Sinhala translation of Perinatal Anxiety Screening Scale: A valid and reliable tool to detect anxiety among pregnant women

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Abstract

Background Anxiety disorders during pregnancy are not routinely assessed in Sri Lanka despite being common and leading to adverse pregnancy outcomes. A screening tool will help early detection and management of anxiety to improve pregnancy outcomes. Our aim was to determine the validity of Sinhala translation of Perinatal Anxiety Screening Scale (PASS) to detect anxiety among Sri Lankan pregnant women.

Methods A cross-sectional study was conducted in antenatal clinics of ateaching hospital in Colombo. PASS was translated to Sinhala language using the standard translation/back-translation method. Pregnant women (n=221) were sequentially recruited and assessed by a psychiatrist until 81 women with anxiety disorder were diagnosed usingInternational Classification of Diseases-10 criteria(gold standard). Sinhala translation of PASS (PASS-S) was administered to all recruited women, including to 139women without anxiety. Receiver-Operator-Characteristics(ROC) analysis was performed, the optimal cut-off score for PASS-S was determined, and its validity was assessed using sensitivity, specificity, predictive values and positive and negative likelihood ratios.Internal consistency was assessed using Cronbach'salpha.Test-retest and inter-rater reliabilityfor PASS-S score and anxiety classification were assessed using intraclass correlation coefficient (ICC) and Cohen's kappa (k), respectively.

Results Mean age(+ SD) of women was 30(+ 5.8) years. Of them,53.7% were multiparous. Psychiatrist diagnosed anxiety disorder in 37.0% of women while PASS-S at its optimal cut-off of 20 classified 37.5% of women as having anxiety. Area under the ROC curve for PASS-S was 0.96 (95% CI0.94-0.99).Sensitivity, specificity and positive and negative predictive values of PASS-S were 0.93(95%CI 0.84-0.97), 0.90(95%CI0.83-0.94), 0.85(95%CI0.75-0.90)and 0.95(95% CI0.89-0.98),respectively. Positive and negative likelihood ratios were 8.8(95%CI 5.3-14.5) and 0.08(95% CI0.04-0.18), respectively. Internal consistency was high (Cronbach's alpha 0.95).Four factor structures obtained by exploratory factor analysis were"Generalized anxiety, acute anxiety and adjustment difficulties","Social anxiety, excessive worry and specific fears","Perfectionism, control andtrauma" and "Generalized anxiety".Test-retest reliability was high for the PASS-S score (ICC 0.85 [95%CI 0.65-0.96]) and anxiety classification (k0.77 [95%CI 0.34-1.2]).Inter-interviewer reliability was also high(ICC 0.92 [95%CI0.81-0.97] for the PASS-S score and (k0.86 [95%CI0.59-1.1] for anxiety classification).

Conclusion Sinhala translation of PASS is a valid and reliable instrument to screen for anxiety disorders among antenatal women in Sri Lanka.

Background

Anxiety during pregnancy is an emotional state resulting from anticipated uncertainties related to pregnancy-specific issues during antenatal and/or post-partum period, especially due to worries about the labour process, wellness of the baby to be born and neonatal care(1,2). Anxiety symptoms are common during pregnancy and postpartum period(3). The probabilities of onset of anxiety disorder and worsening

of pre-existing anxiety disorder are higher during perinatal period than those in the general population(3). Limited evidence suggests that anxiety during pregnancy is associated with adverse foetal and maternal outcomes including still birth, intrauterine growth restriction(IUGR),prolonged labour and caesarean deliveries, preterm birth, low birth-weight, and low Apgar scores at birth (4–7).

Early detection and management of anxiety during pregnancy will improve pregnancy outcomes(8). However, it is not feasible for all pregnant women to be assessed by a psychiatristwhich is the gold standard to detect anxiety(9).Therefore, standard questionnaires such as Perinatal Anxiety Screening Scale (PASS) is used to screen pregnant women for anxiety. PASS isan acceptable, psychometrically-sound questionnaire that performed well in screening for anxiety disorders duringpregnancyand postnatal period (10).Itdetects a broad range of anxiety presentations and is not confoundedbyphysiological symptoms of pregnancy(10).

In Sri Lanka, the proportion of adverse pregnancy outcomes remain high despite other health indices being satisfactory. This could be due to causes that are not assessed routinely during pregnancy, including anxiety. As no valid screening tool is available in Sri Lankato detect anxiety during pregnancy, we aimed to translate PASS into Sinhala language and validateit amongpregnant women.

