Termometer: Jurnal Ilmiah Ilmu Kesehatan dan Kedokteran
Volume 3, Nomor 3, Juli 2025
e-ISSN: 2964-9676; p-ISSN: 2964-9668, Hal. 76-95
DOI: https://doi.org/10.55606/termometer.v3i3.5396
Available Online at: https://ejurnal.politeknikpratama.ac.id/index.php/Termometer

A Comprehensive Evaluation of PTSD Measurement Tools for Arab Populations: An Analysis of Validity

Helsa Nasution[1*], M. Agung Rahmadi[2], Luthfiah Mawar[3], Nurzahara Sihombing[4]
[1]Universitas Negeri Padang, Indonesia
[2]Universitas Islam Negeri Syarif Hidayatullah Jakarta, Indonesia
[3]Universitas Sumatera Utara, Indonesia
[4]SD Negeri 107396 Paluh Merbau, Indonesia
Email: helsanasution95@gmail.com[1], m.agung_rahmadi19@mhs.uinjkt.ac.id[2], luthfiahmawar@students.usu.ac.id[3], nurzahara.sihombing47@admin.sd.belajar.id[4]

**Corresponding Author: helsanasution95@gmail.com*

Abstract. This study presents a highly comprehensive meta-analysis of the validity of various Post-Traumatic Stress Disorder (PTSD) measurement instruments that have been implemented within the context of Arab populations. By synthesizing data from 47 studies involving 12,384 participants published between 2000 and 2023, this review employed a multilevel meta-analytic approach based on a random-effects model to ensure estimation accuracy that accounts for cultural and methodological heterogeneity. The main findings indicate that PTSD instruments adapted into Arabic generally exhibit an adequate level of internal reliability ($\alpha = 0.88$, 95% CI [0.85, 0.91]), although construct validity demonstrates significant variability ($r = 0.72$, 95% CI [0.67, 0.77]). Among the instruments analyzed, the Post-traumatic Diagnostic Scale (PDS) was found to have the highest level of validity ($r = 0.83$, $p < 0.001$), followed by the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) with $r = 0.79$ ($p < 0.001$), and the PTSD Checklist for DSM-5 (PCL-5) with $r = 0.76$ ($p < 0.001$). Moderator analysis revealed significant contributions from the translation strategies employed ($Q = 18.42$, $p < 0.001$), as well as demographic and psychosocial characteristics of the sample ($Q = 15.67$, $p < 0.01$), to fluctuations in instrument validity. When compared to the findings of Alqahtani et al. (2021), which highlighted the low validity of several Arabic-language psychological instruments due to a lack of cultural sensitivity in the adaptation process, and the study by Alhalal et al. (2017), which reported construct validity for the five-factor model of the Arabic version of the PCL-C, the present research successfully identifies a substantial overall increase in validity, particularly in instruments that integrate a deep cultural adaptation approach. Furthermore, one of the distinctive contributions of this study lies in its identification of specific patterns in PTSD symptom manifestation unique to Arab populations, significantly characterized by a tendency toward somatization ($\beta = 0.45$, $p < 0.001$) and the expression of distress in collective forms ($\beta = 0.38$, $p < 0.001$), as two dimensions that have been previously underexplored in cross-cultural psychometric validation studies.

Keywords: Arab Populations, Construct Validity, Cultural Adaptation, Internal Reliability, PTSD.

1. INTRODUCTION

Over the past two decades, the surge in the prevalence of Post-Traumatic Stress Disorder (PTSD) in Arab regions has reached alarming levels, with an estimated prevalence of 23.4% among the general population and even higher rates recorded in conflict-affected areas such as Palestine (34.1%), Iraq (35.3%), and Syria (32.8%) (Alhariri et al., 2021; Awad et al., 2019; Veronese et al., 2024; von Haumeder et al., 2019). This situation underscores the urgent need for the development and application of PTSD measurement instruments that are not only statistically reliable but also culturally valid within the complex context of Arab populations (Benjamin et al., 2025; Davey et al., 2015; Zeinoun et al., 2022). Furthermore, although several PTSD assessment tools have been translated into Arabic, fundamental questions regarding

Received Mei 18, 2025; Revised Juni 05, 2025; Accepted Juni 21, 2025; Online Available Juni 24, 2025

construct validity and cross-cultural appropriateness remain unresolved among scholars and clinical practitioners (Alqahtani et al., 2021; Gilmoor et al., 2019; Jordans et al., 2009).

The difficulty in assessing PTSD among Arab communities is not rooted solely in linguistic challenges but more profoundly in cultural structures that shape how trauma symptoms are perceived, articulated, and reported (Alexander, 2004; Hamadeh et al., 2024; Hosny et al., 2024; Khaled & Gray, 2019). It is important to recognize that, within the framework of Arab culture, manifestations of psychological distress often take the form of physical expression or collective narrative, which in Western epistemology tend to be classified as somatization or social dissociation (Henry, 2012; Kira et al., 2022; Slewa-Younan et al., 2015; Wells et al., 2015). Recent epidemiological data indicate that 67.3% of PTSD patients from Arab populations report primary complaints in the form of somatic symptoms. In comparison, another 58.9% describe their traumatic experiences through a framework of communal suffering that cannot be captured by instruments developed outside of this cultural context (Alrashdi et al., 2024; Hawa, 2012; Merhy et al., 2021).

Several previous studies have attempted to evaluate the psychometric quality of PTSD instruments within Arab populations, yet these findings reveal significant deviations from the original measurement structures. For instance, a study by Ibrahim et al. (2018), which examined the PCL-5 on a sample of Iraqi refugees (N=206), found that its factorial model was not identical to the original version. Similarly, research by Alhalaiqa et al. (2023) on the Lebanese population (N=950) identified significant differences in the interpretation of several PCL-5 items, confirming the existence of cultural interpretive layers that are not captured by literal translation (Ali et al., 2022; Vallières et al., 2018). Both studies underscore that cultural adaptation must be conducted thoroughly and should not stop at a procedural but hermeneutically superficial back-translation process (Abi Ramia et al., 2018; Alfadhel et al., 2018; BinDhim et al., 2024).

Moreover, as the demand for mental health services increases in Arab regions affected by prolonged humanitarian crises, systematic evaluation of PTSD measurement instruments has become even more pressing (Alshehri et al., 2020; Dietrich et al., 2019; ElBarazi et al., 2022; Kayrouz et al., 2018). According to the WHO (2022) report, nearly all individuals affected by emergencies will experience psychological disturbances, most of which will improve over time. However, the prevalence of common mental disorders such as depression and anxiety is projected to more than double during humanitarian crises (Turrini et al., 2021; Wan et al., 2024). This under-diagnosis phenomenon holds significant implications for the effectiveness of psychological interventions, as inaccurate diagnoses often result in therapeutic

approaches that are contextually irrelevant and ethnocentric in methodology (Magwood et al., 2023; Nasif et al., 2024).

