ORIGINAL ARTICLE

Translation and Validation of the Malay Posttraumatic Stress Disorder Checklist for DSM-5 (MPLC-5)

Rafidah Bahari[1], Muhammad Najib Mohd Alwi[1] and Muhammad Radhi Ahmad[2]

[1] Department of Psychiatry, Faculty of Medicine, Cyberjaya University College of Medical Sciences, Persiaran Bestari, Cyber 11, 63000 Cyberjaya, Malaysia
[2] Department of Orthopaedics, Faculty of Medicine, Cyberjaya University College of Medical Sciences, Persiaran Bestari, Cyber 11, 63000 Cyberjaya, Malaysia

ABSTRACT

Introduction: Posttraumatic stress disorder (PTSD) commonly occur following exposure to traumatic events. Since its formal introduction into the Diagnostic and Statistical Manual of Mental Disorders 3rd Edition (DSM-III) in 1980, it has seen a few changes to its criteria. Currently in DSM-5, major changes was made and tools such as the PTSD Checklist for DSM-5 (PCL-5) were developed to reflect those changes. Tools to screen and diagnose PTSD is invaluable to properly manage the condition, but to date no measure, in keeping with the DSM-5, has been produced for the Malaysian population. The objective was to translate the PCL-5 into Malay and validate it for use in the Malaysian population. **Methods:** The PCL-5 was translated according to guidelines. A convenient sample of subject were recruited from those attending the Orthopaedic Ward and Outpatient Departments due to injuries from motor vehicle accidents (MVA). Subjects completed the Malay PCL-5 (MPCL-5) on the day of recruitment and were then interviewed using the Clinician Administered PTSD Scale for DSM-5 (CAPS-5). Two weeks later they were followed-up to again complete the MPCL-5. **Results:** 204 subjects participated in the study. The MPCL-5 was found to have good face, content and construct validity. It also demonstrated strong internal consistency (Cronbach's Alpha = .89) and inter-rater reliability (r = .81). **Conclusion:** The MPCL-5 is a valid and reliable measure for PTSD to be used in the Malaysian population.

Keywords: PTSD, validity, reliability, questionnaire, screening

Corresponding Author:
Rafidah Bahari, PhD
Email: rafidahbahari@cybermed.edu.my
Tel: +603-83137000

INTRODUCTION

Posttraumatic stress disorder (PTSD) is a mental health condition frequently developed following exposure to traumatic events. Initially described in war veterans, the condition was later found in survivors of natural and man-made disasters, motor vehicle accidents and victims of physical and sexual assaults (1). As a diagnosis, PTSD made its debut in 1980 as a recognised medical condition when it appeared in the 3rd Edition of Diagnostic and Statistical Manual of Mental Disorders (DSM III) (2). Since then, the DSM experienced a few more revisions and in the current version, the DSM 5, some changes had been made in the criteria for PTSD.

In the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5), PTSD is reclassified into a new group of disorders called "Trauma and Stressor Related Disorders" (3). Its symptom clusters were also expanded into four, by splitting avoidance symptom cluster into "persistent avoidance symptoms" and "negative alterations in cognition and mood symptoms" clusters. Another major change for PTSD in DSM-5 is the introduction of three new symptoms for the criteria, namely "persistent and distorted blame of self or others", "persistent negative emotional state" and "reckless or self-destructive behaviour".

In keeping with the recent developments, researchers have begun to either revise established PTSD questionnaires or develop new ones in line with the new diagnostic criteria. One tool that had been revised in the Posttraumatic Stress Disorder Checklist (PCL). The PCL is a 17-item self-report questionnaire developed based on the 17 symptoms of PTSD in the DSM-IV (4). It is one of the most commonly used tool to diagnose PTSD belonging to the Center for Traumatic Stress, United States of America's Veteran Affairs Department (5). The first studies on psychometric properties of the PTSD Checklist for DSM-5 (PCL-5) was published in 2015 and more soon followed (6,7). With these publications, the validity and reliability of this new measure is starting to be recognised.

In Malaysia, there had recently been growing interest in identifying and treating this condition. As to any

condition, the key to successful management is the proper identification of the disorder. The gold standard to diagnose PTSD is a structured clinical interview, such as the Clinician Administered PTSD Scale for DSM-5 (CAPS-5). However, its implementation in busy hospital setting with little or minimal mental health professionals is almost impossible. Hence, in most clinical setting, a brief, self-report measure is preferable, and one such tool is the PCL-5. Despite the existence of several methods of screening PTSD in accordance to DSM-5, none has yet been validated for use in the Malay speaking population. As the official language of Malaysia, there is a need to translate a PTSD measure into Malay. Hence, the objective of this study is to translate a chosen PTSD questionnaire, the PCL-5 into Malay and validate it for use in the Malaysian population.

