ORIGINAL ARTICLE

VALIDATION OF KNOWLEDGE OF PTSD QUESTIONNAIRE AMONG MALAYSIAN ADULTS

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ABSTRACT

Post-Traumatic Stress Disorder (PTSD) has a significant global prevalence and is increasingly recognised as an important mental health condition in Malaysia. This study aimed to validate an adapted PTSD Knowledge Questionnaire for use among Malaysian adults. The original 43-item self-rated tool assesses three domains: recognition of traumatic events, PTSD symptoms, and PTSD treatments. The questionnaire was reviewed by experts for content validity and adapted for cultural relevance to the Malaysian population, resulting in a refined 28-item questionnaire. A total of 105 Malaysian adults completed the questionnaire through online convenience sampling. Construct validity was assessed using Exploratory Factor Analysis, identifying two components within each domain, such as differentiating severe trauma from less impactful events, core PTSD symptoms from unrelated psychological characteristics, and separating evidence-based treatments from other interventions. The questionnaire demonstrated excellent internal consistency, with a Cronbach's alpha of 0.948, and excellent test-retest reliability, with an intraclass correlation coefficient (ICC) of 0.92 ($p<0.001$). These findings establish that the adapted questionnaire is a valid and reliable tool for assessing PTSD knowledge among Malaysian adults and suggest its potential usefulness in identifying knowledge gaps and guiding educational interventions.

Keywords: *PTSD, validity, reliability, questionnaire*

INTRODUCTION

Post-Traumatic Stress Disorder (PTSD) is a debilitating mental health condition that can arise following traumatic life events. Such events include, but are not limited to, serious accidents, natural disasters, sexual assaults, and witnessing the unexpected death of loved ones[1]. Around 70% of people globally will experience a potentially traumatic event during their lifetime, but only a minority (5.6%) will go on to develop PTSD[2]. The prevalence of PTSD varies significantly across different countries, ranging from 1.1% to 9.2%, depending on factors such as sociodemographic diversity and prior trauma exposure[3,4,5,6]. Recent research has demonstrated that the occurrence of PTSD in Malaysia is remarkably high, with 25% of healthcare workers suffering from PTSD following the COVID-19 pandemic[7], while 7.4% of motor vehicle accident survivors have been diagnosed with PTSD[8]. Furthermore, approximately 20-50% of juvenile delinquents suffer from PTSD, mostly due to childhood maltreatment[9].

PTSD has led to increased morbidity and mortality, and up to 54% of suicides among people with PTSD are attributable to the disorder[10]. Reviewed papers inferred changes in mental state following trauma[11,12,13], affecting the psychological well-being of individuals and leading to challenges such as sleep disturbances, emotional instability, and an increased risk of developing mental and physical comorbidities[11,13]. Further studies have shown that PTSD symptoms are linked to risk-taking behaviours, offering a psychological explanation for how different traumatic stressors uniquely influence subsequent risk-taking behaviour[12,13].

In recent years, awareness of PTSD has significantly increased[15,17,19], likely due to its debilitating effects on those who suffer from it. However, despite this growing awareness, the general public's ability to accurately recognize PTSD symptoms remains limited[14,15,16]. For instance, a study by Merritt et al. revealed that 67% of participants were able to correctly identify manifestations of PTSD, with females showing higher accuracy rates[15], suggesting potential sociodemographic differences[15,12]. Another study reported a recognition rate of 42.5%, highlighting a significant gap in mental health literacy regarding PTSD[16].

Furthermore, evidence indicates that a substantial portion of individuals with PTSD do not seek or receive appropriate interventions[3,17,18]. This may be attributed to poor recognition of PTSD, lack of knowledge about effective treatments and the impact of stigma, which discourages treatment-seeking and limits access to information about available