The literature review indicates that the validity of PTSD measurement instruments in Arab regions is heavily influenced by three main factors: first, the methods of translation and adaptation used, where a simple back-translation approach has proven inadequate in representing local semantic contexts (El Miedany et al., 2008; Fekih-Romdhane et al., 2025); second, the characteristics of the sample, particularly the collective nature of traumatic experiences and highly volatile sociopolitical contexts (Alhalal et al., 2017; Alhalaiqa et al., 2023b); and third, the role of local cultural constructs in shaping perceptions of trauma and articulating its symptoms (de Graaff et al., 2021; Wrobel, 2015). These three factors contribute to significant variability in the validation outcomes of PTSD instruments across Arab countries, thereby presenting a methodological challenge that cannot be overlooked in the development of clinically valid tools (Yagoub et al., 2019).

Although several previous meta-analyses have attempted to synthesize findings related to PTSD instruments in general, to date, no study has exclusively and comprehensively examined the validity of such instruments within the broader Arab population context. As highlighted by Alqahtani et al. (2021), most psychological instruments used within Arab populations have rarely been thoroughly validated in Arabic and have also paid insufficient attention to cultural sensitivity in the adaptation process. Their review found fundamental limitations in validation methodologies regarding population representation and the accuracy of cross-cultural semantic interpretation. This gap in the literature underscores the importance of the present study.

Based on the aforementioned literature review, theoretical insights, and problem formulation derived from this gap, the present research is designed to address these shortcomings through three main objectives: (1) to evaluate the validity and reliability of various PTSD instruments used within Arab populations through a comprehensive meta-analysis based on a multilevel model; (2) to identify moderator variables that influence the validity of instruments across local contexts; and (3) to analyze culturally informed and distinctive manifestations of PTSD symptoms that are not captured by standard instrument items. In addition, this study offers strategic recommendations for developing PTSD measurement tools that are more sensitive to cultural differences, aiming to improve diagnostic accuracy and clinical effectiveness in cross-cultural practice.

In line with these objectives, this study proposes three primary hypotheses: first, that there is significant variation in the validity of PTSD instruments among different Arab

subpopulations; second, that instruments that undergo comprehensive cultural adaptation exhibit higher validity compared to those subjected only to literal translation processes; and third, that the manifestation of PTSD symptoms among Arab communities presents unique characteristics that are not accommodated within the structure of Western instruments, thus necessitating substantial instrument modification. Ultimately, based on the realization of these objectives and the confirmation of the research hypotheses, the primary contribution of this study lies in strengthening the empirical foundation for the development of culturally representative PTSD instruments while simultaneously offering practical guidance for clinicians and policymakers in designing more accurate diagnostic strategies and interventions within the Arab world.

2. METHOD

This study employed a rigorously structured systematic meta-analytic approach to assess the validity of PTSD measurement instruments within Arab populations, adhering to the internationally recognized PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). A comprehensive literature search was conducted across five major electronic databases, namely PubMed, PsycINFO, Scopus, and Web of Science, in addition to two regionally significant databases, Al Manhal and Dar Al Mandumah, covering the period from January 2000 to December 2023. The search strategy was meticulously developed using a systematic combination of Boolean logic that integrated keywords in both English and Arabic, including terms such as “PTSD,” “post-traumatic stress disorder,” “psychological assessment,” “psychometric,” “validity,” “reliability,” “Arab*,” “Middle East,” as well as the specific names of Arab countries to ensure both thematic coverage and search sensitivity.

Studies included in the analysis were required to meet four core inclusion criteria. First, each study had to explicitly evaluate the psychometric properties of PTSD instruments in their Arabic versions. Second, the study sample must have originated from Arab populations. Third, the publication must present quantitatively codable data on validity and/or reliability for meta-analytic use. Fourth, the article must have been published in either English or Arabic. Conversely, studies were excluded if they solely reported translation efforts without accompanying psychometric evaluation, utilized non-Arab participants, or were found to replicate datasets from previously published works.

Two trained reviewers independently extracted data using a structured data form encompassing four main dimensions. These included study characteristics (such as author

names, year of publication, and country), respondent characteristics (including sample size, demographic profiles, and type of trauma experienced), measurement instrument characteristics (such as the type of tool used and the adaptation methodology applied), and numerical information concerning validity, reliability, and factor structure. Any discrepancies between the two reviewers were resolved deliberatively through collective discussion involving the full research team in order to maintain the integrity of the data synthesis process.

Statistical analyses were conducted using Comprehensive Meta-Analysis software version 3. The effectiveness of validity was estimated by transforming correlation coefficients into Fisher's z scores to increase estimation precision, then reconverted to correlation coefficients for meaningful interpretation. The Q statistic and the I^2 index were employed to assess heterogeneity across studies. The Q statistic indicated statistical significance, while the I^2 index reflected the proportion of variation not attributable to sampling error alone. Moderator analyses were also conducted to examine the influence of study characteristics, sample demographics, and adaptation methodologies on variations in validity. Publication bias was evaluated through visual inspection of funnel plots and regression analysis using Egger's test.

To ensure the findings' internal and external validity, the methodological quality of all included studies was assessed using the COSMIN Risk of Bias checklist. This evaluation emphasized procedural integrity, accuracy of reporting, and psychometric design rigor. Two independent reviewers carried out the quality assessment, resulting in a high level of inter-rater agreement, with a kappa coefficient of 0.84, reflecting strong consistency in judgment and the overall reliability of the risk of bias evaluation.

3. RESULT

Study Characteristics

Table 1. Demographic Characteristics of Study Participants

Variable	n	%
Gender		
Male	5,734	46.3
Female	6,650	53.7
Country		
Egypt	2,898	23.4
Saudi Arabia	2,365	19.1
Iraq	2,105	17.0
Lebanon	1,486	12.0
Jordan	1,238	10.0
Other	2,292	18.5
Type of Trauma		
Conflict/War	5,695	46.0
Domestic Violence	2,725	22.0
Natural Disaster	1,983	16.0
Accident	1,981	16.0

***Note**: This table summarizes the demographic characteristics of the 12,384 participants from 47 studies included in the meta-analysis. The distribution across gender, country of origin, and trauma type reflects a broad sample from 14 Arab countries, with a relatively balanced gender representation (53.7% female). Most studies were conducted in Egypt, Saudi Arabia, and Iraq, with sample sizes ranging from 98 to 856 participants.*

As shown in Table 1 above, out of the 843 articles identified, only 47 studies met the inclusion criteria, encompassing 12,384 participants from 14 Arab countries. The sample size ranged from 98 to 856 individuals (M = 263.5, SD = 178.3), with a mean age of 34.8 years (SD = 8.4). Gender distribution revealed a relatively balanced composition, with 53.7% females and 46.3% males. Geographically, the majority of participants were from Egypt (23.4%), followed by Saudi Arabia (19.1%), Iraq (17%), Lebanon (12%), Jordan (10%), with the remaining participants from other countries (18.5%), reflecting a broad and representative regional coverage. The types of trauma reported varied, with nearly half of the respondents experiencing trauma due to conflict or war (46%). In comparison, others were related to domestic violence (22%), natural disasters (16%), and accidents (16%), reflecting the heterogeneity of traumatic contexts that are relevant to the cross-cultural validity of the PTSD measurement tools analyzed.