METHODS

This prospective observational study was conducted from March 2017 to February 2018. It involved subjects filling in self-report questionnaires and attending an interview by a trained researcher. The processes will be described further in the following paragraphs.

Study sample

The study was conducted in Hospital Serdang, a large government hospital in the suburban area at the fringe of Klang Valley. The hospital is frequented by patients from all races and all walks of life. Subjects were recruited from those admitted to Orthopaedic Ward and those attending Outpatients Clinic for injuries related to motor vehicle accidents (MVA). The inclusion criteria were adults (aged 18 and above), Malaysian citizens, either in-patient or out-patient of the Orthopaedic Department and attended due to MVA related injuries. Subjects who had significant head injury from the MVA, suffered from major cognitive impairment prior to the MVA and those unable to understand Malay language were excluded from the study. Once identified from out-patient registration and in-patient attendance list, subjects who fulfilled the inclusion and exclusion criteria were approached for consent to participate in the study. Convenience sampling method was used to recruit subjects into the study.

Sample size calculation

Sample size for validity and reliability can be calculated using a number of ways. According to Nunnally and Bernstein, reliability of a measure is directly related to its number of items (8). The most frequently used method is to multiple the number of items in the questionnaire with a number from three to ten, or to use a minimum of 50 subjects (9). In this study, since the number of items is 20, we took a middle number of 5 as the multiplier, making the sample size as 100. However, from experience in previous validation study, there may be a large drop out that will invalidate the test-retest reliability and hence we increased the size by 70%. The final sample size calculated for this study was 170.

Study instrument

The PTSD Checklist for DSM-5 (PCL-5) is a validated self-report questionnaire consisting of 20 items which reflects the newly revised DSM-5. It can be used for screening, diagnosis and monitoring treatment response (10). It is a fairly quick and easy tool to use, which is ideal in busy hospital departments such as the Accident and Emergency. Recent studies demonstrated that the PCL-5 is a psychometrically sound instrument with good internal consistency (Cronbach's alpha = .96) and test-retest reliability (r=.84) as well as decent convergent and discriminant validity (6). As mentioned before, the gold standard for diagnosing PTSD is CAPS-5, hence it was also used as comparison to the MPCL-5. The researcher who conducted the interview completed the online training module for administrators of CAPS-5 provided by the Center for Traumatic Stress, US Veteran Affairs Department.

Translation of the PCL-5

Translation of the PCL-5 was done according to the guideline (11). The process stated that the measure was to be translated into the target language (in this case Malay), and then sending this first draft to two content experts fluent in English to be back-translated. The original version was amended accordingly, and then the second draft was reviewed by a team of content experts whose mother tongue are Malay. Several discussions then ensued between the content experts and back-translators and at the end of the process, the final version of the Malay PCL-5 (MPCL-5) was produced.

Prior to validation in a clinical setting, the MPCL-5 was sent for review by a small group of content experts. This is to ensure that the content of the MPCL-5 does not become inconsistent with the DSM-5 criteria for PTSD. When that was satisfied, the MPCL-5 was ready to be validated.

Procedures

Subjects attending the Orthopaedic Out-patient clinic were identified from the registration list, while in-patients were identified from the ward list. Those who fulfilled the inclusion and exclusion criteria were approached to gain consent to participate in the study. Subjects recruited into the study were first asked to complete a data collection form for their particulars and also the attached MPCL-5. This were done without the aid of any researcher. Subjects were then interviewed by a single researcher who underwent training for administration of CAPS-5. To avoid bias, the interviewer was blinded to the results of the MPCL-5. After two weeks, subjects were then contacted on the phone and completed the questionnaires through the telephone.

Analysis

Validity refers to how well an instrument measures

what it sets out to measure (12). It is generally accepted that there are three types of validity; construct validity, predictive validity and content validity. Reliability on the other hand is how well an instrument produces consistent and stable results (13). There are a number of ways that reliability can be ascertained; by looking at the internal consistency, test-retest reliability and inter-rater reliability (14). In this cross sectional study, validity was determined by ascertaining its content (and face) validity, as well as factorial analysis and convergent validity to look at the construct validity. In terms of reliability, two types of reliability was sought for; internal consistency and test-retest reliability. Analysis were done using IBM SPSS 25.

