

Research Methods

Validation of a brief mental health screener for Karen refugees in primary care

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Abstract

Background. Karen refugees from Burma are one of the largest refugee groups currently resettling in the USA. Karen people have endured decades of civil war and human rights violations, leaving them more likely to develop serious mental health disorders. There is a noted lack of brief, culturally validated tools present in primary care settings for detecting posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) in Karen refugees.

Objective. To create the Karen Mental Health Screener, a five-question screening tool used to identify depression and PTSD and to validate it against a clinical reference standard.

Methods. This validation study was conducted during a primary care visit. Participants completed a 20-item questionnaire using a 4-point visual aid and the PTSD and MDD portions of the Structured Clinical Interview for DSM Disorders (SCID-CV for DSM-IV) as the reference standard. Both the questionnaire and the relevant sections of the SCID-IV were rigorously translated and administered by trained researchers along with a trained Karen interpreter.

Results. Logistic regression models and receiver operating characteristic curve analyses were used to determine a subset of items that could be used to construct a screener to identify Karen patients who were most likely to have PTSD and/or MDD. A final five-question screener was created with very strong performance characteristics. With a clinical cut score of 4, these items displayed very strong performance characteristics with sensitivity = 0.96, specificity = 0.97, positive predicted value = 0.83 and negative predicted value = 0.99.

Conclusion. The Karen Mental Health Screener is a valid measure for detecting PTSD and major depression in Karen people from refugee backgrounds presenting in a primary care setting.

Key words. Immigrant health, major depressive disorder, mental health, posttraumatic stress disorder, primary health care, trauma.

Introduction

Karen people from Burma have endured the world's longest ongoing civil war (1). More than 400 000 Karen people are internally displaced in Burma and ~100 000 Karen refugees are living in nine camps on the Thai–Burma border (2). Since 2006, the USA has resettled >75 000 refugees from these camps (3). Karen people have

endured systematic human rights abuses that leave them at increased risk of developing serious psychiatric disorders such as posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) (4,5). Current screening tools for mental health disorders have not been well studied in the Karen population. We sought to validate a brief Karen Mental Health Screener for use in primary care.

Schweitzer *et al.* studied 70 refugees from Burma who resettled in Australia and found that 46% had witnessed or experienced torture (4). Psychological symptoms reported on the Hopkins Symptom Checklist (HSCL-37) included PTSD (9%), anxiety (20%), depression (36%) and somatization symptoms (37%) (6). In our study of 179 newly resettled Karen refugees, 27.4% reported experiencing or witnessing torture and 51.4% reported having friends or family who were tortured. More than 80% reported experiencing some form of war trauma including destruction of homes, forced displacement and injury (7). Torture, older age and female gender were significantly associated with increased total distress (PTSD, depression and somatic complaints).

The lack of brief, culturally appropriate, validated tools for assessing the mental health effects of refugee trauma has been identified by physicians as a barrier to screening the mental health of refugee trauma survivors (8,9). Hollifield and colleagues recently developed the Refugee Health Screener-15 (RHS-15) for use in time-limited settings (10). The RHS is a 15-item inventory developed with Iraqi, Bhutanese and Burmese refugees. Although shorter than the HSCL-37 (11) and other measures of mental health symptoms in use with refugees, it may still be too long for many primary care clinics. In this article, we report the validation of a brief Karen Mental Health Screener, a screening tool for identifying PTSD and MDD in Karen refugees.

Methods

Participants

We enrolled participants from Bethesda Clinic, a University of Minnesota family medicine residency training site in Saint Paul, MN, that serves as a primary care clinic for a sizable number of Karen.

All participants were current patients who were informed about the study during a regularly scheduled appointment. Inclusion criteria were age 18–80, Karen nationality and refugee status. Demographic information is recorded in Table 1.