therapies[15,16,19,20,21]. Surprisingly, even individuals who screen positive for PTSD often have little knowledge of effective treatment options, comparable to those without the conditions[19]. This lack of awareness is compounded by stigma, which not only affects individuals but also creates barriers for families supporting their loved ones with PTSD. In addition, adherence to treatment may be adversely impacted when the population's beliefs about treatment conflict with those of the healthcare professionals[21]. These findings emphasise the importance of improving mental health literacy, which can be achieved through increased awareness, enhanced knowledge, and efforts to reduce stigma at various levels[18]. Greater awareness of PTSD can positively influence help-seeking behaviours, compliance to interventions and health outcomes for those living with PTSD. Therefore, evaluating awareness and knowledge levels regarding PTSD is a crucial preliminary step in identifying regional gaps and implementing targeted interventions to address these deficiencies. While several PTSD instruments used globally[22,23] are primarily designed to diagnose the disorder or monitor treatment outcomes, this study utilises an adapted tool[24] that instead measures knowledge and awareness of PTSD. By focusing on recognition of traumatic events, symptoms, and treatments, it addresses a gap in the Malaysian context where no such knowledge-based instrument currently exists. This study is part of a larger research project aimed at assessing PTSD awareness and exploring the relationship between sociodemographic factors and PTSD knowledge within government primary care settings in Johor Bahru and Pontian. The objective of this study is to validate the adapted English version of the PTSD Knowledge Questionnaire to ensure its reliability and suitability for use in the general adult population of Malaysia.

METHODS

Material

The material used in this study was the PTSD Knowledge Questionnaire, a self-administered tool developed by Harik et al[24]. It comprises 43 items, which are categorized into three domains: recognition of traumatic events, PTSD symptoms, and PTSD treatments. Permission to use and adapt the questionnaire was granted by the authors. The questionnaire was designed for easy understanding and addresses key areas including recognition of traumatic events, the identification of PTSD symptoms, and the understanding of PTSD treatments. The questionnaire remained in the English language and was culturally adapted for use among the Malaysian population; no language translation was performed.

Sample Size Calculations

This phase of the study involved three distinct groups of participants: the panel of experts for content validity, the sample population for pilot testing, and the study population for validation of the PTSD Knowledge Questionnaire. For the panel of experts, the sample size was determined based on the guidelines provided by Yusuf[25], who recommended a minimum of 6 experts and a maximum of 10. To ensure a comprehensive evaluation, the maximum number was selected, resulting in a sample size of 10 experts.

The pilot test population consisted of 30 participants. According to Yusuf[26], although a minimum of 10 participants may be sufficient for pilot testing, a sample size of approximately 30 participants is generally recommended to adequately assess questionnaire clarity, comprehension, and feasibility prior to the main validation study. Therefore, 30 participants were included in the pilot testing phase.

Lastly, for the study population, the sample size required for assessing validity and reliability can be determined using various methods. The original PTSD Knowledge Questionnaire initially comprised of 43 items. Following face and content validation by a panel of experts, the questionnaire was refined and adapted to 28 items to enhance clarity, relevance, and cultural appropriateness. According to Nunnally[27], the sample size is typically calculated by multiplying the number of items in the questionnaire by a factor of 3 to 5. The 28 items were multiplied by 3, resulting in a minimum of 84 participants. To account for potential missing or unusable data, the sample size was increased by 20%, bringing the total to 105 participants for this phase of the study. This ensured an adequate number of participants to maintain sufficient statistical power for the analysis.

Procedure

For the primary data collection, the questionnaire was distributed online through Microsoft Forms. A convenience sampling approach was used, recruiting Malaysian adults including staff and students from Newcastle University Medicine Malaysia (NUMed), as well as members of the public through the investigators' social networks in the Johor Bahru and Pontian areas. Invitations to participate were sent via email and WhatsApp, along with a participant information sheet and an informed consent form. Participants were asked to provide either verbal or written consent to participate in the study. To assess test-retest reliability, participants completed the same questionnaire twice within the same day. The estimated time to complete the questionnaire was between 5 and 8 minutes. Completed responses were automatically collected through Microsoft Forms, and data analysis was conducted to

evaluate the validity and reliability of the adapted questionnaire using SPSS Version 29. Ethical approval for the study was granted by the Newcastle University Ethical Committee.