RESULTS

At the end of the study, 204 subjects participated (Table 1). The vast majority was male, belonged to the Malay ethnic background and single. In terms of education, most completed their higher secondary education and worked in managerial, technical and skilled type occupations.

Table I: Subjects' characteristics

		N	(%)	Mean (SD)
Age		204		27 (9.6671)
Gender	Male	175	(85.8)	
Race	Malay	167	(81.9)	
	Chinese	6	(2.9)	
	Indians	28	(13.7)	
	Others	3	(1.5)	
Marital status	Married	86	(42.2)	
	Single	115	(56.4)	
	Others (Divorced)	3	(1.5)	
Occupation	Professionals	14	(6.9)	
	Managerial and technical occupations	57	(28.1)	
	Skilled occupations – non-manual	63	(31.0)	
	Skilled occupations –manual	17	(8.4)	
	Partly skilled occupations	2	(1.0)	
	Unskilled occupations	16	(7.9)	
	Student	27	(13.3)	
	Unemployed	27	(13.3)	
Education	Postgraduate	8	(3.9)	
	Undergraduate	13	(6.4)	
	Diploma/ Skill certificate	53	(26.0)	
	Higher secondary school (STPM/ SPM)	101	(49.5)	
	Lower secondary school (SRP/PMR)	12	(5.9)	
	Primary school	17	(8.3)	

Comparison between MPCL-5 and CAPS-5

The frequency of PTSD diagnosis made using the two instruments were slightly different. It is found that the diagnosis of PTSD is made in approximately 18% (n=37) of the sample when using the MPCL-5 than only about 8% (n=16) when using CAPS-5.

Validity

Face and content validity

Two types of validity was ascertained in order to determine the validity of this measure. In the first instance, face and content validity were determined through the process of reviewing the translated measure. This was done in the translation stage, as described above. The content experts were satisfied that the meaning of the translated measure is largely intact.

Construct validity: convergent and divergent validity

There are two major ways to establish the construct validity. One way is to apply the measure alongside another well-established tool in the same sample for comparison. If the tool being studied is supposed to measure the same entity as the well-established tool, then their correlation is called convergent validity. If the opposite, then the correlation between the two would be divergent validity. In this study, MPCL-5 and CAPS-5 are used to measure the same thing, PTSD symptoms, thus necessitating the use of convergent validity. We found a strong positive relationship between MPCL-5 and CAPS-5 with a correlation coefficient of .67 ($p<0.0001$) (Table II) and (Figure 1).

Table II: Correlation between CAPS-5 and MPCL-5

		MPCL-5
CAPS-5	Pearson Correlation	.668**
	Sig. (2-tailed)	.000
	N	204

**. Correlation is significant at the 0.01 level (2-tailed).

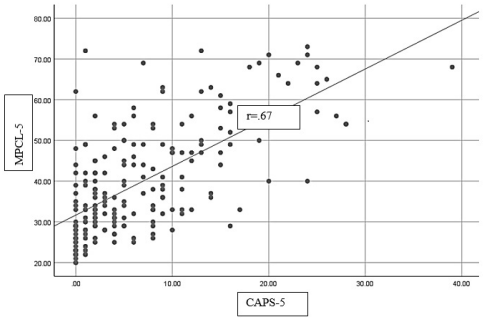

Figure 1: Convergent validity between MPCL-5 and CAPS-5. Convergent validity is a subtype of construct validity. They are used to compare similar tools, and constructs that should be related to each other should show good agreement or "convergence". A strong convergent validity was found (r=.67) in this study which verified that MPCL-5 and CAPS-5 were measuring the same thing, which is the presence of PTSD. This correlation was highly significant ($p<0.0001$).

Construct validity: factorial analysis

More recently, researchers have been favouring the use of exploratory factor analysis to determine the construct validity. Prior to that, it is necessary to first determine whether the sample size is appropriate for this type of analysis using the Keiser-Meyer-Olkin (KMO) measure of sampling adequacy. An adequate sample must have a KMO value above .6. In this study, the sample was indeed adequate, since the KMO value was .89. Also,

in the analysis the MPCL-5 was correctly identified as having four domains, since four components had Eigenvalues more than 1, and they explained about 60% of the constructs (Figure 2).

