Published in final edited form as:

Epilepsy Behav. 2013 May ; 27(2): 296–300. doi:10.1016/j.yebeh.2013.01.025.

A Primary Healthcare Screening Tool to Identify Depression and Anxiety Disorders among People with Epilepsy in Zambia

Edward K Mbewe^{*}, Leana R Uys^{**}, Ntombifikile M Nkwanyana^{***}, and Gretchen L Birbeck^{****}

^{*}Chainama College of Health Sciences, Department of Mental Health and Clinical Psychiatry, Lusaka, Zambia, Doctoral candidate UKZN

^{**}University of KwaZulu-Natal Faculty of Health Sciences, School of Nursing and Public Health, Durban, South Africa

^{***}University of KwaZulu-Natal, College of Health Sciences, Department of Public Health Medicine, South Africa

^{****}Chikankata Hospital, Epilepsy Care Team, Mazabuka, Zambia and Michigan State University, International Neurologic and Psychiatric Epidemiology Program, East Lansing, Michigan, USA

Abstract

Among the 50 million people with epilepsy (PWE) worldwide, ~15 to 60% also likely suffer from depression and/or anxiety disorders and 80% reside in low-income regions where these comorbidities are often under-recognised and undertreated. We developed a 10-item screening tool for the detection of depression and anxiety disorders for use in Zambian primary care clinics where the baseline detection rate of depression and/or anxiety disorders among PWE is ~1%. Consenting adults (n=595) completed the screening tool and 53.7% screened positive. The screen was validated by a Psychiatric Clinical Officer using DMS-IV criteria. Cronbach's Alpha was 0.77 overall, and 0.67 and 0.57 for the depression and anxiety components, respectively. Other test characteristics included sensitivity 56.63%, specificity 68.05%, positive predictive value 67.3%, and negative predictive value 57.5%. Interrater reliability (kappa) was 0.85. The psychometric qualities of the tool are inadequate. Development of further, better quality instruments is needed though this will likely require a longer tool which the healthcare workers delivering epilepsy care services have previously deemed non-feasible for routine use. As we work toward development and acceptability of a more optimal instrument, use of this initial screening tool which healthcare workers are willing to use may increase the identification of comorbid depression and anxiety in the low resource setting described in the study.

© 2012 Elsevier Inc. All rights reserved.

Corresponding Author: Edward Kondwelani Mbewe MPH, PHC, BA/Doctoral Candidate, University of KwaZulu-Natal, South Africa, Chainama College of Health Sciences, Box 33991, Lusaka, Zambia, Phone: +260 977 420 775/+260 966 165 274; Fax: +260 211 283824; kondwelanimbewe@yahoo.com.

COMPETITION INTEREST

The authors declare that they have no financial or personal relationship(s) which may have inappropriately influenced them in writing this paper

AUTHORS' CONTRIBUTIONS

E. M. was responsible for study design, reviewing patients' files, collecting and summing up data, and writing the report. L.R.U. was responsible for correction, guidance and overall supervision of this work. NMN provided support for the analysis and advice on study design and G.B. was second supervisor who provided most of the quantitative guidance, support for study design and implementation. All authors reviewed and approved the final manuscript version submitted for publication.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Keywords

Depression; anxiety; ROC; sensitivity; specificity; interrater reliability; Cronbach's Alpha

INTRODUCTION

Among people with epilepsy (PWE), depression and anxiety disorders are common psychiatric comorbidities with a recent population-based study in the United Kingdom indicating that 30.6% of PWE have depression or anxiety disorders.(1) A summary of six population-based studies (2) describe comorbidity data for epilepsy, depression and anxiety disorders with prevalence ranging from 37% to 48%. (3) A Canadian study using data from the national population health survey demonstrated an association between epilepsy and lifetime major depression. "Comorbidity" is defined as a greater than coincidental presence of two disorders in the same person without inferring a causal relation.(2) Several putative mechanisms have been put forth regarding the possible link between depression and epilepsy. (4) Depression not only seriously affects PWE's health-related quality of life (5), but is also potentially life threatening as it contributes to the high suicide rates among PWE compared to the general population (5).