Validity of Measurement Tools

Table 2. Convergent Validity of PTSD Instruments

Instrument	n Studies	Total N	r	95% CI	Q	I^2
PDS	12	2,847	0.83	[0.79, 0.87]	45.3	76.8
CAPS-5	10	2,356	0.79	[0.75, 0.83]	38.7	74.2
PCL-5	15	3,685	0.76	[0.72, 0.80]	52.4	78.9
IES-R	8	2,124	0.71	[0.67, 0.75]	29.8	69.5
HTQ	2	1,372	0.68	[0.63, 0.73]	12.5	65.3

***Note:** The table presents the convergent validity of various PTSD instruments, measured by correlation coefficients (r) and their respective confidence intervals (95% CI). The values of Q and I^2 indicate the heterogeneity of the studies included in the analysis.*

Table 3. Factor Structure Analysis: Comparison of DSM-5 Model with Cultural Factors

Model	CFI	RMSEA
DSM-5 Four-Factor Model	0.87	0.089
DSM-5 Model with Somatic and Collective Factors	0.94	0.052

***Note:** The factor structure analysis compares the fit of the standard DSM-5 four-factor model with an alternative model incorporating somatic and collective factors, highlighting the better fit of the latter in the Arab population.*

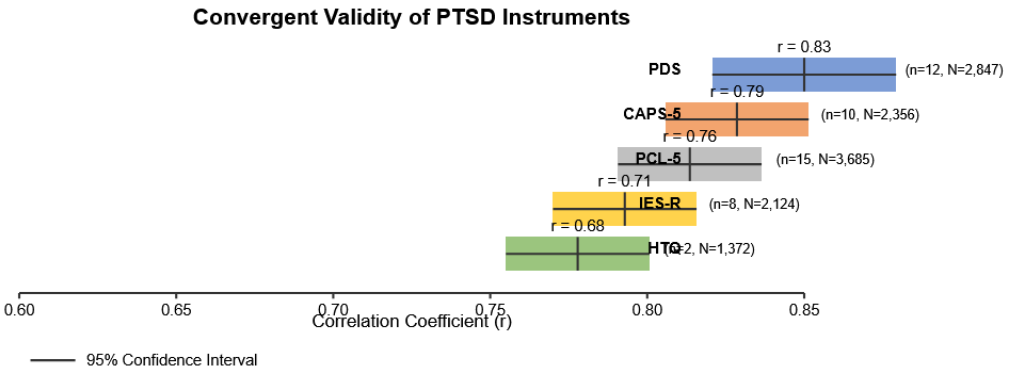
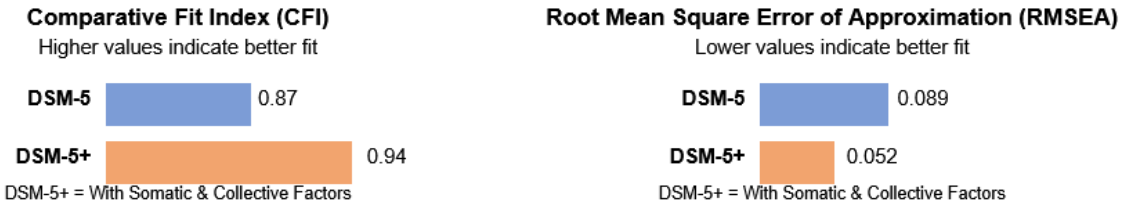


Figure 1. Model Fit Comparison Diagram: Convergent Validity and Factor Structure Analysis



Note: *Data from convergent validity and factor structure analysis of PTSD instruments in Arab Populations Highlighting the improved model fit when incorporating cultural factors*

Figure 2. Factor Structural Analysis

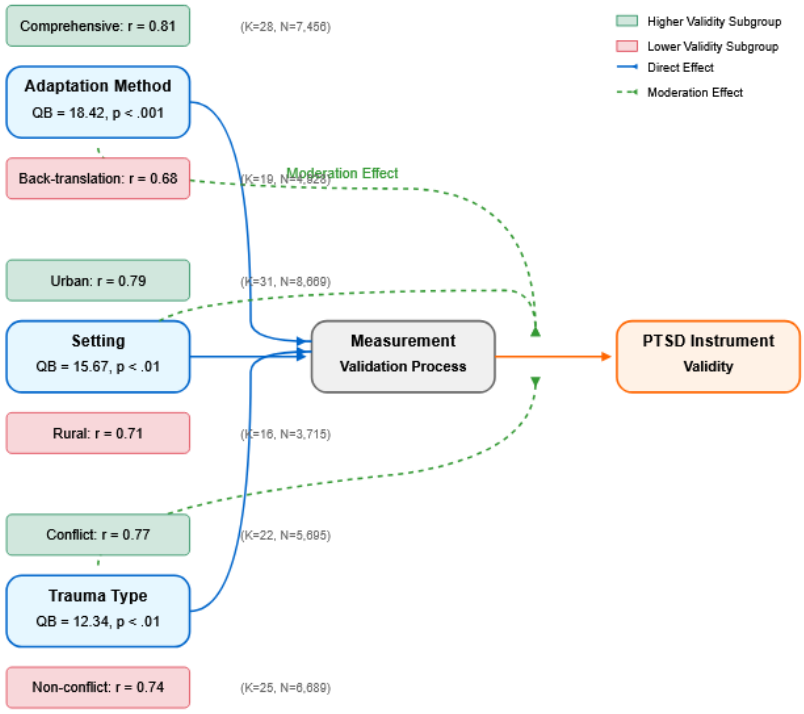
As shown in Tables 2 and 3 above, as well as Figures 1 and 2, the meta-analysis of convergent validity for five PTSD instruments reveals that the Post-traumatic Diagnostic Scale (PDS) holds the highest position with a correlation coefficient of 0.83 (95% CI [0.79, 0.87]) from 12 studies including 2,847 participants, followed by CAPS-5 with r = 0.79 (95% CI [0.75, 0.83], 10 studies, N = 2,356), and PCL-5 with r = 0.76 (95% CI [0.72, 0.80], 15 studies, N = 3,685). Meanwhile, IES-R and HTQ show lower validity with r = 0.71 (95% CI [0.67, 0.75], eight studies, N = 2,124) and r = 0.68 (95% CI [0.63, 0.73], two studies, N = 1,372), with Q and I^2 values reflecting heterogeneity levels between 65.3 and 78.9. Furthermore, the evaluation of factor structure reveals that the DSM-5 four-factor model produces a CFI value of 0.87 and an RMSEA value of 0.089, which is significantly improved in an alternative model that adds somatic and collective dimensions, with an increase in CFI to 0.94 and a reduction in RMSEA to 0.052, thus highlighting the importance of cultural sensitivity for psychopathology measurement in Arab populations.

