



OPEN Development and validation of the mental health literacy among Malaysian population (MyMHL) cross-culturally adapted Malay version of MHLq-SVa and MHLS

Teresa Sui Mien Yong¹, Ain Aqiela Azamuddin¹, Siti Syakirin Sazali¹, Mohamad Zabri Johari¹✉, Masitah Ahmad¹, Komathi Perialathan¹ & Luisa Campos²

Mental health remains taboo in many societies, where stigma often hinders open dialogue and delays support-seeking. Culturally relevant literacy tools is crucial to normalize discussions and encourage early interventions. This study aimed to develop and validate a mental health literacy tool tailored to Malaysia's multicultural context. The study began with a structured review aligned with Malaysia's mental health literacy framework. Content and face validity were assessed by six experts and 38 participants using CVI and FVI. Psychometric testing followed in three cycles (May–August 2024) with 500 randomly selected adults proportionally representing ethnicity and locality in Malaysia. Exploratory Factor Analysis identified six factors explaining 71.53% of variance: mental health information knowledge seeking ($\alpha = 0.834$), attitudes promoting recognition and appropriate help-seeking behaviour ($\alpha = 0.914$), mental health problems knowledge ($\alpha = 0.865$), erroneous beliefs and stereotypes ($\alpha = 0.831$), help-seeking behaviour and first aid skills ($\alpha = 0.858$), self-help strategies ($\alpha = 0.905$). Confirmatory Factor Analysis showed acceptable fit, while ICC values above 0.8 confirmed strong reliability. The final 26-item tool demonstrated validity and reliability for Malaysia's diverse population. This tool offers a culturally sensitive approach to identifying literacy levels, thereby informing targeted interventions and policy initiatives to strengthen early recognition, reduce stigma, and enhance mental health support systems for Malaysia.

Keywords Mental health, Literacy, Tool development, Validation

Mental illness is one of the leading causes of disability and health loss in Malaysia, accounting for 8.6% of total disability-adjusted life-years (DALY).¹ A three-fold sharp increase in prevalence on mental health problems among those 16 years and above is also indicated in the National Health and Morbidity Survey (NHMS) from 10.7% in 1996 to 29.2% in 2016.² It is estimated that 1 in 3 Malaysians (about 9.6 million) may suffer mental health issues². The high prevalence and incidence of depression among adults in Malaysia in 2023 (4.6%) has also doubled since 2019 signifying the need to address the issues revolving mental health among Malaysian².

By 2020, mental illness is expected to be the second biggest health problem affecting Malaysians after heart disease.³ The alarming increase of mental illness can be attributed to the fact that it often remains undetected, undiagnosed, and untreated – due to poor recognition of mental disorders, inadequate help-seeking behaviour knowledge, and fear of being judged or ostracized because of cultural and social stigma.

Mental health literacy refers to the 'knowledge and beliefs about mental disorders which aid their recognition, management and prevention' where Rasido emphasized that mental health literacy is not only knowledge but the skills and competencies in an individual to self-manage their mental well-being, self-care and seek help when needed.⁴

¹Institute for Health Behavioural Research, National Institutes of Health, Ministry of Health Malaysia, Shah Alam, Malaysia. ²Faculty of Education and Psychology, Universidade Católica Portuguesa, R. Diogo Botelho 1327, Porto 4169-005, Portugal. ✉email: mzabrijohari@gmail.com; mzabri@moh.gov.my

Jorm et al. (1997) coined mental health literacy into six main aspects namely (1) recognition of mental health disorders (i.e. being able to identify the onset of problem development), (2) knowledge about seeking mental health information, (3) knowledge about risk factors and causes (4) knowledge about self-treatment, (5) knowledge about professional help available, and (6) attitudes that promote recognition and appropriate help-seeking behaviour.⁵ Kutcher et al. (2016) later reconstructed it into four components which are (1) understand how to obtain and maintain good health, (2) understand mental health disorders and the treatments, (3) Decreasing stigma revolving mental illness, and (4) enhancing help-seeking behaviour efficacy.⁶

While numerous tools have been introduced before, many are rooted to fit the Western community which could be challenging to fit a multi-ethnic country such as Malaysia with its linguistically diverse background among the races. Though these tools could be translated into its lingua franca (Malay language) it is still lacking in comprehensive cultural calibration and may not fully reflect diversity in Malaysian communities. Therefore, it is crucial for valid and reliable tool instruments that can accurately detect and measure the range of mental health literacy in the population and furthermore develop prevention programs and public policies to promote improvements in mental health well-being.

