



Translation and Validation of the Bahasa Malaysia Version of the Adverse Childhood Experiences Questionnaire

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Abstract

Adverse Childhood Experiences (ACE) encompass traumatic circumstances encountered during childhood, including abuse, neglect, and household dysfunction. The ramifications of ACE exposure in adulthood are linked to poor social, behavioural, and health outcomes. The ACE questionnaire has been widely used to identify individuals with childhood adversities and their relation to developing chronic diseases in adulthood. This research aims to translate and validate the 10-item ACE questionnaire from English to Bahasa Malaysia to facilitate its application in our context. The translation process involved forward and backward translation conducted by two language experts fluent in English as their second language. Content validation was performed by three public health specialists and three language experts. A pilot test was subsequently conducted involving 200 participants to assess the reliability of the translated questionnaire. After cross-cultural adaptation, we retained eight items with three domains of ACE. The item-level content validity index (I-CVI) ranged from 0.83 to 1.00, while the average scale-level content validity index (S-CVI/Ave) ranged from 0.88 to 0.98, signifying strong content validity. Furthermore, the overall Cronbach's alpha coefficient was determined to be 0.703, indicating good reliability. In conclusion, we affirm that the 8-item Bahasa Malaysia version of the questionnaire presents a valid and reliable tool for assessing ACE among adult males in Malaysia.

Keywords: Adverse childhood experiences questionnaire, Content validity, Internal consistency, Questionnaire validation

What was Known

- The English version of the Adverse Childhood Experiences questionnaire measures three domains: abuse, neglect, and household dysfunction.
- The Adverse Childhood Experiences questionnaire has been used widely in health and social research to identify childhood adversities and their relations to health outcomes.
- The original 10-item measure shows good internal consistency and construct validity.

What's New and Next

- The 8-item Bahasa Malaysia version of the Adverse Childhood Experiences questionnaire shows good content validity and internal consistency.
- Further research with a larger sample size is required to determine the questionnaire's psychometric properties among different races in Malaysia.

Introduction

Adverse childhood experiences (ACE) encompass traumatic conditions that children may face early in life, such as abuse, neglect, and household dysfunction¹. Exposure to ACE has been consistently linked to adverse social, behavioural, and health outcomes in adulthood. For instance, there is evidence suggesting the intergenerational transmission of problematic parenting behaviours from adults who experienced childhood adversity due to unresolved abuse experiences². Additionally, ACEs have been associated with an increased likelihood of alcohol abuse, chronic diseases, and post-traumatic stress disorder in adulthood³. Moreover, adults who have experienced childhood adversity face elevated risks of obesity, depression, anxiety, and asthma⁴. Early-life adversities often contribute to the perpetration of intimate partner violence among men, with factors such as living situations and financial status mediating this relationship. Men who grew up in violent homes may exhibit a propensity for aggression and a tendency to use violence as a means to resolve conflicts⁵.

The development of the ACE questionnaire started in 1995, involving 13,494 adults. It was a joint effort between the Centers for Disease Control and Prevention (CDC) and Kaiser

Permanente in San Diego, California. The original 17-item questionnaire comprehensively assesses an individual's adverse experiences of physical, sexual, and emotional abuse and household dysfunction during childhood⁶. A new version of the 10-item questionnaire emerged, adding childhood neglect. The 10-item questionnaire consists of three domains: abuse (physical, emotional, and sexual), neglect (physical and emotional), and household dysfunction (substance abuse, mental illness, domestic violence, or criminal behaviour). Respondents indicate "Yes" or "No" for each item, with a score of one assigned to "Yes" and zero to "No" (Dube, 2018; Felitti et al., 1998; Felitti et al., 2014). The ACE questionnaire was adapted from the Conflicts Tactic Scale⁸, the sexual abuse questionnaire⁹, and the National Health Interview Survey¹⁰.

The 10-item ACE questionnaire has undergone extensive validation and reliability testing to establish its psychometric properties. It has been demonstrated as a valid tool for predicting a wide range of health outcomes and behavioural problems^{1,5,11}. The questionnaire is available in multiple languages, including English, Spanish, French, German, Swedish, and Norwegian. Its Cronbach's alpha values range from 0.67 to 0.88, indicating varying levels of internal consistency across its items^{2,12,13}. Nonetheless, the questionnaire demonstrates acceptable psychometric properties, boasting an internal consistency coefficient (theta) of 0.86 and satisfactory internal validity with correlation coefficients ranging from 0.28 to 0.70, all of which are statistically significant ($p < 0.001$)¹². The questionnaire is designed for adults and has found application in the United States' Behavioral Risk Factor Surveillance System. It can be administered through either interviews or self-reporting methods, providing flexibility in data collection. Furthermore, the questionnaire is readily accessible for download from the Centers for Disease Control and Prevention (2023).