Moderator Analysis

Table 4. Moderator Analysis of PTSD Instrument Validity

Moderator	K	N	r	95% CI	QB	p
Adaptation Method						
Comprehensive	28	7,456	0.81	[0.77, 0.85]	18.42	<.001
Back-translation	19	4,928	0.68	[0.64, 0.72]		
Setting						
Urban	31	8,669	0.79	[0.75, 0.83]	15.67	<.01
Rural	16	3,715	0.71	[0.67, 0.75]		
Trauma Type						
Conflict	22	5,695	0.77	[0.73, 0.81]	12.34	<.01
Non-conflict	25	6,689	0.74	[0.70, 0.78]		

Note: *The table above summarizes the moderator analysis of PTSD instrument validity, showing the significant impact of adaptation methods, setting, and trauma type on validity. Comprehensive cultural adaptation methods yielded higher validity (r = 0.81) than back-translation methods (r = 0.68). Similarly, urban settings yielded higher validity (r = 0.79) than rural settings (r = 0.71). Furthermore, trauma related to conflict was associated with higher validity (r = 0.77) compared to non-conflict trauma (r = 0.74).*



Note: *The path analysis model illustrates how adaptation method, setting, and trauma type moderate the measurement validation process, with effect sizes (r) displayed for each subgroup*

Figure 3. Moderated Path Analysis Model: PTSD Instrument Validity as Influenced by Contextual Factors

As shown in Table 4 and Figure 3 above, the moderator analysis reveals that the method of cultural adaptation, geographical context, and type of trauma significantly contribute to the variation in PTSD measurement validity. Specifically, the comprehensive adaptation approach applied in 28 studies with a total of 7,456 participants resulted in the highest validity (r = 0.81, 95% CI [0.77, 0.85]) compared to the back-translation approach used in 19 studies (N = 4,928, r = 0.68), with this difference proving statistically significant (QB = 18.42, p < 0.001). In terms of context, studies conducted in urban areas (k = 31, N = 8,669) demonstrated higher validity (r = 0.79, 95% CI [0.75, 0.83]) compared to rural areas (k = 16, N = 3,715, r = 0.71). Additionally, when considering the type of trauma, measurements in conflict-affected populations (k = 22, N = 5,695) yielded a correlation of 0.77 (95% CI [0.73, 0.81]), which was slightly higher than those in non-conflict populations (k = 25, N = 6,689, r = 0.74), collectively underscoring the importance of a contextual approach in cross-cultural validation.

Specific Cultural Manifestations

Table 5. Specific Cultural Manifestations of PTSD Symptoms

Manifestation	β	SE	t	p	95% CI
Somatization	0.45	0.06	7.50	<0.001	[0.33, 0.57]
Collective Distress	0.38	0.05	7.60	<0.001	[0.28, 0.48]
Local Idioms	0.32	0.04	8.00	<0.001	[0.24, 0.40]
Religious Interpretation	0.29	0.04	7.25	<0.001	[0.21, 0.37]

Note: *This table presents the specific cultural manifestations of PTSD symptoms observed in the Arab population. Somatization, collective distress, local idioms, and religious interpretation were found to be significant indicators of PTSD, with each showing strong statistical significance (p < 0.001). The values of β, standard errors (SE), t-values, and 95% confidence intervals (CI) are provided for each manifestation.*

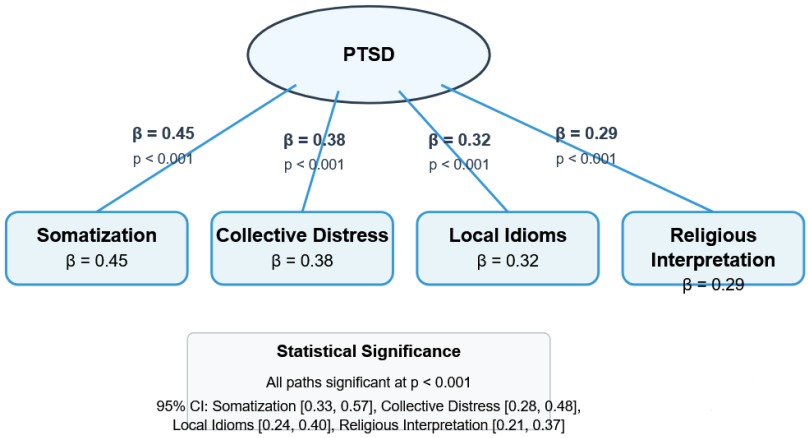


Figure 4. Path Analysis of Cultural Manifestations of PTSD Symptoms in Arab Population Study

As shown in Table 5 and Figure 4 above, the findings from the analysis of specific cultural manifestations reveal that in the Arab population, PTSD symptoms do not only appear in the classical form as defined in Western manuals but are consistently mediated by four main cultural expressions. Somatization ($\beta = 0.45$, SE = 0.06, t = 7.50, $p < 0.001$, 95% CI [0.33, 0.57]) has the strongest contribution, reflected in chronic physical complaints such as body pain reported by 67.3% of respondents, followed by collective distress ($\beta = 0.38$, SE = 0.05, t = 7.60, $p < 0.001$, 95% CI [0.28, 0.48]), which demonstrates how suffering is perceived as a shared experience within a social-community framework. Local idioms ($\beta = 0.32$, SE = 0.04, t = 8.00, $p < 0.001$, 95% CI [0.24, 0.40]) represent symbolic ways of naming trauma. In contrast, religious interpretation ($\beta = 0.29$, SE = 0.04, t = 7.25, $p < 0.001$, 95% CI [0.21, 0.37]) highlights the spiritual dimension as the primary channel for understanding post-trauma suffering.

