Depression	52(15.9%)	3.40 (4.10)	165.02		
Gender:					
Male	137(41.9%)	3.14 (4.28)	153.47	U = 11572.500	0.083
Female	190(58.1%)	3.85 (4.55)	171.59		
Marital status:					
Single	130(39.8%)	3.72 (4.92)	161.98	H = 7.304	0.026 (D/S > (M = S))[α]
Married	159 (48.6%)	2.93 (3.47)	156.62		
Divorced/separated	38(11.6%)	5.58 (5.72)	201.79		
Attempted suicide in the past:					
Yes	36(11.0%)	6.97 (5.80)	233.04	U = 2752.500	<0.001
No	291(89.0%)	3.13 (4.07)	155.46		
Family history of psychiatric disorder:					
Yes	49(15.0%)	5.24 (5.19)	194.78	U = 5304.000	0.012
No	278(85.0%)	3.26 (4.25)	158.58		
MINI categorization:					
Low suicide risk	208 (63.6%)	1.26 (1.29)	114.01	H = 172.335	<0.001 (HSR > MSR > LSR)*
Moderate suicide risk	95 (29.1%)	6.26 (4.28)	239.26		
High suicide risk	24 (7.3%)	12.71 (4.28)	299.31		

[α] Tukey's Test: Divorced/Separated > (Married, Single).
* Tukey's Test: High suicide risk > Moderate suicide risk > Low suicide risk.

Table 3
Descriptive and psychometric details of the Beck Hopelessness Scale-Yoruba (n = 327).

Item/Yoruba translated item	Mean (SD)	Item–scale correlations	Cronbach's alpha if deleted
1. I look forward to the future with hope and enthusiasm./Mo nwo ojo iwaju mi pelu ireti ati idunu.	0.05 (0.22)	0.51	0.91
2. I might as well give up because there is nothing I can do about making things better for myself./Boya kin kuku soretinu nitori wipe ko si nkan ti mo le se lati je ki nkan dara si fun mi.	0.16 (0.37)	0.53	0.91
3. When things are going badly, I am helped by knowing they cannot stay that way forever./Nigbati nkan ko ba lo dede, okan mi ma nbale nitori wipe iyipada yio de.	0.07 (0.26)	0.48	0.92
4. I can't imagine what my life would be like in ten years./Nko tile lee wo ye bi igbesi aye mi yoo ti ri ni odun mewa si bi yii.	0.57 (0.49)	0.50	0.92
5. I have enough time to accomplish the things I want to do./Akoko wa fun mi lati se oun gbogbo ti mo fe se.	0.09 (0.30)	0.48	0.91
6. In the future, I expect to succeed in what concerns me the most./Ni ojo iwaju mo ni igbagbo wipe ohun ti mo gbero lokan ju lati se yoo seese fun mi.	0.04 (0.20)	0.44	0.91
7. My future seems dark to me./Ojo ola mi sokunkun si mi.	0.36 (0.48)	0.53	0.91
8. I happen to be particularly lucky, and I expect to get more of the good things in life than the average person./Olori re ni mi, mo si lero wipe maa tun maa ri ohun rere gba siwaju ju enikeni lo.	0.10 (0.30)	0.75	0.91
9. I just can't get the breaks, and there is no reason I will in the future./Ohun gbogbo tile dojuru fun mi, ko si ireti gan an fun ojo ola.	0.19 (0.40)	0.72	0.91
10. My past experiences have prepared me well for the future./Awon iriri mi latehinwa ti je ki nmura sile fun ojo iwaju.	0.08 (0.30)	0.53	0.91
11. All I can see ahead of me is unpleasantness rather than pleasantness./Inira ni mo ri fun ojo iwaju, ko si irorun nibe rara.	0.11 (0.37)	0.68	0.90
12. I don't expect to get what I really want./Nko ni ireti wipe owo mi le ba ohun ti mo nwa gangan.	0.16 (0.37)	0.68	0.91
13. When I look ahead to the future, I expect that I will be happier than now./Nigbati mo ba wo ojo iwaju mi, mo ni ireti wipe ayo mi yoo po ju ti isisiyi lo.	0.10 (0.30)	0.77	0.91
14. Things don't just work out the way I want them to./Awon nkan ko tile lo dede bi mo ti fe je ko ri.	0.47 (0.50)	0.51	0.92
15. I have great faith in the future./Mo ni igbagbo ti opo fun ojo iwaju.	0.15 (0.36)	0.74	0.91
16. I never get what I want, so it is foolish to want anything./Nkan ti mo fe kii te mi lowo, ki nkuku so ireti nu.	0.16 (0.37)	0.64	0.91
17. It is very unlikely that I will get any real satisfaction in the future./Ko si idaniloju wipe ojo ola yoo dara.	0.15 (0.35)	0.67	0.91
18. The future seems vague and uncertain to me./Ojo iwaju ko ti le lojutu rara si mi.	0.17 (0.37)	0.68	0.91
19. I can look forward to more good times than bad times./Mo nwo iwaju fun adun ti yoo po ju inira lo.	0.13 (0.33)	0.54	0.91
20. My past experiences have prepared me well for the future./Ki nkuku gba kamu tori wipe boya ni mo lee ri awon oun ti mo fe.	0.18 (0.38)	0.58	0.91

