ORIGINAL ARTICLE

Transcultural Arabic validation of the Clinician-Administered PTSD Scale for DSM-5, Child and Adolescent version

Clinician-Administered PTSD Scale for DSM-5, Child and Adolescent version: Validation transculturelle dans une population clinique

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Abstract

Introduction: Posttraumatic stress disorder PTSD in the pediatric population has clinical features. The Clinician-Administered PTSD Scale for DSM-5,child and adolescent version (CAPS-CA-5) is the gold standard in positive diagnosis. Our study had two primary objectives, first, to translate the CAPS-CA-5 into Tunisian dialectal Arabic, and second, to validate the translated version within the Tunisian sociocultural context.

Methods: This is a descriptive cross-sectional study conducted in two hospital departments. We recruited children older than seven years who were exposed to a potentially traumatic event at least one month before. We validated the tool through translation, content, construct validity and reliability.

Results: The validation was made on 146 records after the exclusion of 4 incompleted assessments. We initially translated the CAPS-CA-5 into Tunisian dialect. We validated the content through pre-test and scientific committee evaluation. Afterwards we validated the construction. We calculated the Bartlett's sphericity test ($p<0.001$) and the KMO index that was 0.766. Concerning the reliability study, we found a Cronbach's alpha coefficient equal to 0.92. We studied the inter-rater reliability via the intra-class coefficient which was between 0.8 and 1.

Conclusion: We validated the CAPS CA5 in our cultural context with satisfactory psychometric qualities. This tool will facilitate the early detection and diagnosis of PTSD for pediatric population.

Key words: Validation, translation, CAPS-CA-5, PTSD, children, adolescent.

Résumé

Introduction: Le trouble de stress post-traumatique dans la population pédiatrique présente des caractéristiques cliniques. La CAPS-CA-5 (Clinician-Administered PTSD Scale for DSM-5, child and adolescent version) est le gold standard du diagnostic positif. Notre étude avait deux objectifs principaux , traduire la version enfant et adolescent de la CAPS-CA-5 en arabe dialectal tunisien, et ensuite valider la version traduite dans le contexte socioculturel tunisien.

Méthodes: Il s'agit d'une étude transversale descriptive menée dans deux services hospitalo-universitaires de Tunis. Nous avons recruté des enfants âgés de plus de sept ans qui avaient été exposés à un événement potentiellement traumatique au moins un mois auparavant. Nous avons validé l'outil par la traduction, le contenu, la validité de construction et la fiabilité.

Résultats: La validation a été réalisée sur 146 enregistrements après l'exclusion de 4 évaluations incomplètes. Nous avons d'abord traduit la CAPS-CA-5 en dialecte tunisien, puis validé le contenu à travers un pré-test et l'évaluation d'un comité d'experts. La validation de la construction a suivi, avec un test de sphéricité de Bartlett significatif ($p < 0,001$) et un indice KMO de 0,766. En ce qui concerne l'étude de la fiabilité, nous avons trouvé un coefficient alpha de Cronbach égal à 0,92. Nous avons étudié la fiabilité inter-juges via le coefficient intra-classe qui était compris entre 0,8 et 1.

Conclusion: Nous avons validé la CAPS-CA-5 dans notre contexte culturel avec des qualités psychométriques satisfaisantes. Cet outil facilitera la détection précoce et le diagnostic de l'état de stress post-traumatique pour la population pédiatrique.

Mots clés: Validation, traduction, CAPS-CA-5, TSPT, enfant, adolescent.

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Introduction

Post Traumatic Stress Disorder (PTSD) is a disorder that can occur at any age, following direct or indirect exposure to a traumatic event [1]. According to the National Center for PTSD, traumatic exposure in children is around 15% to 43% [2]. But the occurrence of PTSD is only about 3% to 15% of girls and 1% to 6% of boys [2]. This prevalence does not diminish the significance of the repercussions on various areas of functioning, particularly in the family, social, and academic domains [3]. We must also consider the risk of comorbidities, which can range from anxiety disorders such as generalized anxiety disorder and panic disorder to depressive disorders, and even suicidal attempts [4,5].