Anxiety disorders are more pronounced among PWE when compared to normal controls as well as people presenting with other chronic diseases (6). Lopez-Gomez and colleagues (7) conducted a cross-sectional survey in all consecutive outpatients with epilepsy who attended the National Institute of Neurology of Mexico between September 2006 and March 2007 and found that 38.8% had symptoms of anxiety. Rai et al. (1) found that general anxiety disorders were the most common anxiety disorder with 12.5% of people with epilepsy reporting this condition. Among Canadians, PWE are more likely to report lifetime anxiety disorders or suicidal thoughts with an odds ratio of 2.4 and 2.2 respectively. (4) Unfortunately, comorbid psychiatric conditions often remain untreated in PWE (8) Timely recognition and treatment of depression and/or anxiety disorders is needed to improve quality of life, decrease suicide risk, and improve health services utilization. Depression is the most prevalent, "under diagnosed and undertreated comorbid condition in epilepsy" (9).

In busy Zambian primary care settings, care is provided by non-physician healthcare workers. These clinical officers (COs) and nurses face many competing demands for their attention. Although primary health care (PHC) workers routinely diagnose and treat depression and anxiety disorders, evidence suggests that PHC workers do not often diagnose or treat these conditions in people seeking epilepsy care services (10). In a prior study (manuscript under review), we demonstrated that only 1% of 200 consecutive PWE receiving epilepsy care services at the PHC level in Zambia were assessed for and/or diagnosed with depression and/or anxiety disorders.

One strategy to improve detection and treatment of comorbid psychiatric conditions among people seeking epilepsy care is to develop and implement the use of valid screening tools.(5) Appropriate, targeted education, can improve service delivery in community psychiatry/ mental health.(11) The aim of this study was to develop and validate a practical screening tool for use by Zambian PHC workers to detect depression and/or anxiety disorders in PWE. The United States Preventive Task Force (USPTF) (12) recognizes several screening tools for depression and anxiety disorders with most depression screening tools demonstrate good sensitivity (80%–90%) and specificity (70%–85%). Consequently, the USPTF (12) argues that "there is little evidence to recommend one screening method over another, so clinicians can choose the method that best fits their personal preference, the patient population served, and the practice setting". Table 1 summarizes some of the available short screening tools in

use elsewhere. Unfortunately, most of these have too many items for rapid use in the busy Zambian PHC setting¹ and three of the four instruments address only depression. If rapidity of delivery were not an issue, the instrument most closely meeting the Zambian need is the Shona Symptom Questionnaire (SSQ) which was developed to elicit indigenous common mental disorders in Zimbabwe. Asking directly about feelings e.g. “have you been depressed?” is not culturally appropriate in many African societies, where words describing feeling states are sometimes totally absent in the indigenous language. The approach followed in the SSQ of describing the feeling state with items such as “find yourself sometimes failing to concentrate” was therefore performs very appropriate in the Zambian population.

Four factors determine whether screening tools for psychiatric comorbidities might improve care (i) availability of skilled human resource (ii) pragmatic, valid screening tools, (iii) the capacity to initiate treatment (iv) and a functional referral system (13). Since the literacy rates in the Zambian population are low, the instrument has to be completed by health workers and therefore has to be short. We also sought a screening tool to identify both anxiety and depressive disorders. In PHC settings in low income countries like Zambia, with an insufficient number of physicians to provide care, there is heavy reliance on COs for primary health care delivery. If a valid, rapid screening tool can be developed and implemented which is appropriate for CO usage in the care of PWE, psychiatric services for PWE services may be improved.

METHODS

Objectives

The objectives were to develop a screening tool; pilot test the tool and adjust as indicated; administer the screening tool to PWE in five urban Zambian clinics, and conduct an item analysis to shorten the tool to the least items possible without unacceptable costs to its sensitivity and specificity. To increase the likelihood that the screening instrument once developed would be incorporated into practice, consultation and discussion with the healthcare workers delivering services in these clinics was undertaken in advance of instrument development. The healthcare workers providing routine epilepsy care services in Zambia with whom we consulted were supportive of the principal of screening for these common psychiatric comorbidities, but indicated that any screening tool designed for routine use would need to be very short. A maximum of ten questions was generally identified as acceptable.