Cronbach's alpha = 0.92.

Table 4
Principal Component Analysis with Varimax rotation.

Item	Factor 1	Factor 2	Factor 3
17. It is very unlikely that I will get any real satisfaction in the future.	0.774	-	-
20. There is no use in really trying to get anything I want because I probably won't get it.	0.731	-	-
19. I can look forward to more good times than bad times.	0.672	-	-
12. I don't expect to get what I really want.	0.652	-	-
13. When I look ahead to the future, I expect that I will be happier than now.	0.645	-	-
9. I just can't get the breaks, and there is no reason I will in the future.	0.634	-	-
15. I have great faith in the future.	0.611	-	-
18. The future seems vague and uncertain to me.	0.578	-	-
11. All I can see ahead of me is unpleasantness rather than pleasantness.	0.531	-	-
10. My past experiences have prepared me well for the future.	0.453	-	-
3. When things are going badly, I am helped by knowing they cannot stay that way forever.	-	0.711	-
8. I happen to be particularly lucky, and I expect to get more of the good things in life than the average person.	-	0.696	-
6. In the future, I expect to succeed in what concerns me the most.	-	0.685	-
5. I have enough time to accomplish the things I want to do.	-	0.571	-
1. I look forward to the future with hope and enthusiasm.	-	0.537	-
2. I might as well give up because there is nothing I can do about making things better for myself.	-	-	0.707
4. I can't imagine what my life would be like in ten years.	-	-	0.677
7. My future seems dark to me.	-	-	0.580
14. Things don't just work out the way I want them to.	-	-	0.550
16. I never get what I want, so it is foolish to want anything.	-	-	0.506
Eigen values	4	3	2
Cronbach's alpha	0.91	0.76	0.71
Percentage of total variance explained	24.52%	16.22%	14.48%

Kaiser-Meyer-Olkins measure of sampling adequacy 0.869.
Bartlett's test of sphericity $X^2 = 3616$, $p < 0.001$.

model proved that the MINI suicidality module score has the main predictive power for the BHS-Y score among our outpatients. We also analyzed how the BHS-Y scores of our participants who indicated they had previously attempted suicide predict the fact that they had had previous suicidal attempt using discriminant analysis, which showed adequate predictive validity of the BHS-Y (Wilk's Lambda = 0.871, Adjusted $R^2 = 0.13$, $p < 0.001$).

