

学位論文及び審査結果の要旨

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論文の要旨

Introduction

During the recent decade, people in Asian countries and other countries have gone through several disasters including the 2004 Indian Ocean tsunami, the 2008 Wenchuan earthquake and the 2008 Nargis Cyclone in Myanmar. These disasters caused great suffering, and many efforts have been made to analyze their effects in terms of mortality and disability rates. Many studies of post-disaster psychological adjustment have been conducted during the past few decades. Several studies have reported increased psychological distress among adults after natural disasters. In the past 40 years, PTSD (Posttraumatic Stress Disorder) was the most commonly studied and probably the most frequent psychopathology in the aftermath of disaster.

Several reactions to experiences such as combat and railway accidents have been described since the mid-19th century. These descriptions include two types of characteristic symptoms: dissociative symptoms, in which there is a general disturbance in normal mental functions, such as memory, consciousness, time estimation, sense of reality, identity, and re-experiencing symptoms, in which the traumatic events are vividly relived as though it were happening all over again in the present. Despite this early recognition, posttraumatic stress disorder (PTSD) was only formally defined in the third edition of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders: DSM-III (Washington, DC: American Psychiatric Association, 1980). In DSM-III, the main core 17 items of PTSD were, Diagnostic criteria for Post-Traumatic Stress Disorder (1) recurrent and intrusive, distressing recollections of the event, (2) recurrent distressing dreams of the event (3) sudden acting or feeling as if the traumatic event were recurring (4) intense psychological distress at exposure to events that symbolize or resemble an aspect of the traumatic event, including anniversaries (5) efforts to avoid thoughts or feelings associated with the trauma (6) efforts to avoid activities or situations that arouse recollections of the trauma (7) inability to recall an important aspect of the trauma (8) markedly diminished interest in significant activities (9) feeling of detachment or estrangement from others (10) restricted range of affect (11) sense of foreshortened future (12) difficulty falling or staying asleep (13) irritability or outbursts of anger (14) difficulty concentrating (15) hyper vigilance (16) exaggerated startle response and (17) physiological activity upon exposure to events that symbolize or resemble an aspect of the traumatic event.

The definition was defined in the Diagnostic and Statistical manual of Mental Disorders: DSM-III-R published in 1987, which introduced more symptoms and required at least one reexperiencing symptom (e.g., intrusive memories or nightmares), three avoidance or numbing symptoms (e.g., avoidance of reminders of the traumatic events or loss of interest in activities), and two hyperarousal symptoms (e.g., exaggerated startle or irritability). Diagnostic and Statistical manual of Mental Disorders: DSM-IV, introduced in 1994, retained a similar structure. This formulation placed more emphasis on 'episodes of repeated reliving of the trauma in intrusive memories ('flashbacks') or dreams' and also identified avoidance, numbing, and hyper-arousal as central features.

This study was based on DSM-IV's symptoms. Posttraumatic stress disorder (PTSD) is a chronic and disabling disorder, characterized by specific symptoms that develop after exposure to trauma to which an individual responds with intense fear, helplessness, or horror (DSM-IV). On the basis of the diagnostic criteria of the DSM-IV, PTSD is an anxiety disorder that follows a traumatic event (Criterion A). It is characterized by recurrent re-experiencing of the traumatic event (Criterion B), constant avoidance of trauma-related stimuli and emotional numbing (Criterion C), and persistent symptoms of hyper-arousal (Criterion D). In addition, symptoms must be prevalent for at least 1 month (Criterion E) and lead to impaired functioning in at least one important life domain (Criterion F). The core symptoms of PTSD are reexperiencing the event (B), stimuli avoidance (C), and persistent symptoms of increasing arousal (D). In order to be diagnosed with PTSD according to DSM-IV, a person needs to meet Criteria A, required at least one reexperiencing symptom (B), three avoidance or numbing symptoms (C), and two hyperarousal symptoms (D) and Criterion E and F. Our survey was conducted based on DSM-IV.