Analysis

The PTSD Knowledge questionnaire was adapted for the Malaysian population, retaining the English language format. It underwent a thorough and multi-faceted validation process. Initially, content validity was ensured through a review by a group of panel experts consisting of PTSD specialists, Family Medicine experts, and mental health professionals, who assessed its relevance, clarity, and cultural appropriateness for the Malaysian context. Content validity was examined using the Content Validity Index (CVI), where the item-level CVI (I-CVI) was calculated as the proportion of experts rating an item as relevant, and the scale-level CVI (S-CVI) was derived as the average across items; values ≥0.80–0.83 were considered acceptable[25]. Following expert validation, face validity was evaluated by piloting the questionnaire with a small sample from the general adult population in Johor Bahru and Pontian. Face validity was assessed by asking the participants to rate each item for clarity and relevance using a Likert-type scale (e.g., 1 = not clear to 4 = very clear). The proportion of items rated in the higher categories (e.g., 3 or 4) was calculated, and a cut-off value of ≥0.80 was generally considered evidence of acceptable face validity[26]. Next, construct validity was examined to confirm that the questionnaire accurately measures PTSD knowledge, ensuring it assesses the intended concept rather than unrelated variables. Exploratory Factor Analysis (EFA) was conducted to determine the underlying factor structure of the questionnaire. Prior to factor extraction, sampling adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity. Principal Component Analysis (PCA) with Varimax rotation was used to identify the underlying factor structure of the questionnaire. Factors with Eigenvalues greater than 1 were retained, and factor loadings of ≥0.40 were considered significant for interpretation. Reliability testing was conducted to ensure the PTSD Knowledge Questionnaire consistently measures PTSD knowledge across various situations and populations. Internal consistency was evaluated using Cronbach's alpha, which assesses the degree to which items within the questionnaire are related and measure the same underlying construct. In addition, test-retest reliability was examined using the intraclass correlation coefficient (ICC) to determine the stability of the questionnaire over time. Statistical analysis was carried out using SPSS Version 29 to evaluate the validity and reliability of the adapted questionnaire.

RESULTS

The original PTSD Knowledge Questionnaire was reviewed by six experts. The majority of the experts were aged between 40 and 60 years and resided in the Johor Bahru area. All experts held postgraduate qualifications and had a special interest in mental health. The pilot study demonstrated good face validity, with all items achieving Face Validity Index (FVI) values above 0.80, indicating that the questionnaire items were generally clear, understandable, and relevant to the target population. Minor wording adjustments were made following participant feedback to improve clarity and comprehension. A total of 105 participants took part in the study (Table 1). The majority were female, primarily of Chinese ethnicity, with more than half being married. In terms of education, more than half had either undergraduate or postgraduate qualifications. The most common occupations were students, professionals, and administrative staff.

Validity

Three types of validity were assessed to determine the appropriateness of this measure: face validity, content validity and construct validity.

Content validity

The original questionnaire comprised of 43 items divided into 3 sections, with 12 items in Section 1, 14 items in Section 2 and 17 items in Section 3. According to Mohamad, Wan Ahmad and Rohim[28], items with Content Validity Index (CVI) of less than 70% were considered not relevant or clear. Thus items 7,11 and 12 from Section 1, and items 3, 4, 7, 9, 10, 11, 12, 13, 14 and 15, 16 and 17 from Section 3 were removed. The final calculated average CVI for Section 1 was 0.98, Section 2 was 0.95 and Section 3 was 0.9. Hence, the new adapted PTSD Knowledge Questionnaire for the Malaysian population consisted of 28 items only.

Face validity

Following the establishment of content validity, the calculated Face Validity Index (FVI) for all 28 items in the adapted questionnaire obtained values greater than 0.9. Hence, the adapted questionnaire demonstrated good face validity.

Table 1: Participants' characteristics

		N	(%)
Total participants		**105**	**100**
Gender	Male	28	26.7
	female	77	73.3
Age group	<25	37	35.2
	26-40	32	30.5
	40-65	34	32.4
	>65	2	1.9
Race	Malay	39	37.1
	Chinese	46	43.8
	Indian	19	18.1
	Others	1	1.0
Marital Status	Married	57	54.3
	Single	46	43.8
	Others	2	1.9
Occupation	Managers	14	13.3
	Professionals	30	28.6
	Technicians	2	1.9
	Administrative staff	15	14.3
	Service and sales workers	1	1.0
	Factory workers	1	1.0
	Self-employed	5	4.8
	Student	32	30.5
	Unemployed	5	4.8
Highest level of education	Postgraduate	31	29.5
	Undergraduate	39	37.1
	Diploma	17	16.2
	Skills certificate	1	1.0
	STPM/SPM	12	11.4
	Others	5	4.8

Construct validity

To assess construct validity and determine the dataset's underlying factor structure, Exploratory Factor Analysis (EFA) was conducted. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.878 and Bartlett's Test of Sphericity was significant ($p<0.001$), confirming the suitability of the data for factor analysis. To improve interpretability, Varimax rotation was applied after Principal Component Analysis (PCA) was employed as the extraction technique. The analysis identified two components within each section (Table 2).