In the past, the assessment of PTSD, especially in the pediatric population, was relatively unknown until it was officially recognized in the DSM III-R in 1987. The experiences of war times brought to light significant changes in the behavior of young individuals and developmental variations that were initially overlooked. As a result, the existence of these clinical variations underscores the critical importance of utilizing psychometric tools for accurate diagnosis and assessment. These tools serve as invaluable aids in identifying and understanding the complexities of PTSD in children and adolescents, allowing for more effective and targeted interventions [6,7]. Currently, PTSD assessment in the pediatric population can be facilitated by the use of such tools. To date, we mention some scales that obey to the DSM-5 diagnostic criteria like Primary care for PTSD Screen for Children [8], Child PTSD Symptom Scale - interview version / self report version [9], Child and Adolescent Trauma screen CATS -self report: 7-17 years old / caregiver 3-6 years old [10], UCLA child/adolescent PTSD Reaction Index for DSM5 [11] and the Clinician Administered PTSD Scale for DSM-5, child and adolescent version (CAPS CA 5) [12].

The CAPS-CA-5 is considered the gold standard due to its age-appropriate, simplified presentation and its dual role in both diagnosis and severity assessment [13]. It is derived from the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5), which is recognized as the gold standard for PTSD assessment in adults.

The child- and adolescent version was first published in 2004 meeting DSM IV criteria [12]. This clinician-administered questionnaire explored PTSD symptomatology following exposure to three traumatic events, which each child was asked to keep in mind throughout the interview. The assessment of symptom severity was conducted separately for intensity and frequency.

Over time, several modifications and improvements were made to the scale, driven by user feedback and changes in diagnostic criteria. The most recent version, which aligns with the DSM-5 criteria, was published in 2015 and is known as the CAPS-CA-5 [13].

The original English version of CAPS-CA-5 has been translated and validated in German and Portuguese [14,15]. To our knowledge, there is no Arabic-validated diagnostic tool for PTSD in the pediatric population. Therefore, we proposed to translate and adapt the CAPS-CA-5 into Tunisian dialectal Arabic and validate the scale within the Tunisian cultural context.

Methods

Participants

We conducted a prospective cross-sectional study carried out over a period of 19 months from June 2020 to March 2022. Our study was conducted in two departments in Tunis city : the child and adolescent psychiatry department and the forensic medicine department. We included children aged between 7 and 18 years who had experienced a potentially traumatic event at least one month prior to the interview. Only children whose parents provided written consent were included. Children with any comprehension difficulties were excluded from the study.

PTSD measuring instrument

The CAPS-CA-5 is a semi-structured, clinician-administered questionnaire comprising 30 items specifically designed for the pediatric population aged 7 to 18 years. In cases where an item is unintelligible or unclear to the child, the investigator can offer alternative reformulations of the item, which are already included in the scale.

The CAPS-CA-5 serves to both confirm a PTSD diagnosis and assess the severity of the disorder. It evaluates manifestations related to one single traumatic event, it uses an adapted language to the paediatric population, picture response options and it assesses severity assessment by evaluating both intensity and frequency. A first sheet is used to assess intensity through images of five glasses, progressively filled from an empty glass representing "absent" up to a full glass indicating "extreme." The fuller the glass, the higher the intensity level. A second form allows to evaluate the frequency of symptoms experienced over the past month, using visual aids through five monthly calendar images to help children represent the daily recurrence of symptoms on a scale ranging from "absent" to "extreme".

The association of these two scores allows us to calculate a global severity score according to a 5-point Likert-type scale. A symptom is considered present only if its severity rating is 2 or higher. The total PTSD severity score is obtained by summing the scores of the 20 items, resulting in a possible range from zero to 80.

Procedure

To ensure adherence to ethical standards, we first obtained permission from the original authors to translate and adapt the CAPS-CA-5 into Tunisian dialectal. Additionally, approval was secured from the local Ethics Committee under the reference number 18/2020. The translation process followed the translation/back-translation method, as recommended in standard validation protocols [16]. The original scale was translated into

Tunisian Arabic and then back-translated into the source language to ensure accuracy and conceptual consistency. A panel of eight Tunisian psychiatrists reviewed and validated the translated version. They evaluated the vocabulary adequacy, conceptual clarity, and the consistency and relevance of each item. Feedback and recommendations from the expert panel were carefully considered and incorporated into the final version.

We conducted a pilot test with children aged 7 to 18 years to evaluate their understanding of the questionnaire items and to assess the duration required to complete the CAPS-CA-5. The participants in this pilot phase were not included in the statistical validation of the questionnaire. Following this process, we finalized the Tunisian dialectal Arabic version of the CAPS-CA-5.

Prior to administering the questionnaire, we informed both the parents and their children that participation was voluntary and anonymous, and we clearly explained the purpose of the study. Only children whose legal guardians provided written consent were included.

All data were processed with strict adherence to anonymity and confidentiality.