Over the past 20 years, there has been growing interest in developing tools for the assessment of posttraumatic stress symptoms. One of the most widely used self-report instruments for the assessment of PTSD symptoms is the Impact of Event Scale (IES) and its revised version, the Impact of Event Scale-Revised (IES-R). In 1979, Mardi Horowitz, Nancy Wilner, & William Alvarez developed the IES, a 15-item self-report measure used to assess the frequency of 2 symptoms (7 intrusion items and 8 avoidance items) associated with the experience of a traumatic event. The original IES did not contain symptoms of arousal. In 1997, Daniel S. Weiss and Charles R. Marmar added 7 items for hyperarousal symptoms - a revised version of the IES. Thus, it consists of 22 items. The original IES evaluates the frequency of symptoms within the previous week on a 4-point scale (0, 1, 3 and 5), whereas the IES-R evaluates the severity of symptoms experienced during the previous week on a 5-point scale ranging from 0 (not at all) to 4 (extremely). The IES-R yields total scores that range from 0 to 88. The sum of all individual scores was taken to indicate the severity of the psychological reactions to the previous stress. Structured diagnostic interviews play an increasingly role in contemporary mental health research and practice. A number of structured interviews are now available for diagnosing PTSD. We also conducted GHQ-12 items to find psychological distress. The correlation between GHQ-12 and IES-R as a concurrent validity measure of IES-R-M.

The objectives of this study were to get a validation of a Myanmar version of the Impact of Event Scale-Revised (IES-R) in survivors after disaster by using a clear cutoff point for PTSD (Post Traumatic Stress Disorder) of IES-R-M. The Myanmar-language version of the IES-R (IES-R-M) is in accordance with the English version in items, subscales, and the scoring method. And then to find the prevalence and risk factors of PTSD symptoms among survivors after Cyclone, Nargis in Myanmar.

Methodology

This survey was performed from February 25, 2013 to March 25, 2013, 4 years and 9 months after Cyclone, Nargis in Myanmar. This study was a cross-sectional study. After getting the permission (No.483/sama-1/1(2013) from MRCS (Myanmar Red Cross Society), our group (2 Psychiatrists - Dr. Zaw Sein Lwin, Dr. San San Oo and I) joined with 4 members of Bogale township's center of MRCS. Dr. Zaw Sein Lwin made a plan and management for our survey program. Dr. San San Oo, Junior Consultant/Psychiatrist and I carried out face-to-face interviews with survivors at the same time. The questionnaire has 4 parts as demographic data, IES-R-M, GHQ-12 and CAPS-1. We marked parallel for

IES-R-M scores to get inter-rater reliability of the scale. The rest of the questionnaires' parts were asked separately. It took approximately 45 minutes per person. Thus, we got a completed answer one set and extra one set of IES-R-M score for each participant. A total of 112 people in Bogale Township over the age of 20 both male and female were recruited into this study. All were direct victims of cyclone, Nargis. We excluded those diagnosed as psychotic and more than one person from the same family. Participants are recruited randomly at Myanmar Red Cross Society's sub-units by MRCS staff and local community leaders. We got completed answers from 100 participants out of 112. So, a survey response rate was 89.30%. Myanmar is the largest country in main land South-East Asia. The Cyclone, Nargis that struck Myanmar on May 2nd, 2008 left an estimated death toll of 84,537 and 53,836 people missing (Swiss Re(2009), 2-Sigma). There were 5 villages (1) Kyein Chaung Gyi (2) Bingalar (3) Western La Wine (4) Kan Kone and (5) Lake Gabar in Bogale Township, which was the most affected by Cyclone Nargis affected area, Bogale Township, Irrawaddy Division, Myanmar. Cyclone Nargis struck Myanmar, making landfall in the Irrawaddy Division and Yangon Division. 37 townships were significantly affected by the cyclone. Overall, an estimated 3.2 million people were affected by Cyclone, Nargis (www.jhsph.edu/research/centers-and-institutes). We were making random sampling among victims of cyclone in accordance with the information of population and families from Township Municipal database of Bogale Township. This study will be done according to ethical guide line of Myanmar Red Cross Society. After obtaining permission from the original author, Professor Daniel S. Weiss of the translated version, we established the final IES-R-M on June 12, 2012. The comparability of IES-R-M and the original IES-R has been validated by stringent back-translation procedures. CAPS is a wide used structured interview for assessing PTSD. According to a review of 10 years of research, CAPS has excellent reliability, giving consistent scores across items, raters, and testing occasions. It has good convergent and discriminate validity and sensitivity to clinical change. For this study, an empirically derived rule total severity (frequency+ intensity) ≥ 65 (by Weathers et al., 1998) for making a diagnosis of PTSD was adopted.