Objective

The aim of this study is to develop and validate tools to measure mental health literacy among Malaysian population by translating and cross-culturally adapted from The Mental Health Literacy Scale (MHLS) and Mental Health Literacy Questionnaire-Short Version for Adults (MHLq-SVa) using established methods.

Methods

Study design

The study uses a methodological study design that incorporates repeated cross-sectional data collection to evaluate psychometric properties such as reliability and validity and a stream of processes that is explain in this paper.

Tool

Description of the Adapted Questionnaires.

The Mental Health Literacy Questionnaire – Short Version for Young Adults (MHLq-SVa), developed by Campos (2022)⁷, comprises 16 items spanning four dimensions:

- a) Knowledge of mental health issues, including the general characteristics of mental disorders, their prevalence, signs and symptoms, risk factors, and protective factors that promote mental well-being;
- b) Knowledge of specific mental disorders, specifically depression, anxiety, and schizophrenia;
- c) Endorsement of stereotypes associated with mental health conditions; and
- d) Behavioural intentions, which encompass predispositions to help others, engagement in mental health-promoting behaviours, use of self-help strategies, and actions that support formal and informal help-seeking behaviour.

The Mental Health Literacy Scale (MHLS), developed by O'Connor and Casey (2015), consists of 35 items measured using a 4- or 5-point Likert scale.⁸ It assesses six core attributes of mental health literacy:

- a) The ability to recognize specific mental disorders;
- b) Knowledge of risk factors and causes;
- c) Awareness of self-treatment strategies;
- d) Knowledge of available professional help;
- e) Knowledge of where to seek mental health information; and
- f) Attitudes that facilitate recognition of mental health problems and appropriate help-seeking behaviours.

Development phase (MHL framework according to Kutcher^{6,29})

To inform the development of the tool, a structured literature review was conducted to identify existing measures aligned with Kutcher's mental health literacy framework. Items from both the MHLq-SVa and MHLS were reviewed, with each domain's items evaluated for relevance, representativeness, and coverage of the four target domains.⁶ Items were then systematically selected, adapted, and organized to comprehensively reflect the constructs intended for measurement.

Factors were determined to fit with the definition of the Malaysia Mental Health Literacy (MyMHL).

This tool was developed through a series of systematic stages, each of which is described in detail in the following sections.

Attribute	Conceptual definition	MHLS	MHLq-SVa
Understanding how to obtain and maintain positive mental health	Knowledge and recognition on features of mental illness Knowledge of how and where to seek mental health information	M1 - M4 (Knowledge of how to seek mental health information)	Mq1 - Mq6 (Knowledge of mental health disorders)
Understanding mental disorders and their treatments (knowledge)	Ability to correctly identify features of a disorder		Mq7- Mq9 (Erroneous beliefs/stereotypes)
Decreasing stigma related to mental disorders (attitude)	The degree of attitudes and beliefs, emotional reactions, behavioural intentions and discriminatory behaviour relating to mental illness	M5 - M10 (Attitudes that promote recognition and appropriate help-seeking behaviour)	
Enhancing help-seeking behaviour efficacy (knowing when and where to seek help and developing competencies designed to improve one's mental health care and self-management capabilities)	Knowledge and recognition of a disorder and willingness to seek assistance from mental health professionals and engage in help-seeking behaviour		Mq10 - Mq12 (First aid skills and help-seeking behaviour) Mq13 - Mq16 (Self-help strategies)

Translation procedures

Permission was obtained from the original developers of the MHLS and MHLq-SVa tools^{7,8} to adapt, translate, and culturally contextualize the questionnaires for use in Malaysia^{9,10}. Forward and backward translation of both tools was conducted by certified professional translation services, adhering to the World Health Organization's guidelines for tools translation and adaptation.¹¹

The Malay-translated versions were then compared against existing translations: the Malay version of the MHLS previously developed by Amirah et al. (2020)¹² and the Bahasa Indonesia version of the MHLq-SVa obtained from Campos.⁷ This triangulation ensured semantic accuracy and cultural equivalence between source and target versions.