Methods

This study was conducted in three phases. In phase-1, PASS was translated into Sinhala. In phase-2,construct validity of Sinhala translation of PASSwas assessed and in phase-3, criterion validity and reliability of Sinhala translation of PASSwas assessed.

Perinatal Anxiety Screening Scale

PASS is a 31-item validated instrument used to screen for problematic anxiety in antenatal and postpartum women. Each item enquires about the presence of anxiety symptoms andis scored on a Likert scale ranging from 0 (not at all) to 3 (almost always). A total score between 0–20 isconsidered as "asymptomatic", 21–41 as "mild-moderate anxiety symptoms" and 42–93 as "severe anxiety symptoms". An overall score > 26 indicates high risk of presenting with anxiety disorder(10).

Phase-1: Translation of PASS into Sinhala language

Firstly, the English version of PASS was reviewed by a local expert panel to determine its comprehensiveness and appropriateness for local use. This panel consisted ofthree psychiatrists, anobstetrician,three community physicians and two clinical psychologists.Secondly, two independent bi-lingualexperts translated PASS into Sinhala. The two Sinhala versions werecompared by a third bi-lingual expert. Discrepancies werereconciledand the first draft of the Sinhala version was finalized.Thirdly, this was back-translated into English by two other independent bi-lingual translators who were blinded to the English PASS.A sixth bi-lingual translator who was blinded to PASS reviewed and reconciled the discrepancies between the two versions. This final back-translation was assessed by apsychologist and

threepsychiatrists, who gave consensual approval on the preservation of original English meaning of all items of PASS.

This finalSinhala translation ofPASS (PASS-S)was checkedby an expert panelcomprisingthreepsychiatristswho were not involved in the initial translation process forits content, conceptual and semantic validity of PASS-S.

PASS-S was pre-tested among twenty women attendinghospital antenatal clinics(ANCs) and piloted among twenty other women selected from a field ANC to check itssuitability for use in field clinics.

Phase 2: Construct validity of Sinhala translation of PASS

Sample adequacy and suitability for factor analysis was assessed by Kaiser-Meyer-Olkin(KMO) test and Barlett's test, respectively. Principal Component Analysis for factor extraction in Exploratory factor analysis(EFA) andobliquerotation method which was suggested for correlated variables(11)was used.

Confirmatory factor analysis(CFA) was also performed after ensuring that the required assumptions had been met. The LISREL 10.2 software was used for this. Additivity test was used to checkwhether the scale was on an additive scale.Four-factor model was evaluated. The indices used to determinethe model fit included the absolute fit indices,relative fit indices and parsimony fit indices.Absolute fit indices were chi-squared test, root mean squared error of approximation (RMSEA), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and standardized root mean squared residual (SRMR).Relative fit indices werecomparative fit index (CFI) and non-normed fit index (NNFI)while parsimony fit indices were parsimony goodness of fit index (PGFI) and parsimonious normed fit index (PNFI).

RMSEA values of < 0.05 indicate a good fit to data; value between 0.05 and 0.008 are an acceptable fit; value between 0.008 and 0.10, marginal fit; and values of 0.10, a poor fit (12,13)For the CFI and NNFI, values > 0.95(14)indicate a good fit to the data while for GFI and AGFI > 0.90 indicate a good fit (15).

Phase 3: Criterion validityof Sinhala translation of PASS

Validation of PASS-S against the gold standardwas conducted among pregnant women attending ANCsat Colombo South Teaching Hospital, which is a tertiary care hospital in Sri Lanka.As per the expected sensitivity (70%) and specificity (30%)of PASS (10) the calculated sample size was 81 antenatal women with anxiety disorder and 81 women without anxiety disorder.

Pregnant women (≥ 18 years) attending ANCs were recruited using systematic random sampling with a sampling interval of 5.Womenwithhearing difficulty, visual and/orsspeechproblemsorwho were not conversant in Sinhala or unable to give consent due to mental illness were excluded.

Recruited women were assessed by a psychiatristusing International Classification of Diseases-10(ICD-10) criteria. Recruitment was continued until 81 women with anxiety disorder were diagnosed. The total

number recruited was 221. PASS-S was administered as an interviewer administered questionnaireon the same day by two trained nurses.

The finding of the psychiatrist and the nurses were blinded to each other.PASS-S was re-administered to a randomly-selected 20 women 2–3 days after the initial assessmentby the same nurse who administered PASS-S at the first interview. To another randomly-selected 20 women, PASS-S was re-administered 2–3 days after the initial assessmentby a nurse different from the one who administered it at the first interview.