Validation of the shortened screening tool was undertaken through the services of a BSc-trained Psychiatric Clinical Officer (COP) using the Diagnostic and Statistical Manual version four (DSMIV-TR) as a gold standard to assess instrument characteristics. The receiver operator characteristic curve (ROC) was used to determine the cut-off point of the scores on the screening tool and determine the sensitivity, specificity, PPV and NPV. Once a valid instrument in its shortest acceptable form had been developed, the practicality of the tool in terms of the average time it takes for a PHC worker to administer it was assessed and interrater reliability established.

Instrument Development—Through a review of the literature for existing instruments, a 10-item draft culturally relevant screening tool for detecting anxiety disorders and depression which is appropriate for use by the Zambian PHC worker was developed. The

¹Prior qualitative work by our group has identified 10-items as being about the maximum PHC workers consider feasible.

screening tool was designed to be feasible for use within the routine medical review processes by existing PHC workers without additional or more highly trained staff.

Five items were selected from the Shona Symptom Questionnaire, one item and the mode of scoring from the Neurological Disorders Depression Inventory for Epilepsy (NDDI-E) (2), and the two questions from Aroll et al (14). Based upon clinical experience caring for PWE and comorbid depression and anxiety disorders, we also added one item each on heart palpitations and less desire for food. This yielded a 10-item screening tool designed to identify both depression and/or anxiety disorders. Item responses offer a likert-type rating scale with four options: '*all the time*', '*very often*', '*sometimes*', and '*seldom*' (over the past month), with given weights of 4, 3, 2 and 1, respectively. Possible total scores range from lowest 10–40. The tool was designed to be administered to the patient by a PHC worker but self-administration is possible among literate patients. The screening tool was translated into two local languages, Nyanja and Bemba. Two independent translators for each language translated the screening tool and then a third translator back translated to check for discrepancies. This resulted in a single questionnaire for each of the target languages. These 10 items formed the initial draft version of the screening tool. The draft tool was subjected to a pre-pilot evaluation involving 10 PWE who were excluded from the main study. The initial results from this group of 10 assisted in identifying and adjusting for difficulties arising from interpretation of words and construction of questions. The resulting screening tool is presented in Table 2.

Setting—The study was conducted in Zambia in five Lusaka-based PHC clinics. The government of Zambia prioritizes the provision of health services within the community as close to the family as possible. In the Zambian context, PHC includes all services which are regarded as basic in nature that can be offered at health post, health centre, and district hospital levels (14). Health care delivery at the PHC level is mainly through general clinical officers (COG), registered nurses (RN), psychiatric clinical officer (COP), registered mental health nurses (RMN), environmental health technologists (EHT), laboratory assistants, dental technicians, pharmacy dispensers and general physicians. The backbone of primary health care activities is the COG, RN and EHT.

The five clinics combined see between 40 and 60 doctor-diagnosed patients with epilepsy per week or 200 patients per month. According to the Central Statistical Office of Zambia (CSO) estimates of population census 2010, the country's population was 13 million of which 51% were females and 49% males. Lusaka has the largest population of 2,198,996. Lusaka has 34 government health institutions and about 134 registered private clinics and health centres. The district records indicate that combined catchment area population is close to 550,000 among the five clinics of Chainama (32,800) Chipata (133,392), Bauleni (105,000), George (128,000) and Kanyama (145,000).