3.7. Factorial loading and internal consistency of the 4 item single factor shortened BHS-Y

Table 7 shows the factor loading and internal consistency of the shortened BHS-Y. As the 20 item BHS seems to measures a single construct, we attempted to recommend the use of a shortened version of the scale for clinical screening. We examined the items of the scale and decided to extract the 4 items with the highest item-scale correlations (>0.70) on the 20 item BHS-Y version (Table 3). This yielded items 8 ("I happen to be particularly lucky, and I expect to get more of the good things in life than the average person"), 9 ("I just can't get the breaks, and there is no reason I will in the future"), 13 ("When I look ahead to the future, I expect that I will be happier than now"), and item 15 ("I have great faith in the future"). As shown in Table 7, the 4 items in the single factor shortened BHS-Y version demonstrated a level of internal consistency (Cronbach's alpha 0.87) that is comparable to that of the 20 item BHS-Y (Cronbach's alpha 0.92), thus confirming our hypothesis.

3.8. Construct validity of the 4 item single factor shortened BHS-Y

The construct validity of the 4 item single factor shortened BHS-Y is shown in Table 8. Similarly to the 20 item BHS-Y, there were significant positive correlations with the MINI suicidality module ($r = 0.657$, $p < 0.001$) and BDI-II ($r = 0.503$, $p < 0.001$) scores, while modestly significant negative correlations were also observed with the GAF scores ($r = -0.403$, $p < 0.001$) and the time of last attempt at suicide ($r = -0.475$, $p < 0.001$).

4. Discussion

In this study, we performed a cross-cultural adaptation of the BHS and examined its reliability, validity, factorial structure, and correlates in a cross-sectional sample of psychiatric outpatients in South-western Nigeria. Among our outpatients, the BHS-Y had modestly strong positive correlations with the BDI-II and MINI suicidality module scores. Previous researches have consistently lent credence to a strong positive relationship between scores on the BHS and measures of depression and suicidal intent. The modestly strong positive correlation between the BHS-Y and the MINI suicidality module scores among out outpatients is supported by the importance that has been previously attributed to the BHS as a consistent predictor of suicidal ideation and attempts [37,38,82,83]. The proven relationship between hopelessness and depression [84], is further supported by our finding of positive correlations between BHS and BDI-II scores among our outpatients. The Yoruba version of the BHS demonstrated satisfactory construct validity with the BDI-II similar to the Hungarian version of the scale in a relatively recent study, [50] and the South African Xhosa version of the scale [53]. Studies have shown that there is correlation between BDI-II and the BHS when evaluating patients with depressive disorders [85,86]. We also observed modest construct validity between BHS-Y and the WHODAS-II domain scores, with hopelessness and disabilities in the different domains moving in the same direction. Our outpatients who had higher hopelessness scores

Table 5
Construct validity (correlational analyses) of the BHS-Y.

	1	2	3	4	5	6	7	8	9	10	11	12
BHS-Y	1											
MINI suicidality	0.786**	1										
BDI-II	0.602**	0.558**	1									
GAF	−0.503**	−0.400**	−0.384**	1								
How long ago was the last suicidal attempt	−0.422*	−0.329	−0.332**	0.256	1							
No of previous suicidal attempt	0.253	0.115	0.096	−0.034	−0.321	1						
WHODAS-understanding	0.378**	0.348**	0.355**	−0.504**	−0.307	0.183	1					
WHODAS-getting around	0.262**	0.249**	0.209**	−0.383**	0.504	0.143	0.737**	1				
WHODAS-self care	0.423**	0.336**	0.285**	−0.489**	0.002	0.114	0.717**	0.757**	1			
WHODAS-getting along	0.396**	0.355**	0.374**	−0.507**	−0.269	0.219	0.821**	0.681**	0.736**	1		
WHODAS-life activities	0.345**	0.206**	0.294**	−0.467**	−0.303	0.310	0.710**	0.597**	0.726**	0.727**	1	
WHODAS-participate	0.315**	0.282**	0.340**	−0.418**	−0.301	0.209	0.626**	0.503**	0.542**	0.647**	0.662**	1