Notable, the ACE questionnaire is simpler and shorter than the 43-item Adverse Childhood Experiences International Questionnaire (ACE-IQ)¹⁵. The numerical scoring system to identify adverse experiences allows for a quantitative measure of the overall exposure to childhood adversity. The cumulative scores can be used to assess the impact of adverse experiences and correlate them with various health and behavioral outcomes. Additionally, the ACE questionnaire is preferable as it comprehensively assesses domains of childhood adversities. It also has good internal consistency and construct validity with high correlations with the Childhood Trauma Inventories Questionnaire (CTQ)¹⁶. However, it is essential to

consider potential recall bias associated with the retrospective nature of the assessment, as it captures experiences that may have occurred years or decades before the evaluation.

This study holds significant value as it aims to translate and validate the English version of the 10-item ACE questionnaire into Bahasa Malaysia, the national language of Malaysia. By undertaking this crucial step, we enhance the questionnaire's utility in our context and ensure its relevance for measuring adverse childhood experiences within the Malaysian population. Moreover, the lack of psychometric evaluation of the ACE questionnaire in Malaysia underscores the importance of our research, as it fills a critical gap in the existing literature. Through this study, we aim to address this gap by examining the validity and reliability of the Bahasa Malaysia version of the ACE questionnaire. By validating the Bahasa Malaysia version of the ACE questionnaire, we provide researchers and public health practitioners in Malaysia with a robust tool to measure childhood adversities accurately. Additionally, evaluating the questionnaire in the Malaysian population will contribute to the broader body of ACE research, shedding light on cross-cultural variations and ensuring the questionnaire's reliability and validity across diverse populations. Ultimately, our study has the potential to advance the understanding of ACE within the Malaysian context and pave the way for targeted interventions to mitigate the impact of adverse childhood experiences in the country.

Materials and Methods

The translation process takes into deliberation the semantics of the questionnaire and the cross-cultural adaptation needed to maintain the validity of the questionnaire. In this process, we followed the translation, adaptation, and validation steps outlined in a validated instrument used in healthcare research¹⁷. By adhering to these established guidelines, we aimed to ensure the accuracy and cultural appropriateness of the translated questionnaire. We conducted the study in two phases. In phase one, we performed content validity, followed by phase two, involving a cross-sectional study to test the questionnaire's reliability.

Translation process

The ACE questionnaire was translated into Bahasa Malaysia following the international cross-cultural adaptation guidelines to ensure the original version's accuracy and consistency¹⁷. The purpose of the translation was to achieve equivalence between the English and Bahasa Malaysia versions. The forward translation process was conducted by two translators whose

mother tongue is Bahasa Malaysia. The translators are the language professors at the Faculty of Language, University Malaysia Sarawak (UNIMAS). Each translator independently translated the questionnaire, and their translations were then synthesised and analysed to create a consolidated report. Next, two other language professors from the same faculty, who have English as their second language, performed the backward translation. This step helped identify discrepancies between the original and translated versions. Collaborating with the translators, the principal researchers carefully examined the forward and backward translations, considering any disparities or variations in meaning, language, and cultural context. They worked to reconcile discrepancies and refine the translation, resulting in the first version of the ACE questionnaire in Bahasa Malaysia (Figure 1).

By following these rigorous translation processes and involving multiple language experts, the study ensured the accuracy and quality of the translation. This approach increases the likelihood that the Bahasa Malaysia version of the ACE questionnaire maintains the intended meaning and validity of the original English version.