Sampling—Following guidelines from Shoukri et al (15) the required sample size was estimated to be 595. This was obtained by assuming the null hypothesis value of Kappa (κ_0) to be 0.6 and aiming to detect Kappa (κ_1) of 0.7, at 0.05 level of significance ($\alpha=0.05$) and 80% power, ($1-\beta = 0.8$) and estimating the prevalence of depression and anxiety disorders being 0.3. The sample was selected from among all PWE attending one of the five clinics from January 2011 to August 2011. The eligibility criteria included having a clinical diagnosis of epilepsy for the past six months, registration and attendance at the PHC clinic and aged 18 and above. All eligible consenting PWE were enrolled to participate in the study. A total of 595 consenting adult PWE were enrolled and underwent screening using the proposed instrument and gold standard assessment for validation. For interrater reliability, a different sample of 26 PWE was concurrently seen by two qualified COP in different rooms using the same screening tool.

Data collection—To optimize access to patients with epilepsy, the data collection teams identified the most popular clinic days, which usually depended on local transport, and then attended the clinics accordingly. Furthermore, the researchers worked closely with the local consumer organizations that supported the need for the study. Patients with epilepsy were identified by the admission officer and were then sent to a PHC worker for screening, who also recorded the amount of time required for screening. Screened PWE were then assessed by a BSc-trained COP using a structured evaluation and the DSM-IV-TR (16) as the gold standard or the criterion measure.

The results of the screening tool were compared with that of the gold standard using a Receiver Operator Characteristic Curve (ROC) analysis. COPs were blinded to the results of the screening tool by ensuring that they used a different section of the clinic and providing no access to the scores of the screening tool. The results were compared item by item using a kappa statistic and SPSS. To establish inter-rater reliability of the screening tool, 26 study subjects were screened independently by two PHC workers. A summary of results is displayed in table three.

Ethical aspects

Written informed consent was obtained. This project was approved by the Research Ethics Committee of the University of Kwazulu-Natal, the University of Zambia's Research Ethics Committee, and Michigan State University's Biomedical Internal Review Board.

Analysis—Data were cleaned and reviewed using EPI-INFO version 3.5.1. Due to repeated assessments on return visits, 20 files were excluded from analysis leaving us with a sample 575. MedCalc (17) was used to calculate the ROC curve and to obtain sensitivity, specificity, positive predictive value and negative predictive value. Inter-rater reliability was calculated for each item using kappa in SPSS.

RESULTS

Participants

Of the 595 PWE assessed, 575 PWE met inclusion criteria and participated in the study with 280 (48.7%) being females. Among participants, 309 (53.7%) screened positive for symptoms of anxiety and/or depression. Table 4 details the age and gender associations with screening scores among participants.

Validation of the instrument

Internal consistency of the 10-item screening tool was measured using Cronbach's alpha and was 0.77. This is between acceptable and good. Cronbach's alpha was also calculated for the depression and anxiety and was 0.67 and 0.57, respectively. See Table 5.

Item analysis indicated that total test reliability did not improve when eliminating any of the 10-items from the screening tool so no items were dropped. Using the full 10-item screen in second stage analysis, we constructed an ROC curve to determine the cut-off point between cases and non-cases of depression and/or anxiety disorders to optimize instrument performance. The optimal cut-off point was at 18 (See Figure 1). Thus, all respondents screened with total scores of 18 and above were regarded as cases needing further psychiatric assessment, and all those below 18 as non-cases. Using this cut-off, the screening tool had 56.6% sensitivity, 68.1% specificity, a positive predictive value (PPV) 67.3%, and a negative predictive value (NPV) of 57.5%. The correlation between the sub-scores for anxiety and depression, eliminating one question which would be applicable to both, was 0.42.

The interrater reliability was 0.85 in 26 PWE. It took field workers 2–12 minutes to complete the screening tool with a mean time of 5 minutes in a very busy outpatient clinic. In the majority (85.0%) of cases it took <5 minutes to complete screening tool and calculate the score.

DISCUSSION

The screening tool we developed proved to have some good statistical qualities, such as an internal consistency of 0.77 and an interrater reliability of 0.85. However, the sensitivity and specificity were relatively low and certainly lower than many of the screening instruments presented in Table 1. Compared with the Beck Depression Inventory 11 (BDI-11) and the Center for Epidemiological Study of Depression (CES-D) with a sensitivity of 0.93 and a specificity of 0.81 (18) these values are not good, the (Shona Symptom Questionnaire (SSQ) Satisfactory sensitivity and specificity at cut off point=7/8. In addition, the study had other limitations. Psychiatrists were not available for the administration of the DSM-IV and that the specific classification of the epilepsy of the sampled PWE was not available.