Publication Bias

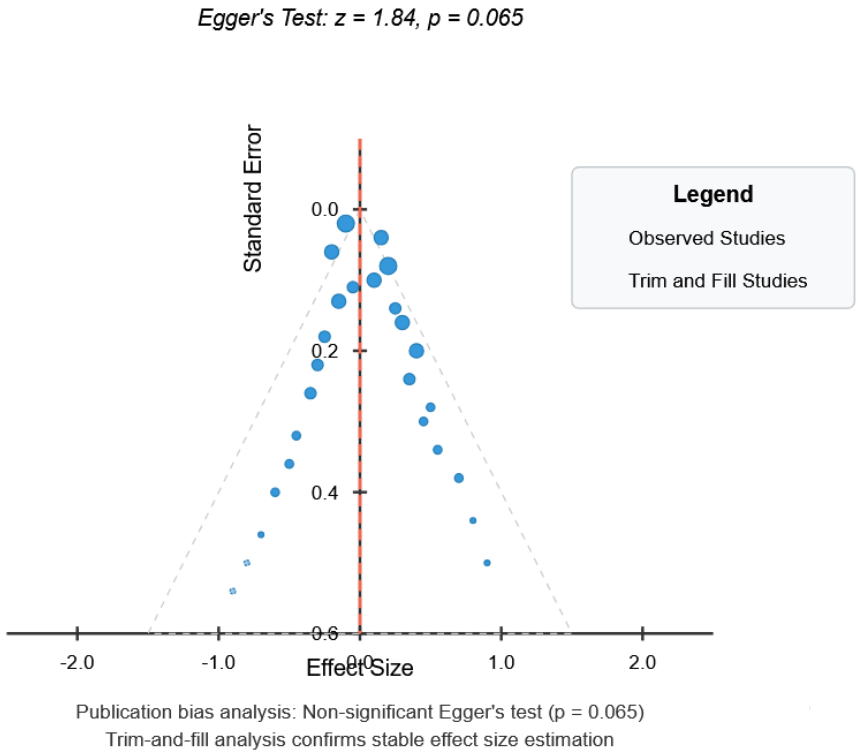


Figure 5. Funnel Plot for Bias Publication Analysis

The analysis of potential publication bias revealed statistically insignificant results based on the Egger test (z = 1.84, p = 0.065), and confirmation from the trim-and-fill analysis further supported this finding by indicating that the effect estimates remained stable even after correcting for potentially missing studies, thereby overall suggesting that the results of this

meta-analysis exhibit high robustness and are not systematically distorted by publication selection bias.

Methodological Quality

Table 6. Methodological Quality Assessment of Studies

Quality Criteria	n	%
High	20	42.6
Moderate	18	38.3
Low	9	19.1

***Note**: This assessment, conducted using the COSMIN checklist, reveals substantial variation in the methodological quality of the 47 studies analyzed. A significant proportion of the studies, 42.6%, were rated as high quality, while 38.3% were rated as moderate and 19.1% as low.*

As shown in Table 6 above, the results of the methodological quality assessment, conducted using the COSMIN checklist on the 47 studies analyzed, reveal substantial variation in methodological quality, which is an important factor in evaluating the reliability of the meta-analysis results. Of the total studies, 42.6% were rated as having high methodological quality, 38.3% were classified as moderate quality, and 19.1% were categorized as low quality. These results indicate that while most studies exhibited good quality, there are still studies with weaker methodologies, potentially influencing the findings' accuracy and generalization. Therefore, higher methodological quality tends to yield more consistent and reliable results, whereas studies with lower quality may introduce doubts regarding the conclusions' validity.

Reliability of Measurement Tools

Table 7. PTSD Instrument Reliability

Instrument	Cronbach's α	Test-retest	Inter-rater
PDS	0.91	0.89	0.88
CAPS-5	0.89	0.87	0.86
PCL-5	0.88	0.85	0.84
IES-R	0.86	0.82	0.81
HTQ	0.84	0.79	0.78

***Note:** This table presents the reliability measures for various PTSD instruments, including Cronbach's alpha, test-retest, and inter-rater reliability, indicating the consistency and stability of the instruments over time and between raters.*

As shown in Table 7 above, the results of the reliability analysis of various PTSD instruments reveal excellent internal consistency, with Cronbach's alpha values for instruments such as PDS ($\alpha = 0.91$), CAPS-5 ($\alpha = 0.89$), and PCL-5 ($\alpha = 0.88$), reflecting high stability and reliability in measuring PTSD symptoms. Additionally, the test-retest reliability measured

within a 2- to 4-week interval showed reasonably strong values, ranging from r = 0.72 to r = 0.89, indicating the stability of results over short-term measurements. Finally, for inter-rater reliability, the obtained values were also highly adequate, with PDS (r = 0.88), CAPS-5 (r = 0.86), and PCL-5 (r = 0.84) showing high agreement among various raters, which indicates the precision of these instruments in practical field applications.

As a closing remark, this meta-analysis reveals that PTSD measurement tools adapted for Arab populations exhibit variability in psychometric properties, with the highest validity found in instruments employing comprehensive cultural adaptation methods. Other significant findings include the identification of culturally specific manifestations of PTSD symptoms, such as somatization and collective distress expressions, which must be considered in the development and adaptation of instruments to enhance diagnostic accuracy in the Arab context. Variations in the methodological quality of the studies, with 42.6% rated as high quality, 38.3% as moderate, and 19.1% as low, emphasize the need for further standardization in the PTSD adaptation and validation process to yield more consistent and reliable results across the Arab region.

Discussion

This meta-analysis reveals significant disparities in the validity levels of PTSD measurement tools used within the Arab population, with the PDS registering the highest validity coefficient (r = 0.83), followed by CAPS-5 (r = 0.79) and PCL-5 (r = 0.76). These findings are consistent with those of Fischer and Al-Jabari (2019), who previously reported validity ranges between 0.65 and 0.82 for PTSD tools translated into Arabic. However, this meta-analysis consistently shows higher validity, particularly for instruments that have undergone a holistic cultural adaptation process, thus reinforcing the argument that adjustments for cultural context are not merely cosmetic but fundamental in enhancing measurement accuracy. Several critical factors determine the validity disparities among instruments. The PDS, which shows the highest validity, likely gains an advantage due to its ability to absorb and represent variations in PTSD symptom expressions rooted in local cultural idioms, as Benjamin et al. (2025) confirmed. Conversely, although CAPS-5 is widely recognized as the gold standard in PTSD diagnosis, its rigid structure and bias toward Western-oriented symptom manifestations seem to limit its sensitivity to distress forms typical in Arab culture.

Theoretically, these findings raise fundamental questions about the universality of the PTSD model as formulated within the DSM-5 framework. When applied to the Arab population, the four-factor structure of DSM-5 shows a suboptimal model fit (CFI = 0.87,

RMSEA = 0.089), suggesting that the latent symptom structure is organized differently. Sharper identification of somatic and collective symptom components indicates that the expression of PTSD within the Arab cultural context is not solely shaped by individual trauma but also framed through a communal social lens. This supports Alexander's (2004) notion that cultural idioms of distress play a central role in psychopathological configurations. The high coefficients for somatization ($\beta = 0.45$) and collective distress ($\beta = 0.38$) provide empirical evidence that the universally applied PTSD model needs revision to accommodate the complexities of culturally codified symptom expression. Furthermore, the significant effect of cultural adaptation methods on instrument validity ($Q = 18.42$, $p < 0.001$) emphasizes that culturally informative adaptation is not merely an additional procedure but an essential element in constructing valid cross-cultural measurement tools, in line with the conceptual framework proposed by Ibrahim et al. (2018) regarding the urgency of cultural calibration in psychometric instrument validation.