Measures

Participants completed a brief demographic questionnaire, a 20-item refugee mental health questionnaire and the PTSD and MDD portions of the Structured Clinical Interview (SCID-4-CV) (12) for the Diagnostic and Statistical Manual of Mental Health (DSM-IV) (13). The Refugee Mental Health Screener is a 25-item questionnaire previously developed for use with Karen refugees (7). Twenty of the original translated questions were identified for inclusion in our validation study. Five questions that asked about physical symptoms were not included in this study. English versions of questionnaire items are available as online [Supplementary Data](#). The 20 distress-related items used to develop the screener were scored along a 4-point (0–3) Likert-style scale with the following response options: not at all (or only one time), rarely (once a week), sometimes (two to four times a week) and almost always (five or more times a week).

Table 1. Characteristics of participants attending primary care appointments between 5 March 2014 and 2 May 2014

Sex	
Male	54 (30%)
Female	126 (70%)
Average age	$M = 38.09$ years ($SD = 13.82$)
Number of years in a refugee camp ($n = 177$)	$M = 11.48$ years ($SD = 6.55$)
Years of formal education	$M = 4.82$ years ($SD = 4.46$)

The response scale corresponded to a visual depiction of cups filled to various levels and participants pointed to the cup that represented their rating of the item.

The SCID-4-CV (for DSM-IV) is a clinician's version of the semi-structured interview based on the diagnostic criteria from the DSM-IV (American Psychiatric Association). The SCID-IV is commonly used as the gold standard in clinical trials for diagnosing a variety of mental health disorders including PTSD and MDD. We adapted the portion pertaining to PTSD and Major Depression through rigorous translation, back translation and reconciliation meetings with two trained Karen translators.

A physician with mental health training and a Karen interpreter administered the measures. All research staff received instruction on the measures and response format to ensure that they were uniformly administered. A graduate research assistant with extensive experience in refugee mental health screening provided training in administering these measures to Karen people from refugee backgrounds. During a series of training sessions, the research staff was supervised conducting interviews. Additional ongoing supervision was provided throughout the data collection process.

Procedures

All Karen patients arriving for a primary care visit between 5 March and 2 May 2014 were approached in the waiting room and the study was briefly explained. Both those who agreed to participate in the study and those who declined had their responses entered into the clinic's Electronic Medical Record (EMR). The study protocol and informed consent procedures were approved by the University of Minnesota's Institutional Review Board.

After giving signed, informed consent, the patients were given a plastic card identifying them as a study participant. The patient completed the 20-item refugee questionnaire. Next, the scheduled medical visit was conducted as usual. At its conclusion, clinic staff brought the patient to a separate exam area and there completed the SCID. The patient was given a \$20 gift card for participating in the project.

When a patient met criteria for PTSD and/or MDD, consent was obtained to enter this diagnosis into the EMR, a note was sent to the patient's primary care provider (PCP) and the patient was assisted in making a follow-up appointment with the PCP for further evaluation and/or referral. Participants expressing suicidality were immediately evaluated by the clinic mental health worker and one of the faculty physicians. This pair determined if emergency transfer was required or if further management was needed urgently. During the course of our study, 25 of 180 patients met criteria for PTSD and/or MDD. Two patients were identified as being potentially suicidal and were appropriately treated.

Data analysis

Research Electronic Data Capture (REDCap), developed by Vanderbilt University, is a software application for clinical studies that is web based and provides secure data entry. Data were entered into the REDCap secure database by a research assistant at the clinic. Data entry was checked for accuracy by a second research assistant. Data were accessed online through a secure network and analyzed using IBM SPSS 20.0, a comprehensive data analytics software tool.

Frequency measures were obtained for current psychiatric disorders. Cronbach's alpha was calculated to establish internal consistency of the screener. The goal of further analysis was to develop the shortest possible screener that performed well. It consisted of two phases: (i) preliminary logistic regression, using forward

stepwise selection, to select subsets of items most likely to best predict meeting MDD/PTSD criteria and (ii) final receiver operating characteristic (ROC) curve analysis to test the performance

Table 2. Preliminary logistic regression results of SCID-IV MDD/PTSD diagnosis ($n = 180$)

Screeners item	<i>B</i>	SE <i>B</i>	<i>P</i>	Odds ratio
1. Unable to concentrate/remember	1.152	0.587	0.050	3.166
2. Feel worthless	1.455	0.679	0.032	4.285
3. Losing control/going crazy	2.414	1.666	0.147	11.178
4. Lack family involvement/social problems ^a	38.648	8.62×10^7	1.000	6.09×10^{16}
5. Unable to complete needed daily tasks	1.355	0.700	0.053	3.876
Constant	-5.951	1.339	0.000	0.003
Test				
Model χ^2	113.25, $df = 5$, $P < 0.000$			
Nagelkerke pseudo R^2	0.868			
Cox and Snell pseudo R^2	0.483			

Results from final step for included five items.