Content validity

Content validity was established to ensure that the items were relevant and representative of the construct of mental health literacy as defined by Kutcher.⁶ The translated questionnaires, a mapping matrix of domains, and assessment instructions were emailed to a panel of six clinical psychologists serving as subject matter experts (SMEs). The SMEs were also tasked in taking consideration on the suitability of translation and contextualization towards the Malaysian culture from the expert's perspective. This includes ethnicity, religion, culture and state perspective.

Each expert independently evaluated the relevance, clarity, and simplicity of every item using a 4-point Likert scale (1 = not relevant/clear/simple, 4 = highly relevant/clear/simple). Prior to calculating the Item-Level Content Validity Index (I-CVI), responses were dichotomized: ratings of 3 or 4 were recoded as 1, and 1 or 2 as 0. Experts were also invited to provide qualitative feedback and suggestions for rewording.

The Scale-Level Content Validity Index (S-CVI/Ave) was computed to assess overall scale validity. According to standards outlined by Polit and Beck (2006)^{13,14}, an I-CVI of ≥ 0.83 ¹⁵ is acceptable when six or more experts are involved. Results showed I-CVI scores of 0.96 for relevance, 0.90 for clarity, and 0.92 for simplicity, indicating excellent content validity for the adapted tool.

Face validity

Face validity was evaluated by recruiting a diverse sample of 38 participants through online channels. Participants represented various demographic groups (e.g., race, age, education level) and were asked to review each questionnaire item for clarity and comprehensibility using a 4-point Likert scale.

The Face Validity Index (FVI) was calculated in the same manner as CVI, with responses recoded and averaged. An FVI score of ≥ 0.80 is generally considered acceptable^{16,17}. Based on this threshold, the tool achieved an FVI of 0.76 at the baseline stage; revealing a number of weaker items. However, the final version of the tool achieved an FVI of 0.82 after removal of weaker items on the third iteration. Further literature noted retention criteria suggested by Chin et al. (2018)¹⁶, Mahadi et al. (2018)¹⁷, and Yusoff et al. (2019, 2021)^{9,10} are acceptable. Qualitative feedback also confirmed that the items were perceived as understandable and easy to complete. This is conducted to ensure the cultural context translation conducted by the SMEs matched with lay participants perception. Mismatch were discussed, resolved and retested upon necessity.

Pre testing

Pre-testing was conducted between May and August 2024 among 500 Malaysian aged 18 years and above that were able to converse in both English and Malay by using random sampling with proportional allocation, facilitated by a contracted professional market research company that was selected by separate panel outside of the research team following strict requirements listed by the research team. Requirements included having a sufficient number of samples in their sampling frame a database that befits the requirements of the study to allow fair representation and allocation. The proportional allocations were determined according to the national population distributions in Malaysia to ensure representation across locality, gender, ethnicity, locality, and age groups in Malaysia, thereby enhancing sample representativeness and generalizability of the findings.

Participants were invited via email to complete the survey using a secure online platform (SurveyMonkey). Respondents were provided with detailed information on the study background, ethical considerations, and confidentiality protocols, and were required to give informed consent prior to participation.

Test-retest reliability was assessed using the Intraclass Correlation Coefficient (ICC). A two-way mixed-effects model (absolute agreement, single measures) was utilized to determine the stability of the self-report scores over a two-week interval. This process was repeated over three testing cycles to establish the consistency of responses over time.

Statistical analysis

All statistical analyses were conducted using SPSS version 29.0 and R Studio version 3.6.0. The psychometric properties of the MyMHL tool were evaluated to assess both its construct validity and reliability.

Descriptive analysis

Descriptive statistics were used to report the central tendencies and dispersion of scores across domains and total tools. The mean, median, standard deviation as well as minimum and maximum values for each domain and overall score were tabulated to assess scoring trends and data distribution.

Construct validity

Construct validity was assessed using both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA was performed using principal axis factoring with direct oblimin rotation to explore the underlying factor structure of the tool which was assumed to be correlated. Items with factor loadings less than 0.40 were considered insufficient and subject to exclusion. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to determine data suitability for factor analysis.