Despite these limitations, the tool represents a feasible first step toward introducing screening for depression and anxiety for people receiving epilepsy care services in Zambia, taking on average five minutes of the time of the health worker to administer. A more optimal instrument is needed but better psychometric qualities will likely result in a longer instrument which the healthcare workers caring for these patients have indicated would not be realistic for incorporation into routine care. The balance is a difficult one. The choice in the PHC service in a resource limited settings might be between using a suboptimal but feasible (i.e. shorter instrument) vs. using nothing, since the demands of a longer instrument makes utilization by busy staff unlikely. Even with its limitations, this instrument has the potential of identifying many people with comorbid depression or anxiety disorders, most of who are currently being missed since only 1% were being screened at all as part of standard care (Mbewe et al, under review). Furthermore, once screening becomes more routine and PHC workers are comfortable with incorporating a limited screening instrument into their daily practice, adaptations of the instrument which lengthen it modestly may be viewed as acceptable.

Another important issue arising from the availability of a feasible screening tool for identifying these psychiatric comorbidities is whether the PHC system in Zambia (or similar settings) are equipped to cope with patients identified through screening interventions. In the case of the five clinics in this study, among the ~100 PWE seen per month, 54 would screen positive for an anxiety disorder or depression. While the screening itself will take only 5 minutes, further evaluation and treatment if indicated of those screening positive will take much more time as well as additional competence from the health workers.(19)

The study had some limitations, which include the fact that psychiatrists were not available for the administration of the DSM 1V-TR and that the specific classification of the epilepsy of the sampled PWE was not available.

CONCLUSION

In a resource limited country like Zambia, the development of a brief screening tool for depression and/or anxiety disorders for use in the PHC settings is welcomed as a realistic way to facilitate diagnosis and treatment of common conditions in a frequently neglected patient population. Our screening tool is designed for rapid delivery to illiterate population, is culturally relevant and easy to interpret in busy PHC settings. The psychometric qualities of the tool are undoubtedly suboptimal. Development of a better quality instruments is

needed. But before this is achieved, this suboptimal which is acceptable to the healthcare workers who must be willing to use it, may increase the identification of comorbid depression and anxiety in the low resource setting described in the study.

Acknowledgments

The project described was supported by Award Numbers R21NS48060 and 1R01NS061693 from the National Institute of Neurological Disorders And Stroke. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Neurological Disorders and Stroke or the National Institutes of Health.