^aSee text on issues with logistic regression, separation and subsequent ROC curve analyses.

Table 3. Screener performance characteristics with two suggested cut scores

Cut score (items' sum)	Sensitivity	Specificity	PPV	NPV	% correctly classified
5 (predictive)	0.92	1.00	1.00	0.99	98.89%
4 (clinical)	0.96	0.97	0.83	0.99	96.67%

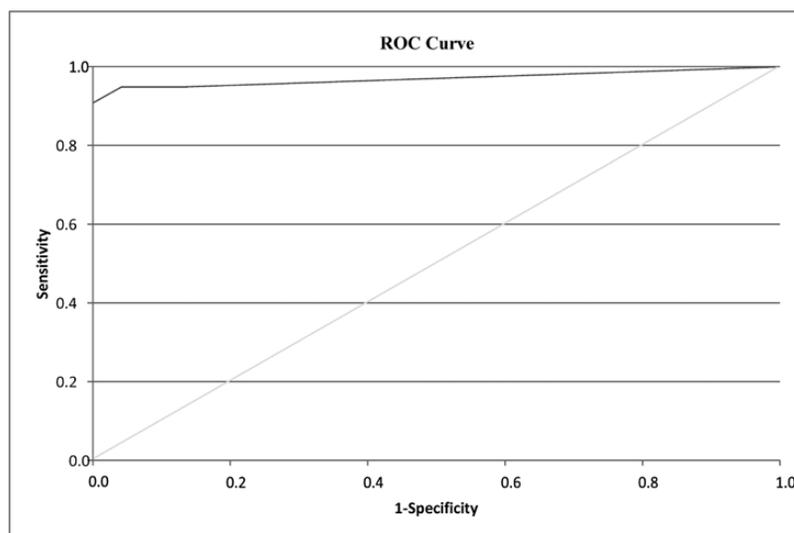
Cut score = 5 minimized total errors (false positives and false negatives) but recommended clinical cut score = 4, very slightly increases total errors but has fewer false negatives. NPV, negative predictive value; PPV, positive predictive value.

of those items, establish the optimal cut scores and provide the commonly understood screening metrics such as sensitivity and specificity.

All 20 screening items were included without any items being presupposed for inclusion. Analysis utilized a forward stepwise selection of items using a likelihood ratio statistic with inclusion criteria of 0.20 to select initial and subsequent items (Table 2), yielding five items for further examination using ROC curve analysis (Table 3). The item concerning social problems had anomalous logistic regression parameter estimates consistent with *separation* in the item's relationship with the outcome. Any level of endorsement of the social problems item was always associated with meeting criteria for MDD or PTSD; coefficients and odds ratios for this predictor will be extremely large as item endorsement is always associated with meeting criteria and never associated with not meeting criteria. The treatment of separation is beyond the scope of this article; however, subsequent testing with the ROC curve analyses as well as further exploratory logistic regressions attempting to examine solutions without the social problems item always decreased the overall prediction and increased diagnostic errors in the subsequent ROC curve analyses. Given the ROC curve analyses are not susceptible to this kind of artefact and in keeping with the use of the measure as a screener, we chose to retain this item in the final screener. Endorsing it at any level was always associated with PTSD or MDD with this sample.