Subsequently, CFA was conducted to evaluate the measurement model and its fit to the observed data. The following fit indices were used to assess model adequacy: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR). Acceptable model fit was determined by thresholds of CFI and TLI > 0.90, RMSEA < 0.08, and SRMR < 0.10. Additionally, Structural Equation Modeling (SEM) was applied to further examine the relationships among latent constructs and observed variables, with factor loadings ≥ 0.40 and *p*-values < 0.01 considered statistically significant.

Reliability analysis

Reliability was assessed through two key approaches: internal consistency and test-retest reliability. Internal consistency of each domain and the overall tool was evaluated using Cronbach's alpha. A Cronbach's alpha threshold of ≥ 0.70 was considered acceptable, indicating satisfactory homogeneity among items within each subscale. In this study, all domains exceeded this threshold, with the overall alpha coefficient reaching 0.880.

Test-retest reliability was measured using the Intra-class Correlation Coefficient (ICC) to assess the consistency of responses across raters through absolute agreement. ICC values greater than 0.80 were interpreted as high reliability, confirming the tool's consistency and reproducibility.

Patient and public involvement

As this was a tools development study, patients and/or the public were not involved in the design, conduct, reporting or dissemination plans of this research.

Ethical statement

Study ethics approval was obtained prior to the commencement of recruitment. All methods in this study were carried out in accordance with relevant guidelines and regulations as outlined by the Medical Research and Ethics Committee (MREC) Malaysia. Informed consent was taken directly from participants prior to participation in the data collection via two means – verbally at recruitment stage and via online before actual participation in the study.

Results

Sample characteristics

This study involved a total of 500 respondents residing in Malaysia, all of whom completed three consecutive cycles of the questionnaire. The majority of participants were from urban areas (76.6%) and held tertiary-level educational qualifications (83.0%). Gender distribution was balanced. Most respondents identified as Malay or Bumiputera ($n = 352$; 70.4%), Muslim ($n = 313$; 62.6%), and married ($n = 264$; 52.8%). In terms of employment, the largest proportion were government employees ($n = 187$; 37.4%), and more than half of the sample reported a monthly household income below RM4,850 ($n = 288$; 57.6%).

Sociodemographic Variable		<i>n</i> (%)
Locality	Urban	383 (76.6%)
	Rural	117 (23.4%)
Gender	Male	250 (50.0%)
	Female	250 (50.0%)

Sociodemographic Variable		n (%)
Ethnicity	Malay & Bumiputera	352 (70.4%)
	Chinese	113 (22.6%)
	Indian	33 (6.6%)
	Others	2 (0.4%)
Religion	Muslim	313 (62.6%)
	Christian	77 (15.4%)
	Hindu	29 (5.8%)
	Buddha	74 (14.8%)
	Others	7 (1.4%)
Marital status	Never Married	218 (43.6%)
	Married	264 (52.8%)
	Divorced	13 (2.6%)
	Widowed	3 (0.6%)
	Cohabiting	2 (0.4%)
Age Group	18–29	169(33.8%)
	30–64	321 (64.2%)
	65 and above	10 (2.0%)
Level of education	No formal education	2 (0.4%)
	Primary Education	4 (0.8%)
	Secondary Education	79 (15.8%)
	Tertiary Education (STPM/Diploma/Certificate/Matriculation)	159 (31.8%)
	Tertiary Education (Degree/Masters/PhD)	256 (51.2%)
Employment status	Government	187 (37.4%)
	Semi-Government	9 (1.8%)
	Private	103 (20.6%)
	Self-employed	40 (8.0%)
	Full-time Homemaker	18 (3.6%)
	Student	106 (21.2%)
	Pensioner	18 (3.6%)
	Unemployed	19 (3.8%)
Household Income (DOSM, 2022)	B40 (< RM4,850)	288 (57.6%)
	M40 (RM4,850-RM10,959)	152 (30.4%)
	T20 (> RM10,959)	60 (12.0%)
Awareness on mental health illness	Aware	477 (95.4%)
	Unaware	23 (4.6%)
Family members with mental health illness	Aware of having	83 (16.6%)
	Aware of not having	369 (73.8%)
	Unaware	48 (9.6%)
MyMinda Awareness	Aware	124 (24.8%)
	Unaware	376 (75.2%)
Talian HEAL Awareness	Aware	156 (31.2%)
	Unaware	344 (68.8%)

Descriptive analysis

Mean and standard deviation for each domain in mental health literacy scale.