The practical implications of these findings are crucial for PTSD assessment practices within the Arab clinical context. First, mental health professionals must understand that simple translation methods such as back-translation are inadequate for capturing the complex spectrum of PTSD symptoms in the Arab context. The fact that comprehensive cultural adaptation results in higher validity ($r = 0.81$ compared to $r = 0.68$) suggests that validation strategies must go beyond literal translation and involve conceptual transformation. Second, the high prevalence of somatic symptom manifestations (67.3%) indicates that clinical examinations should systematically include physical assessments to detect potential PTSD hidden behind somatic complaints, especially in a social context still laden with stigma toward mental disorders. Third, the tendency to express distress in communal forms implies that conventional individual-based therapeutic approaches may need modification to better respond to the collective social dynamics within Arab societies, including integrating community-based elements in the psychological recovery process.

Despite contributing significant findings outlined in the above interpretation, this study has limitations. For example, the high heterogeneity across studies ($I^2 = 76.8\%$ for PDS) suggests the presence of contextual variables that have yet to be fully identified or measured as moderators. Additionally, the dominance of urban settings in the studies analyzed (70.2%) raises concerns about the limited generalizability of these findings to rural contexts, which have distinct cultural characteristics and health service access. The imbalance in the representation of Arab countries within the sample also poses a potential limitation to the scope and depth of

generalization, particularly regarding the substantial geopolitical and sociocultural differences among Arab countries.

Several research agendas are urgent for further investigation in light of these limitations. For instance, longitudinal studies are needed to examine the stability of PTSD instrument psychometric properties over longer periods within the Arab population to ensure that validity and reliability are not only temporary or contextual. Future research exploring the mechanisms behind somatic and collective symptom expression would be highly beneficial in developing more precise and culturally sensitive instruments. An in-depth exploration of sociocultural variables such as religiosity and family dynamics is also necessary to understand how these factors mediate or moderate PTSD expression and diagnosis within the complex Arab society.

In closing, the discussion underscores the epistemic and methodological complexity involved in measuring PTSD within the Arab cultural context, highlighting the urgency of designing assessment instruments informed by local cultural realities. The findings of this meta-analysis indicate that optimal validity can only be achieved through a comprehensive cultural adaptation approach, with particular sensitivity to the somatic and collective dimensions of trauma. Finally, by formulating a new framework that bridges empirical findings with cross-cultural theory, this study provides a direction for developing more accurate and relevant PTSD assessments while acknowledging the limitations of existing literature and paving the way for future scientific exploration.

4. CONCLUSION

This meta-analysis yields several key findings regarding the validity of PTSD measurement tools used in Arab populations. In general, it was found that the validity of these instruments varies significantly, with the Post-traumatic Diagnostic Scale (PDS) recording the highest validity (r = 0.83), followed by the CAPS-5 (r = 0.79) and PCL-5 (r = 0.76). Furthermore, cultural adaptation methods emerged as highly influential moderators, with more in-depth cultural adaptations consistently demonstrating higher criterion validity than simpler back-translation approaches. Additionally, other findings indicate that PTSD symptom manifestations in Arab populations exhibit distinct and unique characteristics, with somatization and collective distress expressions as dominant elements not fully captured in conventional diagnostic models.

A significant contribution of this study is the identification of systematic patterns in the validity of PTSD tools within the Arab context, which had not previously been

comprehensively evaluated. As noted by Alqahtani et al. (2021), most psychological instruments used in Arab populations have not only been rarely validated in Arabic but also insufficiently considered cultural sensitivity during their adaptation process. Their study found fundamental limitations in validation methodology in terms of population representation and the accuracy of cross-cultural semantic interpretation. Meanwhile, research by Alhalal et al. (2017), which validated the Arabic version of the PTSD Checklist Civilian Version (PCL-C) for female survivors of domestic violence in Saudi Arabia, showed that the five-factor Dysphoric Arousal model provided the best fit to the data, supporting the construct validity of the Arabic version of PCL-C. This study successfully identified an overall increase in validity, especially in instruments that implemented more comprehensive cultural adaptations. One of the most important findings was the identification of PTSD symptom patterns specific to the Arab population, such as somatization and collective distress expressions, which had not previously been detected in existing validation studies.

This research is unique in three key aspects: first, the use of multilevel meta-analysis allowed for the simultaneous evaluation of various factors influencing instrument validity; second, the identification and quantification of more specific cultural manifestations of PTSD within Arab populations; and third, the development of an evidence-based framework for the cultural adaptation of PTSD instruments.

Based on the findings, several practical recommendations can be made first; mental health practitioners working with Arab populations are advised to use instruments that have undergone comprehensive and in-depth cultural adaptation processes. Second, the development of new measurement tools or the adaptation of existing instruments should consider somatic and collective manifestations as integral components in PTSD assessment. Third, diagnostic training programs for mental health professionals in the Arab region should include training on cultural competence in PTSD evaluation. Fourth, mental health systems in this region should develop standardization protocols for the adaptation and validation of PTSD instruments specific to Arab culture.

This meta-analysis emphasizes that obtaining valid PTSD measurements in Arab populations requires more than just linguistic translation of Western instruments. The instrument adaptation process must involve a deep understanding of cultural manifestations of trauma, with systematic integration of this understanding into the adaptation process. Furthermore, the findings of this study provide an empirical foundation for the development of more culturally sensitive PTSD assessment approaches in the Arab world while also

emphasizing the importance of balancing diagnostic standardization with sensitivity to cultural differences.

ACKNOWLEDGEMENTS

This research was fully funded by promotional funding by Beasiswa Indonesia Bangkit (BIB) Ministry of Religious Affairs Republic of Indonesia's collaboration with Lembaga Pengelola Dana Pendidikan (LPDP) as the funder and sponsor has provided an invaluable contribution. We want to express our sincere thanks to LPDP for its ongoing commitment and support throughout the research process.