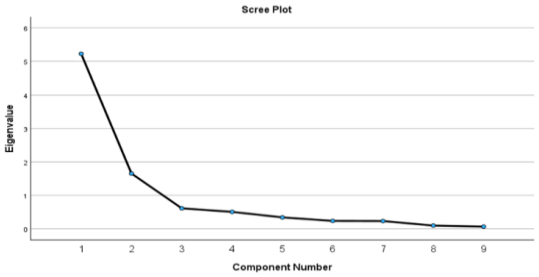
For Section 1 (item 1-9), two components were extracted. The first component grouped items related to traumatic events likely to lead to PTSD, such as being raped or sexually assaulted and being physically abused. The second component grouped items related to stressful life events, less likely to result in PTSD, such as getting fired from a job and having serious financial problems. This differentiation highlights the varying psychological impacts of different types of traumatic events and supports the construct validity of the measurement tool by identifying distinct yet related factors within the domain.

Two components were found for Section 2 (items 10–23), which focuses on symptoms of PTSD. The first component grouped items reflecting core symptoms of PTSD, such as having nightmares about the trauma, getting upset when reminded of it and avoiding places or people associated with the trauma. The second component grouped items that are not typically recognised as PTSD symptoms, such as hearing voices that tell you to harm others, excessive handwashing and sleeping too much. This differentiation reinforces construct validity by clearly distinguishing between genuine PTSD symptoms and other unrelated psychological or behavioural characteristics. Similarly, for Section 3 (items 24-28), two groups were identified. The first group included interventions recognised as true treatments for PTSD, such as Cognitive Behavioural Therapy (CBT), antidepressant medications, and Eye-Movement Desensitization and Reprocessing (EMDR). The second group included items not typically considered effective elements for PTSD, such as support groups and family therapy. This differentiation between evidence-based PTSD therapies and other interventions further supports the construct validity of the questionnaire.

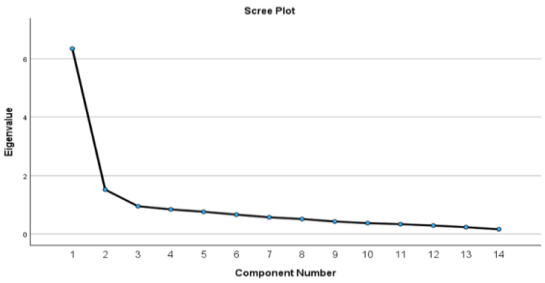
Table 2: Outcome of exploratory factor analysis with all items included.

	Rotated Component Matrix		
		Components	
		1	2
Section 1	Being in a war	.926	
	Being in a serious car accident	.935	
	Being raped or sexually assaulted	.939	
	Seeing someone else get killed	.863	
	Being physically abused	.849	
	Learning that a loved one was seriously injured in an accident		.566
	Getting fired from a job		.856
	Learning that your spouse or partner had an affair		.788
	Having serious financial problems		.804
Section 2	Nightmares about the trauma	.731	
	Feeling very upset when reminded of the trauma	.763	
	Avoiding places or people that remind you of the trauma	.795	
	Feeling irritable or having angry outbursts	.759	
	Avoiding thinking or talking about the trauma	.742	
	Being very alert, watchful, or on guard	.643	
	Having negative feelings about the trauma, such as anger or shame1	.785	
	Getting addicted to alcohol or drugs		.711
	Experiencing decreased appetite		.466
	Feeling hyper, extremely happy or excited for several days straight		.512
	Sleeping too much		.489
	Having chronic chest pain		.616
	Hearing voices that tell you to harm others		.758
	Washing your hands again and again		.806
Section 3	Cognitive Behavioural Therapy (CBT)	.559	
	Antidepressants medications	.636	
	Eye-movement desensitization and reprocessing (EMDR)	.923	
	Support groups		.885
	Family therapy		.805
	Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.a a. Rotation converged in 3 iterations.		

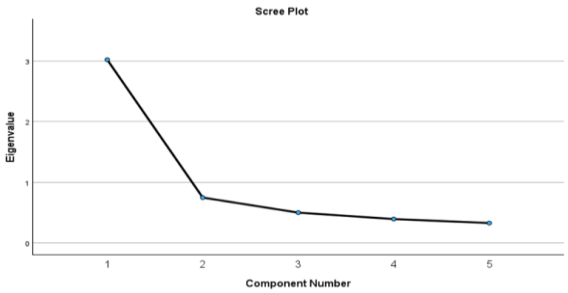
Scree plots were analysed across the three sections to determine the optimal number of factors for interpretation. In every section, the plots showed a clear “elbow” at the second component, suggesting that two components adequately explained most of the variance (Figure 1). Additionally, the cumulative variance explained exceeded 60% across all sections. After the second component, Eigenvalues diminished significantly, supporting the decision to retain two factors.