Data analysis was performed using the SPSS version 20 for Windows. Descriptive statistics, including means, counts and percentages for the variables were calculated. Demographic data were compared in correlation and Chi squared tests to determine the impact of the theoretically possible independent variables in predicting PTSD. Fisher's exact test was used when the expected count of one or more cells was less than five. The discriminative values Sensitivity, Specificity, Positive Predictive Accuracy, Negative Predictive Accuracy and Overall Accuracy were calculated according to the standard formulae. We calculated kappa coefficients that reflects the accuracy of the test. We analyzed a receiver operating characteristic (ROC) curve and Youden Index (J) to obtain the optimal cutoff score for detecting PTSD in all subjects. To assess the reliability of the questionnaire, internal consistency (Cronbach's alpha coefficients) and inter-raters were calculated for IES-R-M. To assess the convergent validity was determined by inter item correlation for IES-R-M. Pearson's correlated was calculated between IES-R-M and GHQ-12 to assess concurrent validity. Significance level was interpreted at the $p < .05$ level for this study.

Findings

In this study, we found that the IES-R-M as an instrument for evaluation of mental disorder associated with exposure to natural disaster. Pearson's correlations of subscales score are high and give good validity ranging from 0.93 to 0.94. The high Cronbach's alpha values for all subscales as well as the total scale indicate very good internal consistency ranging from 0.95 to 0.98. Although test-retest data were not available, inter-raters reliability of IES-R was $r = 0.97$, $p < 0.001$. The correlation between the IES-R-M and CAPS-1 (gold standard) of 17 items ($r = 0.93$, $P < 0.001$) was also high. The optimal cut-off point for IES-R-M in this study, when detecting PTSD, was determined to be 33, which give both good sensitivity 0.86 and specificity 0.98 with positive predictive accuracy 0.95, negative predictive accuracy 0.96, overall accuracy 0.96 and kappa 0.88. The area under the ROC curve of IES-R-M was 0.98 (95% confidence interval = 0.95 to 1.00) with standard deviation 0.01 with Optimal cut off point J was 0.84 by the theory of Youden Index. In accordance with the result of cut off point of IES-R-M was 33, 20 people (15% male and 25% female) were suffered from PTSD out of 100 participants. There were 25 risk factors of demographic,

stressful events and recovery conditions, only lower education ($X^2 = 7.16$, $df = 1$, $p < 0.05$), bad satisfaction of current job ($X^2 = 9.38$, $df = 1$, $p < 0.01$), having loss family ($X^2 = 9.25$, $df = 1$, $P < 0.01$) and worried about rebuild of house ($X^2 = 4.17$, $df = 1$, $P < 0.05$) were significant with having PTSD. We also found out the relationship between IES-R-M and GHQ-12 in our survey to get concurrent validity of IES-R Myanmar version. The result of Person's correlation between IES-R-M and GHQ-12 was $r = 0.87$, $P < .01$. Average score of GHQ-12 was 19.77 and SD 8.51 from the score 3 range to 36.

Conclusions

Several limitations have been encountered during the entire process of the study. Firstly, Myanmar version of IES-R was only administered on a single occasion in this study, so we were unable to examine other potentially important psychometric properties. The pre-disaster mental health situation of this area was not known. We were only able to obtain a follow up analysis between 2008 to 2013. Our data demonstrate that the IES-R-M was a reliable measure with good psychometric properties and can be used as a reliable, valid, and timesaving tool to assess PTSD. There are some strengths and limitations of IES-R-M like its original English version. The main strengths of this version are that is still short, easily administered and scored, correlates better with the DSM-IV, and can be used repeatedly to assess progress but it still is limited by remaining a screening tool rather than a comprehensive test. Although the IES-R-M was not developed as a diagnostic tool, examination of its discriminative validity suggests that the measure can differentiate between individuals with and without PTSD. The data collected in the present may serve as a baseline for comparison with clinical samples of future studies for Myanmar population. The findings of the present study will help other researchers to design prospective studies examining the long-term public health impact of disasters in these communities. This will help build a knowledge base psychological consequences of disasters and to prepare for pre-disaster mental health planning.