* < 0.05
** < 0.001.

tend to be characterized by higher disabilities as measured with the WHODAS II. This observation is supported by the findings of Hamzaoglu et al. (2010) who in a cross-sectional study reported similar positive associations between hopelessness measured with the BHS and disability in 501 adults in Turkey [79]. Another observation that further reinforces the construct validity of the BHS-Y among our outpatients was the modest negative correlation with functioning as measured with the GAF scale. Our result coincides with that of previous studies. Davis and colleagues in a study involving patients with schizophrenia reported that hopelessness was significantly associated with impairment in different aspects of functioning [74], and another study that involved patients with posttraumatic stress disorder reported negative correlation between BHS and functioning measured with the GAF scale [87]. As indicated in our linear regression model, hopelessness among our outpatients was significantly predicted by the combination of the MINI suicidality module, the BDI-II and GAF scores. In the model the main predictive effect is attributed to the MINI suicidality module score.

Aiken (2002) reported that the reliability coefficients of the BHS were consistently high (Cronbach's alpha 0.82–0.93) in seven normative groups [88]. Our culturally adapted version reflected a similarly strong internal consistency (Cronbach's alpha 0.92) which is comparable to the Hungarian version of the BHS that was reported to have an internal consistency with a Cronbach's alpha of 0.91 [50]. The internal consistencies of the BHS have been reported to be generally high in all the culturally adapted versions [48,49,53]. The internal consistency (Cronbach's alpha 0.92) of our translated version, BHS-Y, was comparable to that of the original scale (Cronbach's alpha 0.93) by Beck et al. (1974) who examined a sample of 294 adult psychiatric in patients who had recently attempted suicide [39]. Based on these observations, we can therefore conclude that the 20 item Yoruba version of the BHS has proven to be a valid and reliable measure of hopelessness among our outpatients.

An interesting finding in our study was the negative correlation between BHS-Y and the duration of the last attempt at suicide among our outpatients who had previously attempted suicide. Our participants who reported a relatively more recent attempt at suicide had higher scores on the BHS-Y. This is similar to what was reported in a study in Hungary in which the authors explored psychosocial correlates of hopelessness in a randomly selected sample of 14,000 individuals aver the age of 18. They found that those participants who attempted suicide

Table 6
Linear regression data (indicating the percentage of the variance taken up at each step as each variable is added into the model).

Model	Variable	Unstandardized coefficient	S.E.	Standardized coefficient			95% Confidence interval
		B		B	t	*p*	
1	Constant	0.661	0.192	-	3.450	0.001	0.281–1.044
	MINI suicidality	0.871	0.036	0.798	23.889	<0.001	0.798–0.943
	$R^2 = 0.637$	Adjusted $R^2 = 0.636$					
2	Constant	0.519	0.189	-	2.752	0.006	0.149–0.889
	MINI suicidality	0.716	0.049	0.656	14.587	<0.001	0.619–0.812
	BDI-II	0.092	0.020	0.205	4.563	<0.001	0.052–0.131
	$R^2 = 0.659$	Adjusted $R^2 = 0.657$					
3	Constant	4.072	0.661	-	6.158	<0.001	2.771–5.373
	MINI suicidality	0.646	0.049	0.592	13.292	<0.001	0.550–0.741
	BDI-II	0.080	0.019	0.178	4.118	<0.001	0.042–0.118
	GAF	−0.049	0.009	−0.193	−5.585	<0.001	−0.066 to −0.032
	$R^2 = 0.689$	Adjusted $R^2 = 0.686$					

Table 7
Factorial loading and internal consistency of the 4 item single factor shortened BHS-Y.