Attributes	Items	Min.	Max.	Median	Mean	SD
Knowledge of how to seek mental health information	4	4	20	12.0	16.80	2.52
Attitudes that promote recognition or appropriate help-seeking behaviour	6	6	30	18.0	19.61	5.18
Knowledge of Mental Health Problem	6	6	30	18.0	25.98	3.06
Erroneous Beliefs/Stereotypes	3	3	15	9.0	12.33	2.50
Help-Seeking Behaviour and First Aid Skills	3	3	15	9.0	12.98	1.99
Self Help Strategies	4	4	20	12.0	17.97	2.27

Mean and Standard Deviation for Mental Health Literacy Scale (MHLS) and Mental Health Literacy Questionnaire Short Version for Adults (MHLq-SVa).

Attributes	Items	Min.	Max.	Median	Mean	SD
Mental Health Literacy Scale (MHLS)	10	10	50	30.0	36.41	6.09
Mental Health Literacy Questionnaire Short Version for Adults (MHLq-SVa)	16	16	80	48.0	69.25	7.15

Mean and Standard Deviation for Overall Mental Health Literacy Scale (MHLS) and Mental Health Literacy Questionnaire Short Version for Adults (MHLq-SVa).

Attributes	Items	Min.	Max.	Median	Mean	SD
Overall Mental Health Literacy Scale (MHLS) and Mental Health Literacy Questionnaire Short Version for Adults (MHLq-SVa)	26	26	130	78.0	105.67	10.66

The descriptive analysis shows that the mean scores for all items exceeded the respective midpoints of their scales which is supported by the observable range of values between the minimum and maximum scores. Further analysis on the ceiling effects was also made based on the baseline (final) score where only 0.2% of the scores were less than 55 out of 130 and only 0.6% of the participants were reported to achieve the maximum score of 130.

Construct validity

Exploratory factor analysis (EFA)

Exploratory Factor Analysis (EFA) was conducted using principal axis factoring with direct oblimin rotation. The original scale consisted of 51 items combined, however, during successive EFA cycles, items with factor loading below 0.40 were removed. Through this item reduction process, a total of 25 items were excluded, resulting in a final solution comprising of 26 items that demonstrated satisfactory factor loadings and conceptual coherence within the Malaysian population. No items with loadings lower than the predefined threshold were retained solely for theoretical considerations.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.883, indicating meritorious sampling adequacy, while Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 7971.757$, $df = 325$, $p < 0.001$), confirming the suitability of the data for factor analysis. Six principal components emerged with eigenvalues greater than 1.0, collectively accounting for 71.53% of the total variance, thus meeting the criteria for factor retention based on Kaiser's criterion and aligning with the theoretical constructs underpinning the tool.

The factor structure corresponded to six conceptual domains:

1. Self-help strategies,
2. Attitudes promoting recognition and help-seeking behaviour,
3. Erroneous beliefs/stereotypes,
4. Knowledge of mental health information sources,
5. Knowledge of mental health problems, and,
6. Help-seeking behaviour and mental health first aid skills.

Items	Self-help strategies	Attitudes that promote recognition and appropriate help-seeking behaviour	Erroneous beliefs (stereotypes)	Knowledge in seeking mental health information	Knowledge of mental health problems	Help-seeking behaviour and first aid skills
Mq14	0.925					
Mq15	0.904					
Mq13	0.849					
Mq16	0.726					
M8		0.874				
M10		0.861				
M5		0.846				
M7		0.818				
M6		0.806				
M9		0.805				
Mq8			0.883			
Mq9			0.874			
Mq7			0.815			
M4				0.839		
M1				0.828		
M2				0.810		

Items	Self-help strategies	Attitudes that promote recognition and appropriate help-seeking behaviour	Erroneous beliefs (stereotypes)	Knowledge in seeking mental health information	Knowledge of mental health problems	Help-seeking behaviour and first aid skills
M3				0.623		
Mq6					0.809	
Mq5					0.807	
Mq3					0.779	
Mq2					0.739	
Mq4					0.725	
Mq1					0.634	
Mq10						0.903
Mq12						0.855
Mq11						0.614

Confirmatory factor analysis (CFA)

The results of the CFA showed that the tool could achieve the acceptable fit values whereby the CFI, TLI, RMSEA, and SRMR values obtained were 0.921, 0.909, 0.066 and 0.057 respectively (Table CFA).