Validation process

Content validity

In this study, six experts participated in the content validation process. The expert panel consisted of three Public Health Specialists working with the Ministry of Health Malaysia and three language experts from the Faculty of Language at UNIMAS. We ensured a comprehensive evaluation from content and linguistic perspectives by including Public Health Specialists and language experts in the panel. The Public Health Specialists have extensive experience managing communicable and non-communicable diseases and expertise in family health units. They excel in public health case management, specifically in the context of the One Stop Crisis Centre (OSTPC), which encompasses addressing suspected cases of child abuse and neglect (SCAN). The experts reviewed and assessed the questionnaire for relevance, clarity, simplicity, and ambiguity. The experts rate their responses using a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree), providing a standardised approach for evaluating the questionnaire's characteristics¹⁸. Using the Likert scale, the experts could give nuanced feedback and indicate their agreement or disagreement with the questionnaire's relevance, clarity, simplicity, and ambiguity. The experts also provide comments for each item in the translated questionnaire (Figure 1).

Pilot test

In April 2022, we conducted a cross-sectional, household-based interview in Sibu, Sarawak. Two neighbourhood areas were randomly selected from a list provided by the Sibu Divisional Office, Sarawak¹⁹. From the chosen neighbourhood areas, we used a random number generator to select our respondents based on the household list provided by the head of the community. The inclusion criteria for the respondents were as follows: 1) being a married male, 2) aged 18 years and above, 3) Malaysian citizenship, and 4) being literate and able to understand Bahasa Malaysia. Individuals with mental disorders or those unwilling to participate were excluded. The decision to focus solely on male respondents was due to the intention to utilise the translated questionnaire in a study on family violence among males in Sarawak, Malaysia.

The formula for sample size was ($n = \ln(1-0.95)/\ln(1-0.02)$), as suggested by Viechtbauer et al.²⁰ It includes a 95% confidence interval (γ) and the probability (π) of detecting the slightest problem that may arise during the actual study of family violence predictors in Sarawak. This questionnaire will be a critical component of the upcoming research, and it was essential to ensure that the pilot study had ample statistical power to detect any problems. The probability (π) was set at 0.02 (2%) to ensure accuracy. Therefore, the minimal sample size required is 200²¹.

Statistical analysis

For content validity, the parameters calculated were the item-level content validity index (I-CVI), the scale-level content validity index based on the average method (S-CVI/Ave), and the scale-level content validity index based on the universal agreement method (S-CVI/U). The acceptable CVI for six experts is 0.83 and above^{18,20}. Then, we assessed internal reliability by calculating Cronbach's alpha coefficient using IBM SPSS version 28 (IBM SPSS Statistics, 2022). The acceptable value for Cronbach's alpha is > 0.70 ²⁴.