Item/Yoruba translation	Factor loading	Item-scale correlations	Cronbach's alpha if item deleted
13. When I look ahead to the future, I expect that I will be happier than now./Nigbati mo ba wo ojo iwaju mi, mo ni ireti wipe ayo mi yoo po ju ti isisiyi lo.	0.905	0.812	0.810
15. I have great faith in the future./Mo ni igbagbo ti opo fun ojo iwaju.	0.884	0.773	0.818
8. I happen to be particularly lucky, and I expect to get more of the good things in life than the average person./Olori re ni mi, mo si lero wipe maa tun maa ri ohun rere gba siwaju ju enikeni lo.	0.849	0.715	0.845
9. I just can't get the breaks, and there is no reason I will in the future./ Ohun gbogbo tile dojuru fun mi, ko si ireti gan an fun ojo ola.	0.797	0.698	0.856
Eigen value	2.96		

Percentage of total variance explained 73.9%.
Kaiser-Meyer-Olkins measure of sampling adequacy 0.818.
Bartlett's test of sphericity <0.001.
Cronbach's alpha = 0.87.

within the last one year had higher mean BHS scores (4.86) compared to those who attempted suicide more than 3 years ago (mean 3.57) [57]. We postulated that the reason for this observation may be due to our participants with more recent attempts at suicide being more psychopathologically distressed, albeit subsyndromally or they may currently be experiencing certain disturbing psychosocial issues that warrant exploration within the outpatient clinical setting. We cannot categorically state the reason for this finding, but it appears to emphasis the importance of screening for recent suicidal attempts among psychiatric outpatients. This may enable the early and prompt identification of those outpatients with high levels of hopelessness, which is a risk factor for future suicidal attempts. The importance of recognizing high levels of hopelessness in our outpatients is supported by prospective and retrospective studies reporting that suicide risk could be more accurately predicted based on hopelessness rather than by the severity of depression only [33,34,89]. Although, the prevention of suicide is complex, hopelessness is one modifiable risk factor whose severity can be ameliorated through the application of appropriate psychotherapeutic interventions [33,90]. For example, it has been proved that cognitive therapy brings about a quicker reduction in hopelessness scores in a group of depressed adult patients than a comparative group of depressed patients treated with only pharmacological agents [91]. Another recent study also proved that cognitive behavioral therapy was an effective method in reducing suicidal ideation and hopelessness in adolescents with previous suicidal attempts [92].

In addition, our outpatients who indicated that they had previously attempted suicide had significantly higher mean scores on the BHS-Y and expectedly those we categorized as high suicide risk according to the aggregate MINI suicidality module score had higher mean scores compared to the moderate and low suicide risk categories. These observations are in keeping with what has been reported in some cross-sectional studies which suggest that hopelessness in patients with psychotic and affective disorders is associated with an increased report of suicidal attempts and suicidality [35].

Another interesting finding in our study was that the outpatients who reported positive family history of psychiatric disorders had a higher mean score on the BHS-Y. This may be due to their awareness of the long term adverse effect the illness has had on their affected relatives. This observation needs to be further explored. An observation that is approximate to our finding is the report of psychopathology in parents increasing the odds of suicidality among the adult children of such parents [93,94]. Hopelessness also appears to have a genetic basis. A genetic study on hopelessness found that polymorphism in the tryptophan hydroxylase 2 (TPH2) gene that codes for the rate-limiting enzyme in the synthesis of serotonin was significantly associated with an increased BHS score but not with general symptoms of depression in a large scale general population sample in Hungary [95]. Some earlier studies in the developed countries have demonstrated that functional polymorphism in the serotonin transporter promoter region correlates significantly with hopelessness [96,97]. We also observed significantly higher mean BHS-Y scores among our outpatients who were either divorced or separated, which is similar to what has been previously reported [58]. Greene (1981) administered the Beck Hopelessness Scale to 400 randomly selected British adults in order to obtain the norm for the scale in the general population. The results showed that the BHS scores for the divorced and separated respondents were significantly higher than those who were single and married [58]. How the marital statuses of our participants influenced their level of hopelessness needs further exploration, although we will hypothesize that there may be an association between hopelessness and the level of social support among our outpatients. We found no gender differences in relation to the

Table 8
Construct validity (correlational analysis) of the 4 item single factor shortened BHS-Y.