審査結果の要旨

本論文は、精神障害の一つである心的外傷後ストレス障害、すなわち PTSD (Post Traumatic Stress Disorder) を測定するミャンマー語による尺度を開発し、その妥当性と信頼性を検証している。

ミャンマー連邦共和国（以下、ミャンマー）は、2008 年 5 月に発生したサイクロン・ナルギスによって、死者数が 13 万 8 千人を超える甚大な被害を受け、PTSD に陥った被災者が多数見られた。しかしながら、現段階ではミャンマー人向けに PTSD 発症の有無やその程度を測定するための尺度開発がなされていないという問題がある。こうしたことから、本論文はミャンマー人の PTSD を測定するために、ミャンマー版 PTSD の尺度開発を行うことを目的としている。

Chapter 1 は、PTSD 症状の定義の変遷と PTSD の測定方法について説明している。PTSD 症状については、アメリカ精神医学会が出版している「精神障害の診断と統計マニュアル(DSM)」で定義されている。改定版が何度も出版されており、本論文では調査時点で最新版であった DSM-IV を対象としている。PTSD 症状の測定方法については自記式質問紙法と精神科医らが用いる構造化面接法があるが、それぞれ多数の尺度が提案されており、自記式質問紙法では Impact of Event Scale-Revised (IES-R)が、構造化面接法では Clinician Administered PTSD (CAPS)が代表的であることを説明している。本論文では、ミャンマー版 IES-R を作成し、その尺度による測定値から被験者が PTSD 発症者であるか否かを判断するカットオフ基準を、CAPS-1 による測定結果との比較から決定することを説明している。Chapter 2 では災害、事故、戦争などによる被災者への精神的影響を分析した先行研究のレビューを行っている。Chapter 3 では本論文が行った調査について説明している。調査は、サイクロン・ナルギスがミャンマーを襲った時点から 4 年 9 カ月が経過した 2013 年 2 月 25 日～3 月 25 日に、被害の大きかったボガレー地域に住む被災者を対象としてミャンマー赤十字社の協力のもと実施している。構造化面接法を採用し、ミャンマー版 IES-R、CAPS-1、デモグラフィックスなどを測定している。CAPS-1 による測定値から PTSD 発症の有無を判定する

基準には、頻度と強さの合計点を用いる既存のルールを採用している

ミャンマー版 IES-R の開発については、IES-R の開発者である米国の Daniel S. Weiss 教授からミャンマー版 IES-R を作成する許可を得た後に、翻訳作業を開始している。英語版 IES-R をミャンマー人の精神科医がミャンマー語に翻訳し、そしてそれをミャンマー人の英文科主任大学教授が英語に翻訳し直すというバック・トランスレーションを実施し、英語版 IES-R とミャンマー版 IES-R の意味内容が等価になるよう翻訳を繰り返す作業を行っている。そして、ヤンゴン地区に住む 10 名の被災者に対してこの尺度を用いた調査を行い、尺度の妥当性を検証している。

収集したデータを分析した結果、ミャンマー版 IES-R の内部一貫性、項目－合計相関、下位尺度間の相関関係が十分に高い水準にあることを確認している。IES-R のカットオフ基準は、カットオフ基準を変化させながら CAPS-1 による結果との一致・不一致度を基に計算している。その結果、33 点が IES-R のスコアの最適なカットオフ基準であることを発見している。続いて、カットオフ基準を 33 点に設定して被験者の IES-R の測定値を分析した結果、20%が PTSD 発症者と判定している。

Chapter 4 では、PTSD 発症者とデモグラフィックス特性との関係を分析し、教育水準が低い、現在の仕事への満足度が低い、家族を失っている、および家の建て直しについて不安を抱えている被験者が PTSD を発症している傾向にあることを明らかにしている。Chapter 5 では、ミャンマー版 IES-R のカットオフ基準の妥当性について議論している。Chapter 6 では、本論文で開発したミャンマー版 IES-R の長所・短所について説明し、本論文で収集したデータが今後、ミャンマーで実施される臨床サンプルに対する研究において比較のためのベースラインとして活用できることや災害の長期的影響を調べる研究にも有用であると結論づけている。

本論文は、PTSD 発症者であるかどうかを測定する既に確立した英語版尺度の翻訳版を開発しているものの、この尺度はミャンマーにおける今後の PTSD 測定研究の基点を成すものであり、先駆的研究と位置付けることができる。翻訳版は専門家の協力を得て信頼性と妥当性の高い手続きによって作成されており、尺度の完成度は高いと評価される。この尺度の開発とミャンマー人向けの明確なカットオフ基準を提案したことにより、精神科医でなくても比較的容易に PTSD 発症者であるかどうか、あるいは PTSD の程度を測定することが可能となり、その有用性と実用性は高く期待される。以上のことから、審査委員一同は本論文が本研究科の審査基準③により博士（学術）の学位に値する優れた論文であると判断するものである。

注 論文及び審査結果の要旨欄に不足が生じる場合には、同欄の様式に準じ裏面又は別紙によること。