Ethical approval was obtained from the Ethics Review Committee (ERCref.No: 25/27,May2017) of the Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka. Written informed consent was obtained from all participants.

Statistical analysis

EFA and CFA were performed as described above under the Phase-2 of the study. Using the psychiatrist's diagnosis as the gold standard, receiver-operator-characteristics (ROC) curve was graphed for the total scores obtained by the participantsforPASS-S. The optimal cut-off score of PASS-S for detecting anxiety in pregnancy was determined using Youden's index(16).Performance of PASS-Sat this optimal cut-off score against the psychiatrist's diagnosis was assessed using sensitivity, specificity and predictive values.

Internal consistency of PASS-S was measured using Cronbach's alpha. Test-retest reliability and inter-rater reliability of the total PASS-S scores were assessed using intra-class correlation coefficient(ICC) for the total PASS-S score and those of anxiety classification (anxious/not anxious)were assessed using Cohen kappa(k).

Results

All 31 items of PASS were marked as suitable for screening anxiety symptoms inantenatal women by the first expert panel. The psychiatrists and the psychologists who reviewed the final back-translation rated 28 items as the correct translation while the other three items needed minor revisions. The final expert panel confirmed all 31 items in the PASS-S as of appropriate standard to screen for anxiety symptoms of antenatal women in Sri Lanka, of which 30 items were rated as culturally relevant and one item as moderately relevant.

Construct Validity of PASS-S

The KMO test value for sampling adequacy was0.95.Bartlett's test of sphericity was significant ($\chi2$ = 4390.838; df 496; p < 0.01).

As per the four-factor model analysis, the total variance was 58.1(n = 221). An examination of the factor loadings after rotation (Table 1) showed that Factor 1 ("General anxiety, acute anxiety and adjustment

difficulties") accounts for 46.89% of the total variance, Factor 2 ("Social anxiety, excessive worry andspecific fears") accounts for 4.03%, Factor 3("Perfectionism, control andtrauma") accounts for 3.92%, and Factor 4 ("General anxiety") accounts for 3.27%.These four factors' factor loading described the characteristics of 31 variables included in the PASS-S.

Table 1
Factor Structure of PASS-S

Factors	Factor			
	1	2	3	4
1. "Generalized anxiety, acute anxiety and adjustment difficulties"				
25. Losing track of time and can't remember what happened	.775			
27. Anxiety getting in the way of being able to do things	.754			
29. Fear of losing control	.751			
30. Feeling panicky	.744			
28. Racing thoughts making it hard to concentrate	.688			
26. Difficulty adjusting to recent changes	.684			
23. Avoiding things which concern me	.658			
24. Feeling detached like you're watching yourself in a movie	.632			
21. Feeling really uneasy in crowds	.543			
22. Avoiding social activities because I might be nervous	.440			
7. Really strong fears about things, eg needles, blood, birth, pain, etc	.428			
31. Feeling agitated	.413		.-367	
2." Social anxiety, excessive worry & specific fears"				
19. Worry that I will embarrass myself in front of others		.719		
1. Worry about the baby/pregnancy		.611		
4. Worry about many things		.602		
20. Fear that others will judge me negatively		.487		
5. Worry about the future		.407		.301
18. Upset about repeated memories, dreams or nightmares		.421		
3. A sense of dread that something bad is going to happen	.334	.364		
17. Being 'on guard' or needing to watch out for things	.301	.319		
3. "Perfectionism, control & trauma"				
11. Having to do things in a certain way or order			– .587	

Factors	Factor	
12. Wanting things to be perfect	.324	− .560
13. Needing to be in control of things		− .703
14. Difficulty stopping checking or doing things over and over		− .645
15. Feeling jumpy or easily startled		− .596
16. Concerns about repeated thoughts		− .646
4. "Generalized anxiety"		
6. Feeling overwhelmed		.726
10. Difficulty sleeping even when I have the chance to sleep		.534
2. Fear that harm will come to the baby	− .336	.509
9. Repetitive thoughts that are difficult to stop or control		.399
8. Sudden rushes of extreme fear or discomfort		.465

The results of EFA indicated that four factor arrangement in PASS-S (with Eigen values over 1 and suppressing absolute value less than .03) is explaining all the factors included in PASS-S.