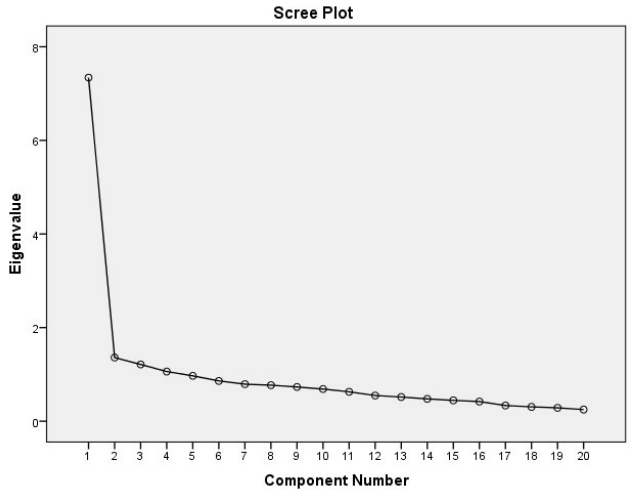

Figure 2: Scree plot of the components of the MPCL-5. A scree plot is used the demonstrate visually the number of significant factors or components in a tool. The eigenvalues and number of factors or components are plotted against each other. There are two ways to analyse the scree plot. One method is to identify the position where the eigenvalues seem to level off (called the "elbow"). The elbow indicates that factors or components to its left should be retained since they are significant. In this study, the elbow seems to be positioned after two components which means that only two components are significant. However, this method has been criticised for its tendency to produce too few factors or components. Another technique that can be used in this analysis is to look at the factors or components with eigenvalues > 1. In this graph, 4 components had eigenvalues of at least one and this is more consistent with the original recommendation and its face validity. Hence, the four components are retained.

Table III: Outcome of exploratory factor analysis with all items included

Rotated Component Matrix[a]				
	Component			
	1	2	3	4
Item 1	.746			
Item 2	.754			
Item 3	.572			
Item 4	.489			
Item 5	.496			
Item 6			.551	
Item 7			.458	
Item 8	.537			.146
Item 9				.720
Item 10				.600
Item 11				.423
Item 12				.401
Item 13		.626		.176
Item 14		.673		.077
Item 15		.789		
Item 16		.644		
Item 17		.167	.772	
Item 18		.310		
Item 19		.481		
Item 20		.375		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 12 iterations.

However, when we ran factorial analysis of the MPCL-5, we found that four of the items did not belong in their rightful domains (Table III). These were items 8 (*"Sukar mengingat bahagian-bahagian penting mengenai sesuatu pengalaman yang memberi tekanan di masa lampau?"* or Trouble remembering important parts of the stressful experience?), 13 (*"Merasa terpinggir dari orang lain?"* or Feeling distant or cut off from other people?), 14 (*"Merasa emosi kaku atau tidak dapat merasakan perasaan sayang terhadap orang-orang yang rapat dengan anda?"* or Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?) and 17 (*"menjadi terlalu berwaspada atau terlampau berjaga-jaga?"* or Being "superalert" or watchful or on guard?).

After painstakingly removing the offending items one by one and running analysis every time, the best results came after the removal of three items; item 8, 13 and 14. The items on the whole fell into their rightful domains following the removal of these three items (Table IV).

Table IV: Final factor analysis output

Rotated Component Matrix[a]					
Domains	Items	Component			
		1	2	3	4
Symptoms Cluster B	1	.782			
	2	.773			
	3	.566			
	4	.477			
	5	.428			
Symptoms Cluster C	6			.558	
	7			.480	
Symptoms Cluster D	9				.744
	10				.596
	11				.465
	12				.452
Symptoms Cluster E	15		.797		
	16		.722		
	17		.156	.777	
	18		.340		
	19		.518		
	20		.374		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 8 iterations.

Reliability

Internal consistency

The first determinant of reliability we looked at was the internal consistency. For a sufficient internal consistency, the calculated Cronbach's Alpha must be more than .6 (15). As a whole, the MPCL-5 has strong internal consistency, with Cronbach's Alpha value of .89. Itemised analysis of the different clusters symptoms also revealed that each domains are at least stable to very stable (Table V).

Test-retest reliability

We also looked at the test-retest reliability of the MPCL-5 after two weeks. We found that the MPCL-5 is extremely stable over time, with a strong test-retest correlation of .81 ($p<0.001$).