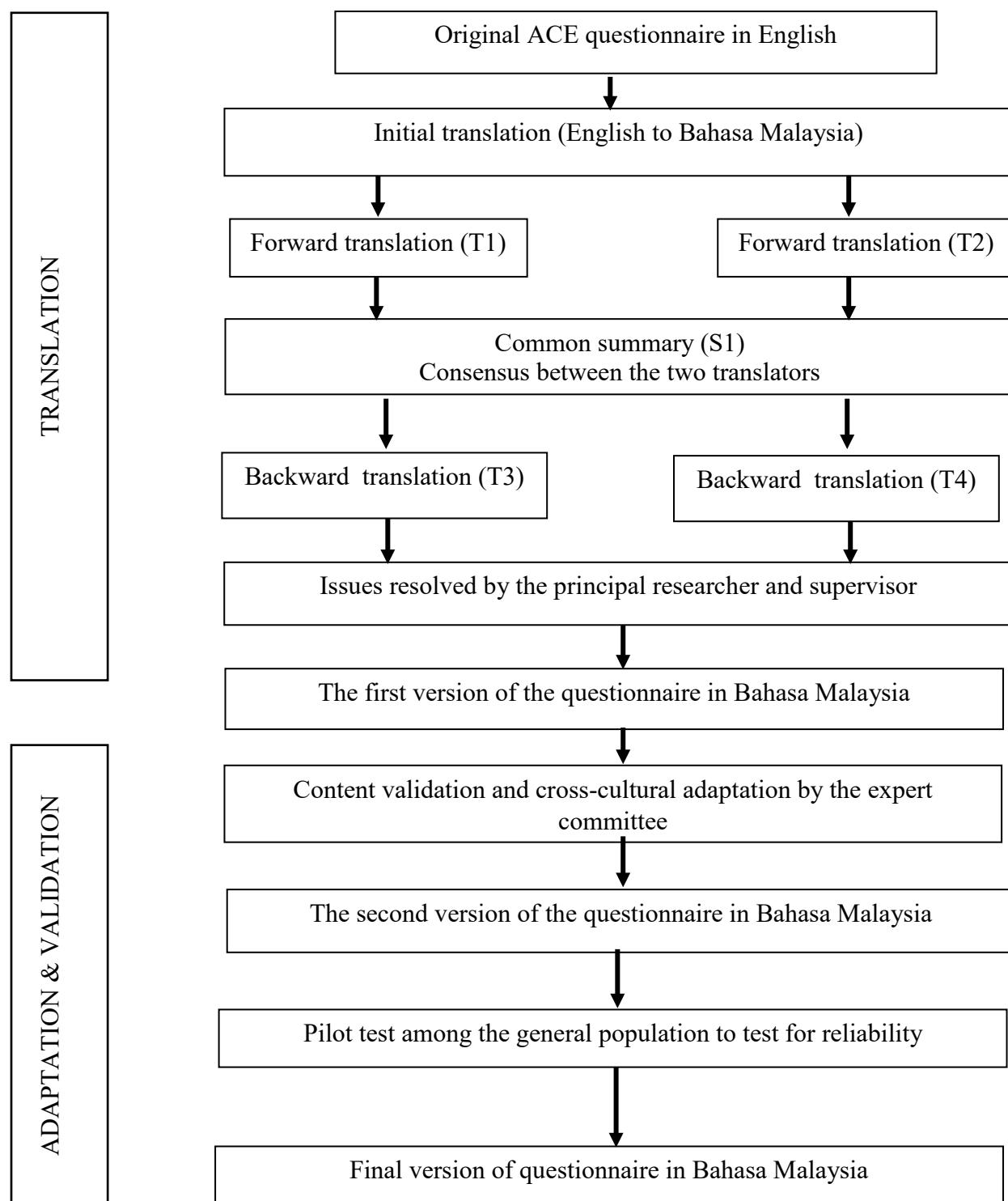


Figure 1 Translation and validation process of the questionnaire

Results

Content validity

The item-by-item analysis reveals unanimous agreement among all experts regarding the relevance of the items, with a mean of 4.00. However, two experts, namely a public health specialist and a language expert, expressed disagreement (a score of two) regarding questions five to ten regarding clarity, simplicity, and ambiguity. Consequently, the mean score for this subset of questions was 3.33. Moreover, the experts identified questions nine and ten as potentially causing non-responses from participants due to concerns about societal stigma or personal embarrassment, resulting in missing data. As a result, the expert reviews recommended rephrasing questions five to eight and omitting questions nine and ten. It is essential to highlight that removing questions nine and ten will not compromise the questionnaire's ability to measure all three domains of ACE (abuse, neglect, and household challenges) (Table 1).

After making the revisions by removing questions nine and ten and rephrasing questions five to eight, the questionnaire was sent back to the experts. The individual I-CVI scores for the 8-item translated questionnaire ranged from 0.83 to 1.00 for all parameters, indicating agreement among the experts that the eight questions adequately captured the ACE dimensions and were relevant, clear, simple, and not ambiguous. The S-CVI/Ave for relevance was 0.98, clarity was 0.88, simplicity was 0.92, and ambiguity was 0.89. Notably, these values surpassed the acceptable threshold for CVI. However, the S-CVI/UA exhibited variation with 0.88 for relevance, 0.25 for clarity, simplicity scored 0.50, and ambiguity obtained 0.38 (Table 2).

Table 1 Item-to-item analysis of the questionnaire (n=6)

No	Questions	Relevance	Clarity	Simplicity	Ambiguity	Comments
1	Did your parents swear at you, insult you, put you down, or humiliate you?	4.00	4.00	4.00	4.00	Good
2	Did your parents push, grab, slap, or throw something at you?	4.00	4.00	4.00	4.00	Good
3	Did an adult person touch you in a sexual way?	4.00	4.00	4.00	4.00	Good
4	Did you often feel that no one in your family loved you or thought you were important or special?	4.00	4.00	4.00	4.00	Good
5	Did you often feel that you didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?	4.00	3.33	3.33	3.33	Rephrase
6	Were your parents ever separated or divorced?	4.00	3.33	3.33	3.33	Rephrase
7	Were any of your parents often pushed, grabbed, slapped, or had something thrown at them?	4.00	3.33	3.33	3.33	Rephrase

No	Questions	Relevance	Clarity	Simplicity	Ambiguity	Comments
8	Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?	4.00	3.33	3.33	3.33	Rephrase
9	Was a household member depressed or mentally ill or did a household member attempt suicide?	4.00	3.33	3.33	3.33	Respondents may not answer due to embarrassment or concerns about facing societal stigma.