Different fit indices were used to assess model fit as shown below:

Fit Indices	Value	Acceptable Fit Values ¹⁸
Comparative Fit Index (CFI)	0.921	> 0.90*
Tucker-Lewis Index (TLI)	0.909	> 0.90*
Root Mean Square Error of Approximation (RMSEA)	0.066	< 0.08*
Standardized Root Mean Square Residual (SRMR)	0.057	< 0.10*

Internal consistency

In this study, the internal consistency was analysed by using both Cronbach's alpha and intra-class correlation coefficient (ICC).

Cronbach's alpha

The Cronbach's alpha was applied where all attributes were analysed individually, in which, the result shows that the items in each attribute could measure the same construct as the values achieved were higher than 0.4. Besides that, the overall internal consistency was analysed as well, where the result obtained was 0.880 which was considered as a reliable value.

Attributes	Cronbach's Alpha
Knowledge how to seek mental health information	0.834
Attitudes that promote recognition and appropriate help-seeking behaviour	0.914
Knowledge of mental health problems	0.865
Erroneous beliefs (stereotypes)	0.831
Help-seeking behaviour and first aid skills	0.858
Self-help strategies	0.905

Intraclass correlation coefficient (ICC) - inter rater reliability

Meanwhile, the ICC in this study was analysed by measuring the rate of consistency from different raters. Since this tool is based on two different tools that have been modified and translated, this tool was analysed by attributes and overall to assess the internal consistency. The tool demonstrated excellent test-retest reliability (ICC = 0.80) indicating high response stability across measurement occasions and domains.

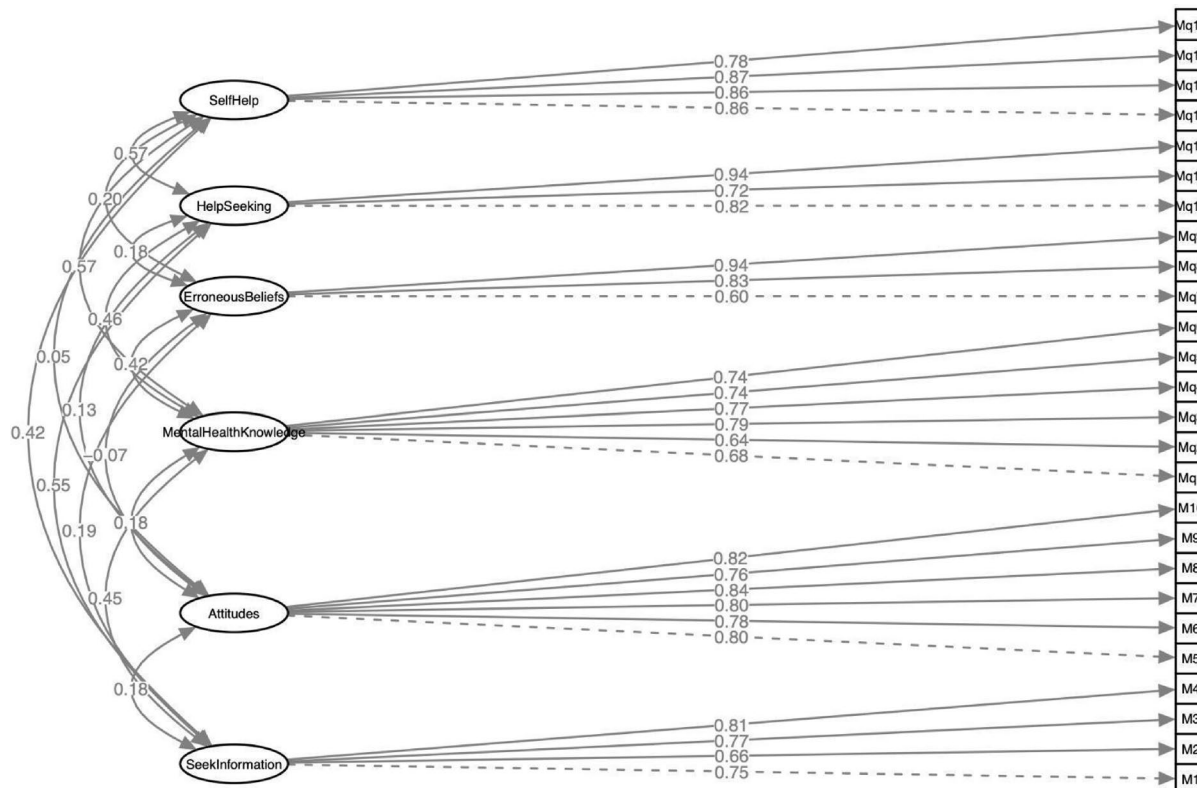
Inter rater reliability was performed to see the consistency of scores for each domain as shown below:

Attributes	ICC value	p-value
Knowledge of how to seek mental health information	0.825	< 0.001
Attitudes that promote recognition and appropriate help-seeking behaviour	0.891	< 0.001
Knowledge of mental health problems	0.856	< 0.001
Erroneous beliefs/stereotypes	0.830	< 0.001

Attributes	ICC value	p-value
First aid skills and help-seeking behaviour	0.850	<0.001
Self-help strategies	0.902	<0.001
Overall MyMHL	0.834	<0.001

Structural equation modeling (SEM)

The SEM were also analysed to gain better insight into the connection of the variables as parts of the Confirmatory Factor Analysis (CFA) whereby all of the values obtained were higher than 0.4 with p-value of less than 0.01, which could be considered as value with high factor loading.



*all of the p-value obtained were <0.01.

Discussion

This study aimed to develop, culturally adapt, and validate the Malaysian Mental Health Literacy (MyMHL) tool based on translated items from the Mental Health Literacy Scale (MHLS) and Mental Health Literacy Questionnaire – Short Version for Adults (MHLq-SVa). The findings indicate that the MyMHL is a valid and reliable tool for measuring mental health literacy (MHL) within Malaysia’s diverse socio-cultural context.

The high content validity indices achieved—0.96 for relevance, 0.90 for clarity, and 0.92 for simplicity—demonstrate strong expert consensus that the translated items accurately capture core elements of MHL. These findings align with the standards proposed by Polit and Beck (2006)¹³ and are comparable to those reported in other validation studies, such as Campos et al. (2022)⁷, who also reported high item agreement when validating the original MHLq-SVa.

The floor and ceiling effects were also examined based on the final score as the baseline data, which reveals minimal clustering at the both of the topmost and lowermost categories. This pattern indicates that the tool could provide adequate variability and discriminatory capacity across the response range, thereby reducing concerns on the restricted sensitivity. Consistent with prior psychometric evaluations reported by Moll et al., which highlighted extreme score clustering as evidence of robust measurement properties³⁵. Although relatively high mean scores were observed across several domains, these did not translate into the ceiling effects as only a small proportion of respondents achieved the maximum possible scores. Previous validation studies of mental health literacy tools have also reported similar patterns where acceptable ceiling effects coexist with relatively high average scores while maintaining adequate measurement sensitivity³⁶.

In terms of construct validity, the Exploratory Factor Analysis (EFA) extracted six components, explaining 71.53% of the total variance, while the Confirmatory Factor Analysis (CFA) confirmed acceptable model

fit (CFI=0.921, TLI=0.909, RMSEA=0.066, SRMR=0.057). These values are consistent with thresholds recommended by Montagni & González Caballero (2022)¹⁸ and mirror similar structural patterns found in other cross-cultural adaptations, such as the French MHLS validation study and the Iranian validation by Nejatian et al. (2021)²⁷, both of which confirmed multifactorial structures aligning with theoretical MHL constructs proposed by Jorm et al. (1997)²⁸ and later refined by Kutcher et al. (2016).²⁹

The identified six factors—self-help strategies, help-seeking behaviour and first aid skills, knowledge of mental health issues, knowledge of information sources, attitudes promoting help-seeking behaviour, and stigma/stereotypes—are consistent with Kutcher et al.'s (2016)²⁹ four-component framework and Jorm's (1997)²⁸ original six-dimensional definition. These conceptual overlaps support the theoretical soundness of the adapted tool and underscore its ability to comprehensively assess MHL across key behavioral and cognitive domains.