Confirmatory Factor Analysis

Fit indices obtained in the CFA indicated that the data fit the hypothesized measurement model well.The four factor model gave Chi squared value(χ2) of 705.57 (df 428; p < 0.001). RMSEA was 0.056 while SRMR,GFI and AGFI were 0.046,0.83 and 0.803 respectively.CFI, NNFI, PGFI and PNFI were0.92,0.919,0.716 and 0.766 respectively. The four-factor model was closer to the good fit indices in each absolute, relative, and parsimony fit indices.

Criterion validity of PASS-S

The mean age ± SD of the recruited antenatal women was 30 ± 5.8 years.Most (74.2%) had completed primary education and 56.1% were multiparous(Table 2). Nearly half (48.9%) were in third trimester of pregnancy, while 36.7% and 14.5% were in second and first trimesters, respectively.

Table 2
Basic characteristics of the antenatal women (n = 221)

Variable	Frequency	Percentage (%)
Age (Years)	30	13.6
18−23	80	36.2
24−29	75	33.9
30−35	36	16.3
36−41	1	0.5
Level of Education	164	74.2
No schooling	56	25.3
Primary	33	14.9
Secondary	118	53.4
Monthly income Level (SLR)	42	19
0-20000	0	0.0
20001−40000	18	8.1
40001−60000	10	4.5
60001−80000		
80001−100000		
100001 and above		
Pregnancy and childbirth status	97	43.9
First pregnancy	94	42.5
Living child 1	23	10.4
Living children 2	6	2.7
Living Children 3	0	0.0
Living Children 4	1	0.5
Living Children 5	32	14.5
Trimester in current pregnancy	31	36.6
Trimester1	108	48.9
Trimester 2		
Trimester 3		

The psychiatrist diagnosed 37.0% of women(n = 81) as having anxiety disorder .Most women with anxiety had generalized anxiety disorder or phobias(Table 3).

Table 3
Severity and domains of anxiety as assessed by gold-standard
(psychiatrist using ICD-10 criteria)

Severity of anxiety	Frequency	Percentage (%)
Mild	47	58.02
Moderate	31	38.27
Severe	03	3.71
Domains of anxiety		
Generalized anxiety disorder	30	37.03
OCD	02	2.46
Phobias(blood and injection)	32	39.5
Social phobia	06	7.4
Specific fear(Child birth)	04	4.93
PTSD	01	1.23
Panic disorder	06	7.4

According to PASS-S scores, 3.7% of the pregnant women(n = 3)had severe anxiety symptoms, while 96.3% of the participants(n = 79) were with mild to moderate anxiety symptoms.

The area under the ROC curve for PASS-S scores was 0.96(95% CI 0.94−0.99) (Fig. 1). The optimal sensitivity and specificity for PASS-S was found at the score of 20. At this cut-off score, thesensitivity was 0.93(95%CI: 0.84−0.97)andthe specificity was0.90(95%CI: 0.83−0.94) (Table 4). The positive and negative predictive values of PASS-S at this cut-off score were 0.85(95%CI: 0.75−0.90)and0.95(95% CI:0.89−0.98), respectively.The likelihood ratios for positive and negative tests were 8.8(95%CI 5.34−14.5)and 0.08(95% CI:0.04−0.18), respectively.

Table 4
Sensitivity and specificity of PASS-S at
different cut-off scores (only the scores
immediately above and below the optimal
cut-off score are shown).

PASS-S Score	Sensitivity	Specificity
12.50	.988	.569
13.50	.988	.613
14.50	.988	.679
15.50	.976	.759
16.50	.976	.810
17.50	.964	.832
18.50	.952	.876
19.50	.929	.898
20.50	.869	.927
21.50	.810	.956
22.50	.738	.956
23.50	.726	.971
24.50	.631	.971
25.50	.619	.978

Cronbach's alpha for internal consistency was 0.95(95% CI0.93-0.96).TheICC for total PASS-S score was 0.85 (95% CI: 0.65–0.96) for test-retest reliabilityand 0.92 (95% CI: 0.81–0.97) for inter-rater reliability.TheCohen's kappa for anxiety classification(anxiety/no anxiety) was 0.77(95%CI0.34-1.2)for test-retest reliability and 0.86(95%CI 0.59–1.1) for inter-rater reliability.

Discussion

The Sinhala translation of PASS produced an acceptable tool to assess anxiety during pregnancy in Sri Lanka. PASS- S had high sensitivity, specificity, and predictive values in a local clinic setting and its test-retest and inter-rater reliability measures were also high.

The standard translation-back translation method that we followedwas similar tohow the translation of PASS was done in Bangladesh(18) and in Turkey (19). PASS-S also showed good content, conceptual

and semantic validity similar tothose inthe saidtwo studies, indicating its appropriateness for use in multicultural settings.