Section 1



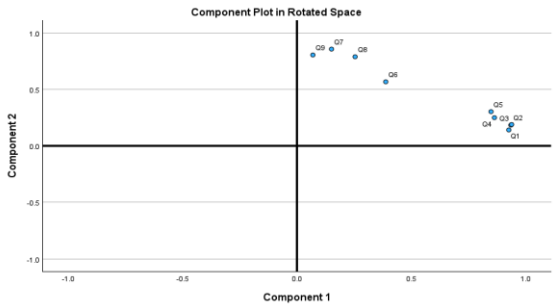
Section 2



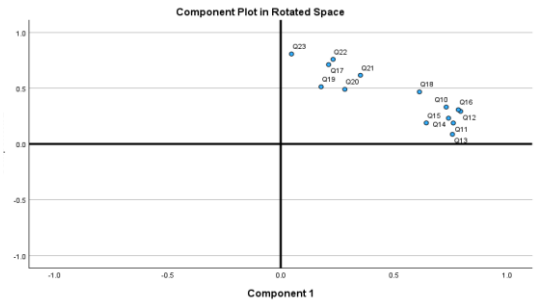
Section 3

Figure 1: Scree plot of the three sections of the PTSD Knowledge Questionnaire

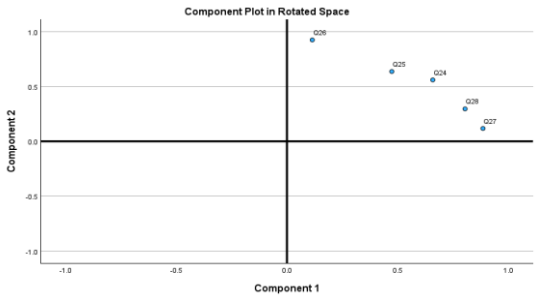
The rotated component matrices and scree plot analysis consistently identified two primary components across all sections (Figure 2). The elements in Section 1 distinguished between traumatic events (e.g. war or physical abuse) and life stressors (e.g. financial difficulties or job loss). For Section 2, the components distinguished between core PTSD symptoms and unrelated psychological or behavioural characteristics. The components in Section 3 distinguished between clinical treatments (e.g. EMDR, antidepressants) and psychosocial interventions (e.g. family therapy and support groups). These results reveal a multifaceted structure within the data, offering clear and interpretable factors for further application.



Section 1



Section 2



Section 3

Figure 2: Component plot in rotated space showing the three sections of the PTSD Knowledge Questionnaire

Reliability

Internal Consistency

The first measure of reliability assessed was internal consistency. The internal consistency of the 28-item questionnaire and its three domains was evaluated using Cronbach's alpha. According to Wan Ahmad and Muhammad[29], a Cronbach's alpha value greater than 0.8 indicates good internal consistency. Overall, the PTSD Knowledge Questionnaire demonstrated excellent internal consistency, with a Cronbach's alpha value of 0.948 (Table 3).

Table 3: Internal Consistency of the PTSD Knowledge Questionnaire

	Cronbach's Alpha	N of Items
Overall	.948	28
Section 1	.895	9
Section 2	.900	14
Section 3	.827	5

The analysis of individual domains revealed strong internal consistency across the questionnaire. For events that can lead to PTSD (section 1), Cronbach's alpha was 0.895, indicating good internal consistency. Symptoms of PTSD (section 2) demonstrated excellent internal consistency, with a Cronbach's alpha of 0.900. Effective treatments for PTSD (section 3) had a Cronbach's alpha of 0.827, reflecting acceptable internal consistency. Overall, the questionnaire exhibited high internal consistency, with an overall Cronbach's alpha of 0.948, indicating excellent reliability. These results confirm that the items within each domain reliably measure their respective constructs.

Test-retest reliability

The test-retest reliability of the PTSD Knowledge Questionnaire was assessed using the intraclass correlation coefficient (ICC). The analysis revealed a strong test-retest correlation, with an ICC of 0.92 for single measure ($p < 0.001$), indicating excellent reliability and a strong positive correlation between repeated measurements (Table 4).