Table 2 Content analysis of the questionnaire (n=6)

Parameters	I-CVI	S-CVI/Ave	S-CVI/U
Relevance	0.83-1.00	0.98	0.88
Clarity	0.83-1.00	0.88	0.25
Simplicity	0.83-1.00	0.92	0.50
Ambiguity	0.83-1.00	0.89	0.38

Reliability analysis

Regarding reliability analysis, we conducted a pilot test involving 200 respondents. Their mean age was 37 years, with the youngest was 25, and the oldest was 60. The mean household income was MYR 4048.95, with a minimum of MYR 1500 and a maximum of MYR 9000. The majority of our respondents are Iban and Malay. Specifically, 48.5% of the participants held diplomas (Table 3). Our assessment of the questionnaire's reliability, using Cronbach's alpha coefficient, yielded a value of 0.703, indicating good internal consistency. However, item six exhibited poor interrelatedness, with a corrected item-total correlation below the recommended threshold of 0.30. Although removing item six would have improved the overall Cronbach's alpha to 0.734, we decided to retain it based on feedback from expert reviewers, as it was deemed important for capturing ACE. Conversely, the remaining items displayed strong interrelatedness, with corrected item-total correlations surpassing 0.30 (Table 4).

Table 3 Sociodemographic characteristics of respondents for reliability test (n=200)

Characteristics	n (%)	Mean (SD)
Age (years)		
20-40	147 (73.5)	37.57 (8.4)
41-60	53 (26.5)	Min,Max: 25, 60
Household income (MYR)		
< 3000	28 (14.0)	4038.95 (1426.4)
3000-5000	119 (59.5)	Min, Max: 1500, 9000
> 5000	53 (26.5)	
Race		
Malay	30 (15.0)	
Chinese	62 (31.0)	
Iban	86 (43.0)	
Others	22 (11.0)	
Employment		
Labourer	18 (8.5)	
Farmer	24 (12.0)	
Civil servant	32 (16.0)	
Self-employed	44 (22.0)	
Private sector	83 (41.5)	
Education level		
Primary	11 (5.5)	
Secondary	73 (36.5)	
Diploma	97 (48.5)	
Degree	19 (9.5)	

Table 4 Reliability analysis of the questionnaire (n=200)

No.	Questions	Overall, Cronbach's	Corrected Item-	Cronbach's alpha
		Alpha (α)	Total Correlation	(α) if the item deleted
1.	Did your parents swear at you, insult you, put you down, or humiliate you?		0.353	0.685
2.	Did your parents push, grab, slap, or throw something at you?		0.410	0.670
3.	Did an adult person sexually touch you?		0.452	0.667
4.	Did you often feel that no one in your family loved you or thought you were important or special?	0.703	0.341	0.685
5.	Did you often feel that you didn't have enough to eat, had to wear dirty clothes, or had no one to protect you?		0.496	0.650
6.	Were your parents ever separated or divorced?		0.101	0.734
7.	Were your parents ever grabbed, slapped, kicked, or thrown things at each other?		0.632	0.629
8.	Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?		0.454	0.660

Discussion

Various studies have reported a strong relationship between childhood adversity and the development of chronic diseases during adulthood^{1,25,26}. Therefore, we need a more upfront tool to identify the impacted individuals to improve their health outcomes. Addressing this need, we translate and validate the English version of the 10-item ACE questionnaire into Bahasa Malaysia for use in our setting. Generally, the assessment of content validity and the acceptability of items by those who will use them was achieved through qualitative work²⁷. Nonetheless, we demonstrate the importance of considering the experts' views on content validation of ACE measures. The experts expressed concerns about items nine and ten, which were sensitive,

ambiguous, and could potentially be judgemental in Malaysian culture. The consequences of including those items would be an introduction of response bias and a high non-response rate, which would have a detrimental effect on the validity of the questionnaire. Removing items nine and ten from an original questionnaire is not unusual. Wade et al. (2017) made similar changes, shortening the original ACE questionnaire into two domains only (household alcohol and emotional abuse). The study yielded good sensitivity and convergent validity, with sensitivity between 70% and 99% and specificity between 66% and 94%. Likewise, Ford et al. (2014) shortened the questions by removing emotional and physical neglect items. The psychometric testing showed good construct validity and adequate internal consistency. Additionally, an 8-item retrospective self-report ACE questionnaire measuring lifetime physical, emotional, and sexual abuse, excluding the household dysfunctions domain, yielded a valid measure of physical, emotional, and sexual abuse²⁹.