Sampling adequacy for EFAwas excellent (KMO = 0.95) and was similar tothe EnglishPASS validation study (KMO = 0.96(10)). Inter-item correlation was sufficiently large for PCA (Bartlett's test of sphericity, p < 0.00) and was also similar toEnglish PASS. Number of factors identified was 4 which is consistent with the English PASS. However, theitem distribution for the factors slightly varied from the English PASS and Turkish translation of PASS(PASS-TR). In English PASS, factor 1 (acute anxiety and adjustment) had items that addressed symptoms of panic disorder, dissociative disorder and adjustment difficulties, factor 2(generalworryandspecificfears)covered symptomsof general anxiety disorder and phobia, factor 3 (perfectionism, control and trauma) included symptoms of obsessive compulsive disorder and posttraumatic stress disorder, and factor 4 (social anxiety) had questions that included to determine social anxiety. However, in PASS-S, factor direction and titles of factors were altered. Factors 1–4 were reclassified as "Generalized anxiety, acute anxiety and adjustment difficulties", "Social anxiety, excessive worry &specific fears"; "Perfectionism,control&trauma" and "Generalized anxiety", respectively. These changes were essential components of intercultural adaptations, and the factor structure of current study reflects specific classification of anxietyin Sri Lankan context. The factor analysis has shown thatgeneralized and acute anxiety symptoms among antenatal women in Sri Lanka are more prominent(factor loaded under factor 1 of the factor structure) while excessive worry and specific fears are prominent anxieties among participants of the English PASS validation study.

The optimal cut-off point of 20 for PASS-S waslower than the score of 26 for the English PASS(10)but was higher than the score of 16 for PASS-TR (19).It suggeststhat Sri Lankan women's anxiety risk occurs at a lower symptoms threshold compared with their Australian counterparts but at a higher threshold compared with the Turkish(19).Specificity of PASS-S was similar tothat of PASS-TR but higher than the EnglishPASS while the sensitivity of PASS-S was higher than both the English PASS(10)and the PASS-TR(19).One reason for comparable sensitivity with PASS-TR may be due to assessment of criterion validity against thegold standard using the entire sample in both these studies. In the English validation study, criterion validity was assessed only inasub-sample. Thesocio cultural factors that affect participants from different geographical areas differently would also have contributed to the variable perception and reporting of anxiety symptoms by the participants in different studies.The Bangladesh study does not report sensitivity, specificity and the cut off score sincecriterion validity was not assessed in that study(18). When a screening tool has high sensitivity and high specificity, it detects large proportions of true positives and true negatives, and its quality is at an optimum level (20).Furthermore, the accuracy of a screening test depends on its ability to differentiate between those who have and not have the disease and is measured by the area under the ROC curve. PASS-S accurately classified 96% of the women with and without anxiety compared to 93% for PASS-TR(19) and 70% for the English PASS(10). The minimal misclassification when PASS-S was used makes it an ideal tool to be used in settings where the gold standard assessment is not available.

The internal consistency of PASS-S was similar to PASS-TR(19),PASS Bangladesh version (18)and the English PASS (21). The high test-retest ICC for the total score (0.85) and Cohen's kappa(0.77) for anxiety classification indicates that the symptoms measured in PASS-S were stable over time. High test-retest reliability was also seen in the English PASS (Pearson r = 0.74 for the total score(10))and the Bangladesh version of PASS (Pearson r = 0.83 for the total score(18)). Our study is the first to reportinter-interviewer reliability for PASS in any language and showed that this was high for the total score (ICC 0.92) and anxiety classification(Cohen's kappa 0.86). This suggests that PASS-S is suitable for use in clinic settings that often havemultiple interviewers.

PASS-S was administered as an interviewer-administered questionnaireto maximize the response rate and ensure that literacy level of the participants did not influence the responses(22,23). Thetime taken to complete it was 6–8 minutes on average. This was not very different from 2–10 minutes that took to complete the English PASS and PASS-TRwhich wereadministered as self-administered questionnaires(10,14).