Data analysis

The data analysis was performed using the programs IBM SPSS Statistics. We conducted an exploratory factor analysis in two stages. A first extraction was done to determine the number of relevant factors to consider. Then we calculated "Varimax" rotation to redefine the composition of the factors in order to facilitate the interpretation [17]. Thus, we used the Bartlett sphericity test and the Kaiser-Meyer-Olkin measure. We assessed the linear reliability using Cronbach's alpha coefficient. A Cronbach's alpha value between 0.70 and 0.95 is considered acceptable [18,19], indicating good reliability without excessive item redundancy.

To further evaluate the scale's reliability, we analyzed the inter-item correlation using Spearman's coefficient. An ideal mean inter-item correlation falls within limits of 0.15 and 0.50 [20], suggesting that the items are sufficiently related while still measuring distinct aspects of the construct. When it is below the lower limit it indicates that the items have a poor or non-existent correlation. On the contrary, when the mean inter-item correlation exceeds the upper limit of 0.50, items are considered as very close or even repetitive. We also assessed the inter-rater reliability using the intra-class coefficient ICC, which serves to gauge the level of agreement between raters when evaluating a specific scale [17]. The interpretation of this coefficient is considered moderate when ICC falls between 0.4 and 0.6. An ICC above 0.6 indicates strong reliability, while below 0.4 suggests weak reliability [21].

Results

We recruited 150 children and we excluded four incomplete questionnaires. The mean age of the sample was 11.96 years (SD = 11.96 +/- 3.14 years). The sex ratio was 3 males (n=68) to 7 females (n=84).

Content validity

The panel of eight experts reviewed the translated version of the questionnaire and recommended rewording items A, 8 (D1), and 5 (B5). Subsequently, we conducted a pilot study with 15 children exposed to potentially traumatic events. The average time required to complete the questionnaire was 45 minutes. Participants found the items easy to read and understand. Only minor form-related issues were reported, which were subsequently addressed and rectified.

Construct validity

The result of the Bartlett sphericity test was 0.000 or ($p<0.001$). The KMO index was 0.766.

Reliability

We found a Cronbach's alpha coefficient of 0.92 for the questionnaire items. The values of the alpha coefficient for the different clusters are summarized in the table 1

Table 1. Cronbach alpha score for the different clusters

	Cronbach alpha coefficient
Cluster B	0,84
Cluster C	0,34
Cluster D	0,8
Cluster E	0,78
Total score	0,92

Inter-item correlations:

The study of inter-item correlations was carried out using the Spearman coefficient as specified in table 2.

Table 2. The Spearman coefficient between the items of each cluster

	Absolute value of Spearman coefficient
Cluster B	0,383-0,678
Cluster C	0,206
Cluster D	0,126-0,654
Cluster E	0,184-0,562

Inter-rater reliability:

Inter-judge reliability was measured via the intra-class coefficient which was greater than 0.8 for all items as follow in the table 3.

Discussion

Our work allowed to validate the first diagnostic tool for children Post-Traumatic Stress Disorder in arabic language specifically in the Tunisian dialect. The CAPS-CA-5 is a widely recognized measurement tool with proven psychometric quality. It is considered the gold standard due to its age-appropriate presentation, simplified structure, and its dual role in both diagnosis and severity assessment.

The findings of the present study showed that the psychometric characteristics of our Tunisian version are optimal and similar to the original version of the scale. However, there are some limitations in our study.

Table 3. Intra-class correlation coefficient and confidence interval for individual items

	Intra-class correlation coefficient	Confidence interval (CI)
B1	0,84	0,81-0,92
B2	0,94	0,87-0,97
B3	0,88	0,72-0,95
B4	0,89	0,82-0,98
B5	0,92	0,89-0,96
C1	0,88	0,82-0,96
C2	0,95	0,91-0,98
D1	0,95	0,92-0,97
D2	0,98	0,91-0,99
D3	0,91	0,89-0,96
D4	0,89	0,85-0,96
D5	0,87	0,85-0,98
D6	0,92	0,89-0,96
D7	0,95	0,89-0,96
E1	0,93	0,91-0,98
E2	0,92	0,89-0,95
E3	0,94	0,92-0,96
E4	0,93	0,91-0,98
E5	0,92	0,89-0,97
E6	0,89	0,85-0,94
Total score	0,94	0,92-0,98
F1	0,83	0,81-0,92
F2	0,82	0,78-0,92
G1	0,96	0,92-0,98
G2	0,89	0,82-0,94
G3	0,92	0,89-0,96
Item 26	0,91	0,84-0,96
Item 27	0,85	0,76-0,92
Item 29	0,94	0,89-0,97
Item 30	0,95	0,91-0,98

In fact, our population was recruited over a relatively long period of one year and seven months. This delay is attributed by the COVID-19 pandemic and its impact on hospital activities in child psychiatry and forensic medicine departments. Additionally, we were unable to assess the external validity of the construct due to the lack of a validated scale exploring PTSD in the pediatric population. Furthermore, we could not verify the external structure validity, as there are no other Tunisian dialect-based tools available for PTSD diagnosis in children.