Content validity provides evidence regarding the extent to which components of an assessment are relevant and accurately represent the intended construct for a specific assessment purpose. This study reported the CVI, a widely accepted measure for evaluating an instrument's content validity³⁰. The Bahasa Malaysia version of the ACE questionnaire accurately measured childhood adversity, as evidenced by a good I-CVI ranging from 0.83 to 1 and a good S-CVI/Ave for all parameters^{22,31}. Even though we removed two items from the household dysfunction domain, we achieved a good CVI, suggesting that it possesses similar properties and measures as the original version³². The construct validity of the original ACE questionnaire has already been established, with the identification of three domains: abuse, neglect, and household challenges (Mei et al., 2022; Zarse et al., 2019). In comparison, our translated questionnaire also retained the same domains.

Regarding reliability, our translated questionnaires consisting of eight items consistently measured the concept, as indicated by an overall Cronbach's alpha of 0.703. This value suggests a high reliability in assessing adverse childhood experiences³⁵. Moreover, all eight items demonstrated good interrelatedness. It means that the items are not only individually reliable but also show strong correlations with each other, indicating that they are measuring a cohesive and interrelated concept³⁶. Likewise, other studies have also adjusted the number of questionnaire items to suit the local context, resulting in variations such as eight²⁹, ten¹⁶, and eleven items³⁷. Regardless of the item count, the adapted questionnaire displayed good validity

and internal reliability^{16, 29, 37}. This underscores the flexibility of the questionnaire and its ability to maintain its effectiveness and measurement properties across various contexts, making it a valuable tool for assessing childhood adversities.

This study is subject to several limitations. Firstly, recall bias is a potential issue, as respondents may struggle to remember events from their childhood accurately. To mitigate this, interviewers allocated ample time to explore the circumstances and not rush the interview sessions. Secondly, the small number of respondents prevented the assessment of psychometric properties such as factor analysis and measurement invariance. To address this limitation, we recommend future research with a larger sample size to thoroughly investigate the psychometric properties and predictive validity of the Bahasa Malaysia version of the ACE questionnaire. Finally, our study focused on the male population, anticipating its application in future research into family violence prediction among men in Sarawak. Therefore, we suggest future research to include both genders to provide a more comprehensive evaluation of the validity of the 8-item Bahasa Malaysia ACE questionnaire. Nevertheless, it's important to emphasise that despite these limitations, our present study has successfully demonstrated that the translated eight-item ACE questionnaire is valid and reliable for assessing childhood adversities among adult males in Malaysia. This marks a significant step forward in understanding and addressing this critical issue in the region.

Conclusion

In conclusion, the study findings affirm the content validity and reliability of the adapted eight-item Bahasa Malaysia ACE questionnaire for assessing childhood adversities among adult males in Sarawak. The questionnaire has demonstrated its potential as a valuable tool for identifying and understanding the impact of ACE in the Malaysian context. The successful adaptation of the questionnaire opens avenues for further research, particularly in exploring the connections between childhood adversities, health outcomes, and family violence. Moreover, the translated questionnaire holds promise for applications in diverse settings, including primary healthcare and behavioural risk surveys. It can also serve as an effective screening tool in the community to gauge the prevalence and repercussions of ACE. By addressing the limitations and building upon these initial findings, forthcoming studies have the potential to deepen our comprehension of ACE in Malaysia. They can significantly contribute to the development of

targeted interventions and policies aimed at alleviating the effects of childhood adversities and enhancing the overall well-being of individuals who have endured such challenges.

Ethical Approval Statement

We obtained ethics approval from the Ethical Committee of University Malaysia Sarawak (UNIMAS) (Reference: UNIMAS/TNC(PI)/09 – 65/01 (62).

Author Contributions

SR contributed to the study conception and design, manuscript writing, data collection, data analysis, and interpretation. MR contributed to study conception and design, data analysis, and critical revisions for important intellectual content and language editing. All authors read and approved the manuscript before submission for publication.

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Conflicts of Interest

There was no conflict of interest.

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