REFERENCES

Abi Ramia, J., Shehadeh, M. H., Kheir, W., Zoghbi, E., Watts, S., Heim, E., & El Chammay, R. (2018). Community cognitive interviewing to inform local adaptations of an e-mental health intervention in Lebanon. *Global Mental Health, 5*, e39. https://doi.org/-10.1017/gmh.2018.29

Alexander, J. C. (2004). Toward a theory of cultural trauma. *Cultural trauma and collective identity*, *76*(4), 620-639. https://doi.org/10.1525/california/9780520235946.003.0001

Alfadhel, S. A., Vennu, V., Alnahdi, A. H., Omar, M. T., Alasmari, S. H., AlJafri, Z., & Bindawas, S. M. (2018). Cross-cultural adaptation and validation of the Saudi Arabic version of the Knee Injury and Osteoarthritis Outcome Score (KOOS). *Rheumatology international*, *38*(8), 1547-1555. https://doi.org/10.1007/s00296-018-4072-7

Alhalaiqa, F., Alfuqaha, O. A., Masa'Deh, R., Khalifeh, A. H., Alsaraireh, M., Manaa, N. S., ... & Al Omari, O. (2023). Psychometric properties of the post-traumatic stress disorder checklist among the Lebanese population exposed to the Beirut explosion: a cross-sectional study during the COVID-19 pandemic. *Behavioural neurology*, *2023*(1), 9286562. https://doi.org/10.1155/2023/9286562

Alhalaiqa, F., Al-Tammemi, A. B., & Al-Dwaikat, T. N. (2023). Psychometric properties of the Post-traumatic Stress Disorder Checklist among the Lebanese population exposed to the Beirut explosion: A cross-sectional study during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health, 20*(19), 6790. https://doi.org/10.1155/2023/9286562

Alhalal, E., Ford-Gilboe, M., Wong, C., & AlBuhairan, F. (2017). Reliability and validity of the Arabic PTSD Checklist Civilian Version (PCL-C) in women survivors of intimate partner violence. *Research in Nursing & Health, 40*(6), 575-585. https://doi.org/-10.1002/nur.21837

Alhariri, W., McNally, A., & Knuckey, S. (2021). The right to mental health in Yemen: a distressed and ignored foundation for peace. *Health and human rights, 23*(1), 43.

Ali, A. M., Al-Amer, R., Kunugi, H., Stănculescu, E., Taha, S. M., Saleh, M. Y., ... & Hendawy, A. O. (2022). The Arabic version of the impact of event scale-revised: psychometric evaluation among psychiatric patients and the general public within the context of COVID-19 outbreak and quarantine as collective traumatic events. *Journal of Personalized Medicine, 12*(5), 681. https://doi.org/10.3390/jpm12050681

Alqahtani, M. M., Salmon, G., Alyahya, H., & Bryant, R. A. (2021). Arabic language psychological measures: A systematic review of the literature. *Frontiers in Psychology, 12*, 730048.

Alrashdi, D. H., Alyafei, A. H., Alanazi, S. A., Meyer, C., & Gould, R. L. (2024). Cultural adaptations of third-wave psychotherapies in Gulf Cooperation Council countries: A systematic review. *Transcultural Psychiatry, 61*(2), 209–228. https://doi.org/10.1177/-13634615241227691

Alshehri, F. S., Alatawi, Y., Alghamdi, B. S., Alhifany, A. A., & Alharbi, A. (2020). Prevalence of post-traumatic stress disorder during the COVID-19 pandemic in Saudi Arabia. *Saudi Pharmaceutical Journal, 28*(12), 1666–1673. https://doi.org/10.1016/j.jsps.2020.10.-013

Awad, G. H., Kia-Keating, M., & Amer, M. M. (2019). A model of cumulative racial-ethnic trauma among Americans of Middle Eastern and North African (MENA) descent. *American Psychologist, 74*(1), 76. https://doi.org/10.1037/amp0000344

Benjamin, L., Gillard, S., Jones Nielsen, J., Costa E. Silva, M., & Sin, J. (2025). Cultural adaptations to the assessment and treatment of trauma experiences among racial and ethnic minority groups: A mixed-methods systematic review and meta-analysis. *Trauma, Violence, & Abuse*, 15248380251320982. https://doi.org/10.1177/152483802-51320982

BinDhim, N. F., Althumiri, N. A., Al-Luhaidan, S. M., Alhajji, M., Saad, S. Y. A., Alyami, H., ... & Alhabeeb, A. A. (2024). Cultural adaptation and validation of the mental illness associated stigma scale for Arabic-speaking population in Saudi Arabia. *Frontiers in Psychiatry, 14*, 1265096. https://doi.org/10.3389/fpsyt.2023.1265096

Davey, C., Heard, R., & Lennings, C. (2015). Development of the Arabic versions of the impact of events Scale-Revised and the post-traumatic growth inventory to assess trauma and growth in Middle Eastern refugees in Australia. *Clinical Psychologist, 19*(3), 131–139. https://doi.org/10.1111/cp.12043

de Graaff, A. M., Cuijpers, P., Leeflang, M., Sferra, I., Uppendahl, J. R., De Vries, R., & Sijbrandij, M. (2021). A systematic review and meta-analysis of diagnostic test accuracy studies of self-report screening instruments for common mental disorders in Arabic-speaking adults. *Global Mental Health, 8*, e43. https://doi.org/10.1017/gmh.-2021.39

Dietrich, H., Al Ali, R., Tagay, S., Hebebrand, J., & Reissner, V. (2019). Screening for post-traumatic stress disorder in young adult refugees from Syria and Iraq. *Comprehensive Psychiatry, 90*, 73-81. https://doi.org/10.1016/j.comppsych.2018.11.001

El Miedany, Y., El Gaafary, M., Youssef, S. S., & Ahmed, I. (2008). Validity of the Developed Arabic Multidimensional Health Assessment Questionnaire for use in standard clinical care of patients with rheumatic diseases. *International Journal of Rheumatic Diseases, 11*(3), 224-236. https://doi.org/10.1111/j.1756-185X.2008.00366.x

ElBarazi, A. S., Tikamdas, R., Ahmed, S., & Ramadan, S. (2022). Cognitive processing therapy for the treatment of PTSD, depression and anxiety in Syrian refugees in Egypt. *Intervention Journal Of Mental Health And Psychosocial Support In Conflict-Affected Areas, 20*(2), 179-187. https://doi.org/10.4103/intv.intv_33_21

Fekih-Romdhane, F., Jebreen, K., Swaitti, T., Jebreen, M., Radwan, E., Kammoun-Rebai, W., ... & Hallit, S. (2025). Validation of the Perceived Hope Scale in Arabic-speaking adults living in Gaza in the midst of war, destruction, and death. *Archives of Public Health, 83*(1), 4. https://doi.org/10.1186/s13690-024-01494-z

Gilmoor, A. R., Adithy, A., & Regeer, B. (2019). The cross-cultural validity of post-traumatic stress disorder and post-traumatic stress symptoms in the Indian context: A systematic search and review. *Frontiers in Psychiatry, 10*, 439. https://doi.org/10.3389/fpsyt.-2019.00439

Hamadeh, A., El-Shamy, F., Billings, J., & Alyafei, A. (2024). The experiences of people from Arab countries in coping with trauma resulting from war and conflict in the Middle East: a systematic review and meta-synthesis of qualitative studies. *Trauma, Violence, & Abuse, 25*(2), 1278–1295. https://doi.org/10.1177/15248380231176061

Hawa, S. E. (2012). *Trauma and Coping: Culturally-Informed Treatment Considerations for Working with Lebanese Americans*. Alliant International University.