In our work, we obtained the Arabic version of the CAPS-CA-5 according to the back-translation method. In our translation and validation study, we selected 146 patients as the final sample. Nevertheless, previous studies have recruited a smaller number. However, previous studies have used smaller sample sizes. For instance, the German study included 112 patients, while the Portuguese study had 101 patients [14,15].

We chose to translate the tool into Tunisian dialectal Arabic rather than literary Arabic as the target language. This decision was made to better adapt the tool to the characteristics of our target population and to enhance the understanding of the items. We believed that the semiological description of symptoms in Tunisian dialect would be more accessible to children, even considering their developmental and academic levels.

In our study, we followed the standard statistical tests for validation. We began with construct validity by conducting Bartlett's test of sphericity and calculating the Kaiser-Meyer-Olkin (KMO) measure [22]. We found respectively 0.000 and 0.766. According to Professor Juhel J, the KMO index reflects the relationship between correlations and variables assessing the uniqueness of each variable's contribution to the factor structure [22]. We believe that the difference found in the KMO index can be explained by the neurodevelopmental and cognitive specificities of the population, which may have influenced their ability to distinguish between the different items.

We proceeded to the evaluation of the internal consistency via the calculation of Cronbach's alpha coefficient the most used reliability estimator. We found a value of 0.92, which translates into a satisfactory reliability for the 27 items explored.

In our study, the Cronbach alpha values were 0.84 for Cluster B, 0.34 for Cluster C, 0.78 for Cluster D, and 0.78 for Cluster E. In the study conducted by Diehle et al. in Germany, the corresponding values were 0.75 for Cluster B, 0.6 for Cluster C, 0.83 for Cluster D, and 0.83 for Cluster E [14]. Similarly, in the study conducted by Barroca et al. in Portugal, the values were 0.75 for Cluster B, 0.6 for Cluster C, 0.83 for Cluster D, and 0.64 for Cluster E [15]. Regarding Cronbach alpha coefficient of clusters B, D and E, we found values ranging from 0.78 to 0.84, indicating satisfactory reliability. However, it was equal to 0.34 for cluster C . This corresponds to a non-acceptable internal reliability [18,19]. Unlike the other clusters, cluster C is the only one with two items. In fact, its small size can be the cause of approximation errors in Cronbach's alpha [23]. These coefficients represent the internal consistency or reliability of the measurement scales used in each study, with higher values indicating a more reliable clustering of items within each respective cluster. Thus, according to Bourque et al, Cronbach's alpha is one of the most criticized statistical coefficients because of its conditions of use and its limits related to the number of items [24].

We also calculated the inter-item correlation via Spearman coefficient. We found that, majority of the items in different clusters belonged to the ideal range of mean correlation. While for cluster B, we noted the presence of repetitive items according to item 5 which corresponds to the physiological reactions when exposed to internal or external cues. This can be explained by the fact that the investigator systematically looks for distress generated by the different intrusive symptoms. For intra-class correlation coefficient, we found good inter-rater reliability of our scale with values of the inter-class correlation coefficient ICC between 0.81 and 0.99. We found an overall score equal to 0.94, indicating a good agreement [19,23]. In the literature, the authors of the CAPS-CA-5 in German and Portuguese versions have found a good inter-rater reliability equal to 0.99 and 0.97 respectively[14,15].

Conclusion and implications

The CAPS-CA-5 is a semi-structured hetero-questionnaire comprising 30 items specifically designed for the pediatric

population aged 7 to 18 years, who has experienced a traumatic event. The total PTSD severity score is calculated by summing the scores of 20 items, resulting in a range from 0 to 80. This instrument serves a dual purpose of positively diagnosing Post-Traumatic Stress Disorder (PTSD) and assessing the severity of symptoms. As such, it is considered the gold standard tool for evaluating PTSD in the pediatric population. Our research has equipped child and adolescent psychiatrists with a validated tool in the form of CAPSCA-5, which we strongly recommend for use in all children exposed to potentially traumatic events. This tool facilitates the comprehensive description and analysis of PTSD-specific characteristics in children aged over 7 years, thereby facilitating early detection and effective intervention for this vulnerable population.

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