Results

There were 180 participants who completed the protocol and 3 people declined participation in the study. The average participant had been in the refugee camp ($n = 177$) for 11.48 (SD = 6.55) years and had 4.82 (SD = 4.46) years of formal education. The average age of participants was 38.09 (SD = 13.82) years. One hundred twenty-six (70%) of the sample were women; 54 (30%) were men. Utilizing the SCID-IV, 25 (13.9%) of the 180 respondents met criteria for MDD or PTSD. Fourteen (7.8%) met criteria for PTSD; 23 (12.8%) met criteria for MDD. Twelve (6.7%) met criteria for both PTSD and MDD. Twelve of 14 participants who met criteria for PTSD also met



Diagonal lines produced by ties.

Figure 1. ROC curve for Karen Mental Health Screener against SCID diagnoses of PTSD and MDD.

criteria for MDD. Given that a screener is intended to predict general mental health issues for further assessment, they can often predict multiple diagnoses simultaneously as seen here in participants meeting criteria for both PTSD and MDD.

Diagnostic accuracy and recommended cut-off point

Reliabilities for the full measure and the short five-item screeners were good with Cronbach’s alpha’s of 0.95 and 0.83, respectively. Possible score ranges for the five items were from 0 to 15. For clinical use, the use of a ‘clinical’ cut score of 4 was chosen from the ROC curve analysis (Fig. 1) where any score ≥4 (see Fig. 2 for items and scoring protocol) is a positive result for the screener and presumably leads to a referral for a full mental health assessment. ROC curve analysis of the five items with related cut point indicated, with this cut score, very strong performance characteristics: an area under the curve statistic of 0.97, sensitivity = 0.96, specificity = 0.97, positive predicted value = 0.83 and negative predicted value = 0.99 (Table 3). That is, this scoring protocol correctly identified 24 of 25 positive cases, with an additional 5 false positives and 1 false negative.

Discussion

There is a lack of validated, brief screening tools to detect mental health disorders for use in primary care settings with Karen refugees. The development of validated, culturally appropriate questionnaires is necessary to accurately identify patients who suffer from mental health problems, many of whom have been misdiagnosed with another condition such as irritable bowel syndrome, migraine and vertigo (14–16). Our group developed the Karen Mental Health Screener (Fig. 2), a short, five-question screener for use with Karen-speaking patients that predicts MDD and PTSD with high positive and negative predictive value. Further validation will come with repeated use and administration.

The items in this study that best predicted these diagnoses included items that are not typically included on standard measures of PTSD and Depression. In particular, items three, four and five were highly unusual items. Refugee patients often fail to discuss mental health concerns due to stigma associated with being viewed as ‘crazy’ (17). Therefore, it is significant that a fear of losing control or going crazy was endorsed by refugees who were suffering with PTSD and



Introduction Script: Sometimes refugees have emotional difficulties or pain because of the war and living in refugee camps. I want to ask you about some emotions, thoughts and feelings that you might have because of these things you have lived through. In the last month....

လူနာတစ်ဦးမှပွဲ တချို့နဲ့ပဲတုအထက်အံဒ်ဘာအချို့ မှန့ဘာလဲဒီဖျီမှ တမှတကဲထီတုအသးဒီးန့လူနာကိုလူနာအိပ်ဆီးတုမှတမှလူနာကဒီးအပူလူနာမပျံ့ မေးန့က့န့ မတက့ပဲတက့ခီက့န့န့မတမှမဘာခါဒီးန့သ့န့သးမအပူကွဲတလဲအတိပုအံဒ်တခါပဲမါ