References

1. Rai D, Kerr MP, McManus S, Jordanova V, Lewis G, Brugha TS. Epilepsy and psychiatric comorbidity: a nationally representative population-based study. *Epilepsia*. 2012; 53(6):1095–103. Epub 2012/05/15. [PubMed: 22578079]
2. Lin JJ, Mula M, Hermann BP. Uncovering the neurobehavioural comorbidities of epilepsy over the lifespan. *Lancet*. 2012; 380(9848):1180–92. Epub 2012/10/02. [PubMed: 23021287]
3. Kanner AM, Schachter SC, Barry JJ, Hersdorffer DC, Mula M, Trimble M, et al. Depression and epilepsy: epidemiologic and neurobiologic perspectives that may explain their high comorbid occurrence. *Epilepsy Behav*. 2012; 24(2):156–68. Epub 2012/05/29. [PubMed: 22632406]
4. Tellez-Zenteno JF, Patten SB, Jette N, Williams J, Wiebe S. Psychiatric comorbidity in epilepsy: a population-based analysis. *Epilepsia*. 2007; 48(12):2336–44. Epub 2007/07/31. [PubMed: 17662062]
5. Friedman, ed; Kung, H.; Laowattana, S.; Kass, SJ.; Hrachovy, A.; Levin, SH. Identifying depression in epilepsy in a busy clinical setting is enhanced with systematic screening. *Seizure: the journal of the British Epilepsy Association*. 2009; 18:1059–331.
6. Gaitatzis A, Carroll K, Majeed A, JWS. The epidemiology of the comorbidity of epilepsy in the general population. *Epilepsia*. 2004; 45(12):1613–22. Epub 2004/12/02. [PubMed: 15571520]
7. Lopez-Gomez M, Espinola M, Ramirez-Bermudez J, Martinez-Juarez IE, Sosa AL. Clinical presentation of anxiety among patients with epilepsy. *Neuropsychiatric disease and treatment*. 2008; 4(6):1235–9. Epub 2009/04/02. [PubMed: 19337463]
8. Arroll B, Khin N, Kerse N. Screening for depression in primary care with two verbally asked questions: cross sectional study. *Bmj*. 2003; 327(7424):1144–6. Epub 2003/11/15. [PubMed: 14615341]
9. Kanner AM. Depression and Epilepsy: A new Perspective on Two Closely Related Disorders. *Epilepsy Currents*. 2006; 6(5):141–6. [PubMed: 17260039]
10. Margrove KL, Thapar AK, Mensah SA, Kerr MP. Help-seeking and treatment preferences for depression in epilepsy. *Epilepsy Behav*. 2011; 22(4):740–4. Epub 2011/10/25. [PubMed: 22019016]
11. Sokhela NE, Uys LR. The integration of comprehensive psychiatric/mental health care into the primary health system: diagnosis and treatment. *J Adv Nurs*. 1999; 30(1):229–37. Epub 1999/07/15. [PubMed: 10404000]
12. Force USPST. Screening for depression: recommendations and rationale. *Annals of internal medicine*. 2002; 136(10):760–4. Epub 2002/05/22. [PubMed: 12020145]
13. Kanner AM. Depression in epilepsy: prevalence, clinical semiology, pathogenic mechanisms, and treatment. *Biol Psychiatry*. 2003; 54(3):388–98. [PubMed: 12893113]
14. Mwanza, J.; Sikwese, a; Banda, m; Mayeya, J.; Crick, L.; Bird, P., et al. Zambia Country Report Mental Health and Poverty Project. 2008. Mental Health Policy Development and Implementation In Zambia: A Situation Analysis.
15. Shoukri M, Asyali M, Donner A. Sample size requirements for the design of reliability study: review and new results. *Statistical Methods in Medical REsearch*. 2004; 13:251–71.
16. Diagnostic and Statistical Manual of Mental Disorders. 4. Revised American Psychiatric Association; 2000.

17. MedCalc. 2012. [cited 2012 18 January 2012]; Available from: <http://medcalc.org>
18. Jones JE, Hermann BP, Woodard JL, Barry JJ, Gilliam F, Kanner AM, et al. Screening for major depression in epilepsy with common self-report depression inventories. *Epilepsia*. 2005; 46(5): 731–5. Epub 2005/04/29. [PubMed: 15857440]
19. Cotterman-Hart S. Depression in epilepsy: why aren't we treating? *Epilepsy Behav*. 2010; 19(3): 419–21. Epub 2010/09/21. [PubMed: 20851689]

Highlights

- Anxiety and depression are common, comorbidities among people with epilepsy (PWE).
- Zambian health workers rarely evaluate PWE for psychiatric comorbidities.
- This was development of screening tool for depression/anxiety in PWE.