Table 4: Test-retest reliability of the PTSD Knowledge Questionnaire

		95% Confidence Interval		F Test with True Value 0			
	Intraclass Correlation	Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.917	.880	.942	22.958	104	105	<.001
Average Measures	.956	.936	.970	22.958	104	105	<.001

One-way random effects model where people effects are random.

DISCUSSION

This study demonstrates that the adapted PTSD Knowledge Questionnaire for the Malaysian population has excellent validity and reliability. While there had been some questionnaires developed to assess knowledge of this condition, they were mainly constructed for use in larger studies to ascertain 'before and after' effects of psychoeducational interventions[24,30,31,32]. One such tool which was created specifically to measure knowledge, the Trauma-Informed Education Knowledge Survey (TIE Knowledge), was developed to evaluate teachers' knowledge on trauma and its related processes, rather than PTSD per se[33]. The TIE Knowledge showed moderate internal consistency and confirmed to be a valid measure of trauma knowledge. However, a scale for use in the general Malaysian population to assess PTSD knowledge is still non-existent. The adapted questionnaire in our study, on the other hand, showed excellent face, content and construct validity, as well as remarkable reliability. Hence, this validated adapted PTSD Knowledge Questionnaire for the Malaysian population, will be a useful addition for use in the clinical and non-clinical setting.

While the original questionnaire consisted of 43 items, for the Malaysian population, many items in Section 3 (Knowledge of PTSD Treatment) were found to be irrelevant by the experts since they are not available in the country. Interestingly, Harik et. al.[24] in the original study that utilised this questionnaire also found that their population had the poorest knowledge in this section. Hence, reducing the number of items in Section 3 from 17 items to 5 makes more sense. Similar adaptations of Harik et al.[24] PTSD recognition task have been reported in other settings. A study conducted in the United Kingdom modified the questionnaire to reflect PTSD presentations in children and local treatment guidelines in England[34]. This highlights the importance of contextual adaptation when

applying PTSD knowledge instruments to different populations and healthcare settings. Similarly, in the present study, several treatment-related items, such as equine therapy and medical marijuana, were removed as they were considered less relevant or less commonly available within the Malaysian context. The adapted questionnaire, having only 28 items, is then more applicable to the Malaysian population, is also less distracting and more streamlined, contributing to the ease and feasibility of its application in a busy, resource-strapped setting.

Nevertheless, even with the removal of items deemed by experts not relevant to the Malaysian population, the rest of the items showed exceptional construct validity. In each section, there were correct and incorrect answers which was, in our study, appropriately grouped together. Furthermore, the 28-item adapted PTSD Knowledge questionnaire has demonstrated to be a reliable measure with excellent values for overall and for each of the section separately.

The use of a tool that gauges the knowledge of PTSD is vast. In the general population, it allows policy makers to ascertain how well the public is informed about PTSD so that a more tailored and targeted psychoeducational programmes can be devised. Furthermore, it can also measure the effectiveness of such psychological interventions. In certain communities which are more at risk of developing PTSD such as military and emergency services personnel, victims of crimes and serious accidents, it can help authorities plan better interventions to improve awareness on PTSD and thus improve treatment outcomes[35].

The main strength of this study is the meticulousness in its process which utilised a number of different methods to determine validity and reliability. Its main limitation is that, since it has been conducted only in one institution, it cannot be proven for definite that this tool can be generalised to the whole of the country. In addition, the use of convenience sampling may have introduced selection bias and limited the representativeness of the sample. Nevertheless, the participants in the study did generally reflect the normal population seeking medical treatment in a government healthcare facility. Another limitation is that the results may not fully represent non-English-speaking Malaysians due to language barriers. A follow-up study will translate and validate the questionnaire in Bahasa Malaysia. Further studies, conducted in a wider population, will be needed to expand its applicability. Another limitation is the time taken between test and retest is too short; ideally it should be done at least two weeks apart. It was unavoidable since our study was conducted anonymously and online; hence it would be difficult to identify the participants. However, the results of the internal consistency reliability were strong, to substantiate the overall reliability of the test.

CONCLUSION

The adapted PTSD Knowledge questionnaire has excellent validity and reliability. The brief self-rated measure has vast potential to be used in the clinical and non-clinical setting. Further studies are required to further confirm its generalisability and benefits.

Conflict of interest

The authors declare no potential conflict of interest.

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