	Not at all	Rarely	Sometimes	Almost Always
1. In the past month, have you been unable to concentrate, remember things, or make decisions? (for example, drifting in and out of conversations, losing track of a story on television, forgetting what you read) မှန့အိပ်ဒီးတသးတစွာဆွဲသးလူနာမနီပဲမါတက့ န့တမှသးလူနာဆွဲတတက့တက့ တဘူ ဝခါ Alternative translation: make decisions ဆွဲတလဲလဲတသး	0	1	2	3
2. In the past month, have you felt worthless? မဲအပူကွဲတလဲအတိပု ဝန့တက့တက့သးသးဆဲးတဘျီခါ	0	1	2	3
3. In the past month, have you had a fear of losing control or going crazy? မဲအပူကွဲတလဲအတိပုမှန့ဘာလဲဒီးန့သးလူနာပုလဲကဲန့သးတု န့တမှန့က့န့က့ ဝ အိပ်တဘျီခါ	0	1	2	3
4. In the past month, have you experienced problems because of what happened in the past that kept you from being involved with your family or socializing with your friends? Alternative question stem: Do these problems or the things you experienced in the past make it difficult to spend time with your family and friends? How much does this bother you? မဲအပူကွဲတလဲအတိပု တက့ကဲမဲလူနာဘာလဲဒီဖျီတက့တက့ ဝန့အိပ်တက့န့ န့တက့ ကီဒီအမှတက့လဲလူနာပုပုပုမတမှတက့လဲလူနာဒီးန့တဲသးကဲတက့ ဝခါ	0	1	2	3
5. How much are you unable to do the things that you need to do on a daily basis? (for example, cooking, bathing, taking care of children, going to appointments?) တဲလဲအလဲအိပ်လဲန့ကတဲအံဒ်လဲတန့ဘာအတိပုဒီးန့မဲအိပ်တက့လဲတက့အိပ်ခါ. (အိပ်.....ဖိအိပ်တုအိပ်တဲလဲလဲန့အဲထဲကွဲထဲမိလဲလဲအတိပုန့ဒီးအဲလဲတက့)	0	1	2	3
Total Score (add scores from each column): _____ = _____				

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Figure 2. Karen Mental Health Screener – 5 items.

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Depression. Items four and five concerned patients' ability to perform in social roles and complete daily tasks. For Karen refugees, these symptoms may be better predictors of serious psychiatric distress than items found on more standard Western measures of distress.

This study has several limitations. Validation efforts assume the validity of the diagnosis which is itself established using a 'gold standard', here, the SCID – DSM-IV. From a measurement perspective, the SCID (and other structured interviews) have some built in concerns; for example, the SCID – DSM-IV has not been specifically validated in the Karen population. Since very little is known about the perception of depression and PTSD among Karen people (although there is great effort underway to understand this), ultimately we can only establish that our screener correlates well with the longer SCID – DSM-IV.

For this effort, both the screening interview (the 20-item questionnaire from which the final five-question screener was developed) and the structured interview were completed by the same physician and translator pair. This could introduce a common method bias that could upwardly bias the apparent agreement between the screening items and the diagnoses.

The study was performed at a single location over the span of 7 weeks. The majority of our respondents had lived in one of two different refugee camps in Thailand so it is unknown if Karen patients in other settings will have similar results. Finally, the five-question screener that was developed is specific to Karen refugees and is not meant to be used with other populations.

Given the rate Karen participants met criteria for MDD or PTSD ($n = 25$), reliable prediction of those criteria for screening items should be replicated in a new sample in future research. A larger sample could help resolve the separation artefacts in the logistic regression, particularly important if future researchers have related research questions that primarily rely on logistic regression analytic techniques.

Conclusion

Refugees from all over the world are arriving on our shores; many of them have witnessed or experienced torture and other forms of trauma either in their homeland or in refugee camps. There is a need for culturally appropriate, validated tools to identify mental health problems in these populations. Misdiagnosis of ill-defined symptoms can result in delayed care, unhelpful and inappropriate treatments and unnecessary testing and referrals. Refugees often suffer in silence; research has indicated that often they will not initiate conversations with physicians about mental health due to a cultural deference to authority (17). Physicians need more effective and efficient ways to begin conversations about mental health in the primary care setting and a screening tool for MDD and PTSD can be one such opportunity to discuss this important issue.

We were able to complete our study at a busy, urban residency clinic with minimal interruption to our clinic flow. The result is a short screener with good sensitivity and specificity characteristics as tested against SCID. Our hope is that this will provide help for Karen people from refugee backgrounds in first receiving a diagnosis and then receiving treatment for MDD and PTSD. Additionally, the methods used in the creation of this screener could be employed to develop similar tools for use with other populations.

Supplementary material

Supplementary material is available at *Family Practice* online.

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Declaration

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Conflict of interest: None.

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