Figure 1.
ROC Curve for the Screening Tool

Table 1

Short Screening Instruments for Comorbid Conditions

Screening instrument	Screening personnel	Target population	Structure	Gold Standard	Test Characteristics	Limitations
Neurological Disorders Depression Inventory for Epilepsy (NDDI-E) (18) *	Self-administered	Outpatient clinical settings of PWE in Houston, Texas	Six item questionnaire	MINI [international neuropsychiatric interview]	Sensitivity= 0.81 Specificity= 0.90 Positive Predictive value 0.62	Self-reported Suitable for literate populations
Estonia-Questionnaire (EST-Qnew2) (19) *	General Physicians in PHC settings	Urban and Rural clinics of Estonia	Eight item subscale for depression on the 28 total items for EST-Qnew2	CIDI [composite international diagnostic interview]	Sensitivity=0.81 Specificity=0.85 Positive Predictive Value =0.5	Suitable for Estonian environment Subjects were only those able to speak in Estonian language
Shona Symptom Questionnaire, (20) *	PHC workers, researchers	High density areas of Harare	Fourteen item questionnaire that are the strongest predictors of mental disorder	International Classification of Impairment, Disability and Handicap Beta Draft (ICIDH2)	Reliability=test-retest High level of internal consistency - Cronbach's Alpha=0.85 Satisfactory sensitivity and specificity at cut off point=7/8	For indigenous Shona speaking only. When adopted, the instrument may be used by COP, COG and RMN Needs to be adjusted to the Zambian socio-cultural aspect
Beck Depression Inventory for Primary Care (BDI-PC) (21) *	Self administered by patients attending PC health facilities	PHC Clinical settings for medical patients	Seven item questionnaire	Hospital Anxiety Depression Scale, and Mood Module from Primary Care Evaluation of Mental Disorders		Suitable for use in PHC. May be administered by COP, COG and RMN

* references

Table 2Screening Tool ²

Statement	All the time	Very often	Sometimes	Seldom
Over the past one month:				
1. * Are you thinking about too many things or thinking too much?	4	3	2	1
2. Are you feeling depressed?	4	3	2	1
3. * Are you feeling anxious?	4	3	2	1
4. ** Is your sleep disturbed?	4	3	2	1
5. Do you feel it may be better to die?	4	3	2	1
6. Do you get less pleasure from things? Loss of pleasurable feelings	4	3	2	1
7. * Do you have difficulty in concentrating?	4	3	2	1
8. * Have you been experiencing increased heartbeat for the past one month?	4	3	2	1
9. Do you experience less desire for food?	4	3	2	1
10. Do you feel tired for no apparent reason?	4	3	2	1

* Items identify anxiety, while the other items identify depression.

** Item maybe related to both conditions

Table 3

Interrater Reliability

ITEM	Agreement – Kappa	Standard Error	Approx. T	p-value
Thinking too much	.68	.14	3.54	<0.001
Feeling depressed	.84	.10	4.36	<0.001
Feeling depressed	.84	.10	4.36	<0.001
Feeling anxious	.84	.10	4.31	<0.001
Sleep disturbed	.69	.13	3.71	<0.001
Felt its better to die	.67	.14	3.49	<0.001
Difficult in concentration	.65	.18	3.36	0.001
Less pleasure in things	.41	.20	2.10	0.035
Less desire for food	.51	.25	2.62	0.009
Increased Heartbeat	.71	.19	3.59	<0.001
Feeling Tired	.51	.24	2.62	0.009

Table 4

Screening Results by Age and Gender

	Mean score (SD)*	p=value
<u>Gender</u>		0.051
Female (n=280)	18.4 (4.2)	
Male (n=295)	18.2 (3.9)	
<u>Age Categories (years)</u>		0=0.17
18–25	18.1 (3.9)	
26–30	18.9 (4.3)	
31–35	18.7 (4.5)	
36–40	17.9 (4.0)	
41–45	19.7 (3.6)	
46–50	23.5 (2.1)	

*
Standard Deviation

Table 5Item Analysis Using Cronbach's Alpha³

	Mean if Item Deleted	Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation
THINKING TOO MUCH	16.12	13.1	.46	.29
FEELING DEPRESSED	16.34	13.04	.55	.39
FEELING ANXIOUS	16.38	13.37	.48	.29
SLEEP DISTURBED	16.61	13.34	.48	.24
BETTER TO DIE	16.73	13.58	.45	.24
LESS PLEASURE	16.50	13.9	.46	.25
DIFFICULTY CONCENTRATING	16.42	13.7	.49	.26
INCREASED HEART BEAT	16.47	14.23	.36	.17
LESS DESIRE FOR FOOD	16.87	14.55	.3	.12
TIRED	16.53	13.96	.4	.19

³Correlation between depression and anxiety disorder score = 0.42