The main strength of ourstudy is that PASS-S was validated against the gold standard diagnosis for anxiety.Oursis only the second study to do this, the first being validation ofPASS-TRagainst both Diagnostic and Statistical Manual of Mental Disorders-4th edition (DSM-IV) criteria and ICD-10 criteria (19). Furthermore, the performance of PASS–S compares well with the English PASS and its other translated versions for validity, reliability, and discriminatory ability. One limitation in our study is that our sample represented the urban and semi-urban antenatal women in Sri Lanka. However,as nearly half of the Sri Lankanwomen belong to this category(24)and the perception and expression of anxiety symptoms amongrural women are unlikely to differ significantly from those of urban/semi-urban women, the findings can be applied to all Sinhala-speaking antenatal women in Sri Lanka.

Tools hitherto available in Sri Lanka(25) to assess anxiety werenot specific/suitable to screen anxiety in pregnancy(10). The good validity and reliability of PASS-S makes ita suitable tool to be used in clinical practice and in researchwhich may even be usedroutinely to detect anxiety among antenatal women in Sri Lanka. Studies to assess the feasibility of usingPASS-S as a screening tool to detectanxiety during routine antenatal care is recommended. Validation of PASS in Tamil, the other local language in Sri Lanka, is also recommended.

Conclusion

PASS-S is a valid and a reliable instrument to assess anxiety during pregnancy among Sinhala-speaking women and maybe useful in routine assessment of anxiety in such women.

List Of Abbreviations

PASS;Perinatal Anxiety Screening Scale, PASS-S;Sinhalaversionof Perinatal Anxiety Screening Scale,PASS-TR;Turkish translation of Perinatal Anxiety Screening Scale,ROC;receiver-operator-

characteristics,ERC;Ethics Review Committee ,k-;Cohen kappa,ICC;intra-class correlation coefficient,EFA;Exploratory Factor Analysis,CFA;Confirmatory factor analysis,ANC;antenatalclinics,ICD-10;International Classification of Diseases-10,RMSEA ;Root mean square error of approximation,RMR;Root mean square Residual,GFI;Goodness of fit index ,AGFI;Adjusted goodness-of-fit index ,CFI;Comparative fit index,KMO;Kaiser-Meyer-Olkin,DSM-IV;Diagnostic and Statistical Manual of Mental Disorders,4th edition

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Ethics Review Committee (ERC ref.No: 25/27,May2017) of the Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka. All participants were informed that their participation was voluntary and their identities will be kept strictly confidential. Informed written consent was taken fromall participants who voluntary participated.

Consent to publish

Not applicable.

Availability of data and materials

The datasets used and/or analyzed(those included personal information of antenatal women) during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Funding was available only for data collection of half of the population(100 antenatal women out of two hundred and twenty one women). Data collection of the other 121 women was done voluntarily by the principal investigator. And also funding was not available for data entry, analysis, and interpretation of data and publication of the manuscript.

Authors' contributions

MNP collected and analyzed data, interpreted resultsandwas responsible for manuscript writing. MDIAW conducted Reference test as the psychiatrists' diagnosis of anxiety based on International Classification of Diseases-10 criteria(ICD-10). MDIAW also contributed in data acquisition and writing the discussion.DMSF and BCVS as senior authors contributed in conceptualizing and developing the study, interpreting results and in revising the manuscript. CSEG contributed in implementing the study and

revising the manuscript several times.AB contributed to interpreting results. All authors read and approved the final version of the manuscript.All authors areguarantors of the paper.

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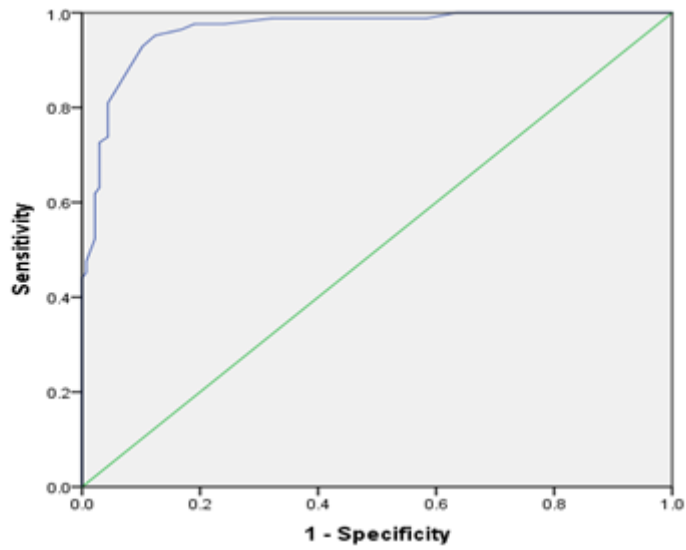
Figures

Figure 1

The receiver operator characteristic curve of the participants

Supplementary Files

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