Variable	Correlation coefficient
Mini suicidality	0.657**
BDI-II	0.503**
GAF	−0.403**
How long ago was the last suicidal attempt	−0.475**
No of previous suicidal attempt	0.412
WHODAS-understanding	0.394**
WHODAS-getting around	0.249**
WHODAS-self care	0.446**
WHODAS-getting along	0.428**
WHODAS-life activities	0.289**
WHODAS-participate	0.270**

* <0.05
** <0.001

BHS-Y in our sample; this further supports the insinuation that sex adjustment of the BHS is not needed [98]. Regarding the factor structure of the BHS-Y, Principal Component Analysis with Varimax rotation yielded a 3 factor structure among our participants. Each of the factors is composed of items that had satisfactory internal consistencies (factor 1 – Cronbach's alpha 0.91, factor 2 –Cronbach's alpha 0.76, and factor 3 – Cronbach's alpha 0.71). After carefully examining the wordings of the items that constitute each of the factors, we gave the following labels; factor 1 (Negative expectations regarding the future), factor 2 (Positive expectations regarding the future), and factor 3 (Loss of motivation). We had no reason to eliminate any of the items on the scale since there were no excessively high or perfect correlations among the items. Despite the several studies conducted till date that had examined the factor structure of the BHS in both medical and nonclinical populations, it's structure still remains rather ambiguous [43]. It has been suggested that the varied factor structure of the BHS in the different studies is due to the type of clinical sample and the factor extraction methods that were applied [86,89]. The original developers of the scale applying similar extraction method to our own on their data obtained from 294 suicide attempters produced a 3 factor model, labeled, "Feeling about the Future", "Loss of Motivation" and, "Future Expectations" [39]. But, up till date, none of the several studies that have examined the structure of the BHS have been able to replicate the exact factor model demonstrated in the original validation study by Beck et al. (1974). Some authors have proposed a one factor structural model, for example, Mystakidou et al. (2008) measured hopelessness in a cross-sectional sample of Greek oncological patients (n = 112) and reported a one factor solution using Principal Component Analysis with Varimax rotation [99]. Similar one factor models have been reported by some earlier authors [100,101]. Aish and colleagues applying Confirmatory Factor Analysis on data from 324 Swedish suicide attempters went as far as to conclude that 15 of the items on the BHS measure one factor, and that the number of the items on the scale can be reduced considerably [43]. Other authors have proposed a 3 factor model. Rosenfeld et al.(2004) reported a 3 factor 20 item BHS model in 2 samples of AIDS patients in the US [102], while Dyce (1996) also proposed a similar factor structure among 411 Canadian inpatients [103]. Another study that involved 120 US depressed elderly outpatients also yielded a 3 factor model comprised of 20 items [104]. An observation we made that further reinforces the lack of consensus regarding the factorial structure of the BHS was that among all the previous studies that reported a 3 factor 20 items model, all differ from one another and to the original version in terms of the items that constitute each factor. Assessing the structure of the BHS in more than 400 patients with advanced respiratory and gastrointestinal malignancies, Nissim et al. (2009) using Confirmatory Factor Analysis found that the construct of hopelessness was best explained by a 2 factor BHS model [85]. Also, in a cross-sectionally recruited group of Taiwanese patients with schizophrenia, a 2 factor solution corresponding with negative expectations and loss of motivation dimensions fitted the authors' data satisfactorily [46]. As reported in studies describing a 3 factor model, all the 2 factor models share no similarities in factor structure item contents. Finally, a Confirmatory Factor Analysis of the BHS in a sample of 340 Italian university students did not support the 3 factor model in samples of psychiatric patients as reported by some authors. A follow-up Principal Axis Factor analysis yielded two interpretable correlated factors, suggesting that the structure of the scale may differ across clinical and nonclinical populations and as a function of nationality [49].