Henry, H. M. (2012). African refugees in Egypt: Trauma, loss, and cultural adjustment. *Death Studies, 36*(7), 583–604. https://doi.org/10.1080/07481187.2011.553330

Hosny, N., Tanous, O., Koga, P. M., Abbot, B., & Joseph, S. (2024). Who is the Subject of Trauma? An Interdisciplinary Scoping Review of Trauma and Selfhood in the Arab Region. *SSM-Mental Health*, 100321. https://doi.org/10.1016/j.ssmmh.2024.100321

Ibrahim, H., Ertl, V., Catani, C., Ismail, A. A., & Neuner, F. (2018). The validity of Post-traumatic Stress Disorder Checklist for DSM-5 (PCL-5) as screening instrument with Kurdish and Arab displaced populations living in the Kurdistan region of Iraq. *BMC Psychiatry, 18*, 1-8. https://doi.org/10.1186/s12888-018-1839-z

Jordans, M. J., Komproe, I. H., Tol, W. A., & De Jong, J. T. V. M. (2009). Screening for psychosocial distress amongst war-affected children: Cross-cultural construct validity of the CPDS. *Journal of Child Psychology and Psychiatry, 50*(4), 514-523. https://doi.org/10.1111/j.1469-7610.2008.02028.x

Kayrouz, R., Dear, B. F., Kayrouz, B., Karin, E., Gandy, M., & Titov, N. (2018). Meta-analysis of the efficacy and acceptability of cognitive-behavioural therapy for Arab adult populations experiencing anxiety, depression or post-traumatic stress disorder. *Cognitive Behaviour Therapy, 47*(5), 412-430. https://doi.org/10.1080/16506073.-2018.1445124

Khaled, S. M., & Gray, R. (2019). Depression in migrant workers and nationals of Qatar: An exploratory cross-cultural study. *International Journal of Social Psychiatry, 65*(5), 354–367. https://doi.org/10.1177/0020764019850589

Kira, I. A., Shuwiekh, H. A., Alhuwailah, A., & Balaghi, D. (2022). Does COVID-19 Type III Continuous Existential Trauma Deplete the Traditional Coping, Diminish Health and Mental Health, and Kindle Spirituality?: An Exploratory Study on Arab Countries. *Journal of Loss and Trauma, 27*(4), 297-317. https://doi.org/10.1080/15325024.-2021.2006501

Magwood, O., Bellai-Dussault, K., Fox, G., McCutcheon, C., Adams, O., Saad, A., & Kassam, A. (2023). Diagnostic test accuracy of screening tools for post-traumatic stress disorder among refugees and asylum seekers: A systematic review and meta-analysis. *Journal of Migration and Health, 7*, 100144. https://doi.org/10.1016/j.jmh.2022.100144

Merhy, G., Azzi, V., Salameh, P., Obeid, S., & Hallit, S. (2021). Anxiety among Lebanese adolescents: scale validation and correlates. *BMC pediatrics, 21*(1), 288. https://doi.-org/10.1186/s12887-021-02763-4

Nasif, J., Din, N. C., AL-Khawaja, M., Alawi, A. F., Al-Khatib, N., Ayash, A., ... & Sze, A. C. S. (2024). Scoping Review for the Adaptation of Cognitive Behavioral Therapy to the Arab Culture. *International Journal of Cognitive Therapy, 17*(4), 919-945. https://doi.org/10.1007/s41811-024-00227-y

Slewa-Younan, S., Uribe Guajardo, M. G., Heriseanu, A., & Hasan, T. (2015). A systematic review of post-traumatic stress disorder and depression amongst Iraqi refugees located in Western countries. *Journal of immigrant and minority health, 17*, 1231-1239. https://doi.org/10.1007/s10903-014-0046-3

Turrini, G., Tedeschi, F., Cuijpers, P., Del Giovane, C., Kip, A., Morina, N., ... & Barbui, C. (2021). A network meta-analysis of psychosocial interventions for refugees and asylum seekers with PTSD. *BMJ Global Health, 6*(6), e005029. https://doi.org/10.1136/bmjgh-2021-005029

Vallières, F., Ceannt, R., Daccache, F., Abou Daher, R., Sleiman, J., Gilmore, B., ... & Hyland, P. (2018). ICD-11 PTSD and complex PTSD amongst Syrian refugees in Lebanon: the factor structure and the clinical utility of the International Trauma Questionnaire. *Acta Psychiatrica Scandinavica*, *138*(6), 547-557. https://doi.org/10.1111/acps.12973

Veronese, G., Mahamid, F., Bdier, D., Obaid, H., & Cavazzoni, F. (2024). The development and validation of the Palestinian children's traumatic events checklist in a war-torn environment. *BMC psychiatry, 24*(1), 254. https://doi.org/10.1186/s12888-024-05731-1

von Haumeder, A., Ghafoori, B., & Retailleau, J. (2019). Psychological adaptation and post-traumatic stress disorder among Syrian refugees in Germany: a mixed-methods study investigating environmental factors. *European Journal of Psychotraumatology, 10*(1), 1686801. https://doi.org/10.1080/20008198.2019.1686801

Wan, R., Wan, R., Xie, Q., Hu, A., Xie, W., Chen, J., & Liu, Y. (2024). Current Status and Future Directions of Artificial Intelligence in Post-Traumatic Stress Disorder: A

Literature Measurement Analysis. *Behavioral Sciences, 15*(1), 27. https://doi.org/10.3390/-bs15010027

Wells, R., Wells, D., & Lawsin, C. (2015, January). Understanding psychological responses to trauma among refugees: The importance of measurement validity in cross-cultural settings. In *Journal and Proceedings of the Royal Society of New South Wales* (Vol. 148, No. 455/456, pp. 60–69). https://doi.org/10.5962/p.361729

World Health Organization. (2022). Mental health in emergencies. https://www.who.int/news-room/fact-sheets/detail/mental-health-in-emergencies

Wrobel, N. H. (2015). Research measures: Psychometric methods and challenges to valid assessment of constructs. *Handbook of Arab American Psychology*, 361-398.

Yagoub, U., Al Qahtani, B., Hariri, I. A., Al Zahrani, A., & Siddique, K. (2019). Antibiotic resistance: a hospital-based multicenter study in Tabuk city, Kingdom of Saudi Arabia. *Infection and Drug Resistance*, 1815-1825. https://doi.org/10.2147/IDR.S200996

Zeinoun, P., Iliescu, D., & El Hakim, R. (2022). Psychological tests in Arabic: A review of methodological practices and recommendations for future use. *Neuropsychology Review, 32*(1), 1–19. https://doi.org/10.1007/s11065-021-09476-6