Table V: Internal Consistency of the MPCL-5

	Cronbach's Alpha	N of Items
MPLC-5	.889	17
Symptom Cluster B	.783	5
Symptom Cluster C	.648	2
Symptom Cluster D	.625	4
Symptom Cluster E	.777	6

DISCUSSION

This study showed that the newly translated MPCL-5 has good validity and reliability. However, there is a higher prevalence of PTSD when measured with MPCLC-5 compared to CAPS-5, although the two scales are well correlated to each other. The higher prevalence for MPCLC-5 is similar to another study conducted among trauma victims in Orthopaedic setting in Kelantan (16). This indicates that the MPCL-5 is probably more useful than CAPS-5 for screening of PTSD at least in the local context. The fact that no PTSD was missed when using MPCL-5 is certainly reassuring.

The other important point to address is the removal of items 8, 13 and 14 for a stronger construct validity. This is not an issue in validation studies, especially when the cultural background of the population for which the translated questionnaire is intended for is so different from the population where the measure was originally developed. Interestingly, although having poorer internal consistency with the other items in the same domain, item 17 had to be retained for reasons already described above. One explanation for this phenomenon is possibly that since there are no equivalent words to describe "superalert" or "watchful" or "on guard" in Malay because the same word maybe used for all three.

One of the main strengths of this study is the large sample size. Furthermore, the participants came from a fairly representative demographic distribution for Malaysia which gave strong support on the usefulness of MPCL-5 as a screening tool for PTSD in Malaysia.

CONCLUSION

In conclusion, the MPCL-5 is a valid and reliable tool to screen for PTSD in the Malaysian population. It will be a beneficial tool to add to the toolkit for a successful management of PTSD in the country.

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REFERENCES

1. Loughran T. Shell shock, trauma, and the First World War: The making of a diagnosis and Its histories. J Hist Med ALLIED Sci. 2010 Jan;67(1):94–119.
2. Jones E, Wessely S. A paradigm shift in the conceptualization of psychological trauma in the 20th century. J Anxiety Disord. 2007;21:164–75.
3. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders 5th edtion (DSM 5). Fifth Edit. American Psychiatric Publishing. American Psychiatric Publishing; 2013. 991 p.
4. Weathers FW, Litz BT, Herman DS, Huska JA, Keane TM. The PTSD Checklist (PCL): reliability, validity, and diagnostic utility. Paper presented at the Annual Meeting of International Society for Traumatic Stress Studies, San Antonio, TX, October, 1993 . 1993.
5. McDonald SD, Calhoun PS. The diagnostic accuracy of the PTSD checklist: A critical review. Clin Psychol Rev. 2010 Dec;30(8):976–87.
6. Blevins CA, Weathers FW, Davis MT, Witte TK, Domino JL. The Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. J Trauma Stress. 2015;5(December):489–98.
7. Wortmann JH, Jordan AH, Weathers FW, Resick PA, Katherine A, Hall-clark B, et al. Psychometric analysis of the PTSD Checklist-5 (PCL-5) among treatment-seeking military service members. Psychol Assess. 2016;5(January).
8. Nunnally J, Bernstein I. Psychometric Theory, 3rd edn, 1994. McGraw-Hill, New York. 1994;
9. Rouquette A, Falissard B. Sample size requirements for the internal validation of psychiatric scales. Int J Methods Psychiatr Res. 2011;20(4):235–49.
10. Weathers FW, Litz BT, Keane TM, Palmieri PA, Marx BP, Schnurr PP. The PTSD checklist for DSM-5 (PCL-5). Natl Cent PTSD. 2013;5(August):2002.
11. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine (Phila Pa 1976). 2000;25(24):3186–91.
12. Nunnally JC, Bernstein IH. Validity. Psychometric Theory. Tata McGra. New Delhi: Tata McGraw-Hill; 2010. p. 83–113.
13. Phelan C, Wren J. Reliability and validity [Internet]. University of Northern Iowa College of Humanities and Fine Arts Student Outcomes Assessment Web Site. 2005 [cited 2017 Jun 5]. p. 90. Available from: https://chfasoa.uni.edu/reliabilityandvalidity.htm
14. Sun CW. Questionnaire translation and

psychometric properties evaluation. Online Rev. 2009;2(2):45–51.
15. Nunnally J, Bernstein I. The assessment of reliability. Psychometric Theory. Tata McGra. New Delhi: Tata McGraw-Hill; 2010. p. 248–92.
16. Syed Jaapar SZ, Abidin ZZ, Othman Z. Post traumatic stress disorder and its associated risk factors among trauma patients attending the orthopaedic wards and clinics in Kota Bharu , Kelantan. Int Med J. 2014;21(6):541–3.