We have been able to prove that a single factor shortened version of the BHS-Y composed of 4 items extracted from the 20 item BHS-Y demonstrated satisfactory psychometric characteristics similar to the full item Yoruba version of the scale. The four items (8, 9, 13 and 15) that demonstrated the highest item-scale correlations were selected from the full BHS-Y version. This approach is similar to the method adopted by a group of Hungarian authors in creating their 4 item shortened version of the BHS [57].The 4 items in our single factor shortened BHS-Y had excellent internal consistency has indicated by a Cronbach's alpha of 0.87, which is comparable to that of the 4 item shortened BHS (Cronbach's alpha 0.85) developed by a group of Hungarian researchers [57]. On the basis of Confirmatory Factor Analysis, Aish, Wasserman and Renberg [43] proposed that a 4 item single factor shortened version of the BHS best explain the construct of hopelessness. Their scale was composed of items 6, 7, 9 and 15 from the 20 item version. Our single factor shortened Yoruba version of the BHS has 2 of the items in their scale (items 9 and 15). The 4 item BHS proposed by Aish and colleagues [43] was employed in the evaluation of hopelessness in a cross-sectional study involving 2000 individuals in Hong Kong, the authors reported a significantly high correlation ($r = 0.88$) with the original 20 item version indicating that the reduced version is an effective replacement for the original version [42]. Similarly, our shortened BHS-Y version demonstrated a significantly positive correlation ($r = 0.91$) with the full item version. Since suicidal intent is rarely expressed by patients, a brief screening scale that can rapidly and effectively identify suicidal patients will be beneficial among Nigerian patients. It is well recognized that individuals at risk of self-injurious or suicidal behaviours consult their physicians for various non-specific complaints a week or 2 prior to engaging in suicidal acts [105]. In this present study, we have demonstrated that the culturally adapted Yoruba version of the BHS either in its full or shortened version is a valid and reliable measure of hopelessness among a sample of psychiatric outpatients in Nigeria. We have also contributed to the currently available data on the lack of consensus regarding the factorial content of the scale. We do hope that with the baseline information we have generated in this study, other researchers in Nigeria and Sub-Sahara Africa will be encouraged to further explore the characteristics of the scale in other languages and among other diverse

clinical and nonclinical populations. We also hope that the BHS-Y will be useful in our environment as a potential measure that can be incorporated into suicide risk assessment and therefore assist in the identification of Nigerian psychiatric outpatients with a high risk of suicide. The main strength of our study lies in the fact that this is the first study in Nigeria and Sub-Sahara Africa to explore the construct and correlates of hopelessness, a very important factor that has been repeatedly shown to be strongly associated with suicide. One other strength is that we evaluated the psychometric properties of the translated version of the first and most extensively used measure of hopelessness.

Our study has a number of limitations. The first is that it is a cross-sectional study conducted in a single health care facility in Nigeria, therefore there is need to exercise caution in generalizing our findings to psychiatric outpatients in other parts of the country. In addition, our sample was tilted towards those receiving treatment for schizophrenia, although there were no significant differences in the hopelessness scores among the 3 diagnostic groups. In conclusion, this is the first study to the knowledge of the authors to explore the construct of hopelessness among Nigerian psychiatric outpatients. Further studies are needed to identify other clinical and psychosocial factors that could independently influence the level of hopelessness among Nigerian patients with chronic mental and medical disorders. In addition, there is the need for further studies to explore the validity and reliability of the BHS among the other ethnic groups speaking different languages in Nigeria. We are of the opinion that the identification of other factors that are associated with hopelessness will enable the application of appropriate psychotherapeutic interventions that will on the long term reduce suicidal risk among the Nigerian psychiatric outpatients population.

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