Building on this conceptual alignment, the six-factor structure identified in this study can be interpreted as a cultural adaptation of establish MHL frameworks rather than a theoretical extension. Although the domains reflect the MHL aspects from previous literature^{28,29}, the factor structure suggests that these constructs hold distinct emphases within the multicultural context in Malaysia. Thus, the six-factor configuration represents a contextualized operationalization of MHL that retains the theoretical foundations of existing models while capturing the patterns that befits the multicultural view in Malaysia.

Internal consistency, measured via Cronbach's alpha, ranged between 0.831 and 0.914 across all domains, with an overall alpha of 0.880—demonstrating strong reliability and coherence among items. This aligns with findings by O'Connor and Casey (2015) for the original MHLS and those reported by Özpulat et al. (2022)³⁰, who similarly noted alpha values exceeding 0.80 in their Turkish adaptation of MHL tools. Additionally, intra-class correlation coefficients (ICC) above 0.80 further confirmed the reproducibility and reliability of the tool across multiple raters.

Importantly, the descriptive data revealed generally high scores across domains, suggesting an encouraging level of awareness among the sample population. However, the relatively lower scores observed in domains such as *erroneous beliefs/stereotypes* and *help-seeking behaviour intentions* resonate with national concerns highlighted in NHMS 2019³¹ and NHMS 2023,² which reported that many Malaysians continue to experience barriers to recognizing symptoms or accessing professional help due to stigma and misinformation. These findings reinforce the conclusions of recent literature (e.g., Low, 2023;³² Peşkırcı & Uslu, 2024³³), which underscore stigma as a persistent challenge in Malaysian mental health efforts.

The current study addresses a key gap in MHL assessment in Malaysia, where previous tools either lacked cultural calibration or had not undergone psychometric testing in the local context. As noted by Andersen (2021)³⁴, culturally adapted and psychometrically sound tools are essential in producing actionable data that inform national policy and targeted interventions. The MyMHL, tool validated in this study, fulfills that role by offering a reliable mechanism to identify literacy gaps and tailor mental health literacy campaigns effectively.

Limitations and future directions

While this study employed rigorous methods for validation, some methodological limitations should be acknowledged. First, although the sample was demographically diverse, it may not fully represent marginalized or non-Malay-speaking populations. Future studies should consider additional linguistic and cultural validations, particularly among indigenous and non-Malay ethnic groups. Second, the tool was tested among adults aged 18 and above; its applicability to adolescents and elderly populations remains to be established. Lastly, the FVI indicated room for improvement in item clarity, which can be addressed through cognitive interviews or user-centered design refinement.

In regards to analysis of the data, the high mean scores observed across mental health literacy domains suggest a robust baseline of knowledge within this sample. However, several factors may have influenced these elevated scores. First, a potential ceiling effect may exist, where the tool lacks the sensitivity to differentiate between high and very high levels of literacy. Second, given the stigma surrounding mental health, social desirability bias cannot be ruled out, as participants may have over-reported positive attitudes. Finally, the sampling characteristics must be considered; our participants were largely recruited from urban centers and possessed higher-than-average educational attainment. Consequently, these results may reflect the literacy levels of an educational elite rather than the general population, and future research should aim for a more demographically diverse sample to improve generalizability.

Future research should also explore the predictive validity of the MyMHL in relation to actual help-seeking behaviors and mental health outcomes. Longitudinal studies could assess how mental health literacy evolves over time and in response to interventions, further informing mental health promotion strategies in Malaysia.

Conclusion

This study successfully developed, translated, and validated the Malaysian Mental Health Literacy (MyMHL) tool by adapting items from two internationally recognized tools—the MHLS and MHLq-SVa—into a culturally appropriate tool for the Malaysian population. Through rigorous processes involving expert evaluation, factor analyses, and reliability testing, the MyMHL demonstrated strong content validity, construct validity, and internal consistency.

The final six-domain model captures essential dimensions of mental health literacy, including knowledge, attitudes, stigma, and help-seeking behaviors. The high reliability coefficients and satisfactory model fit indices affirm that the MyMHL is a robust and reliable tool capable of assessing mental health literacy across diverse Malaysian communities.

As a practical and evidence-based tool, the MyMHL can support mental health promotion efforts, policy development, and targeted educational interventions. It holds promise for enhancing early identification of mental health issues, reducing stigma, and ultimately improving mental health outcomes nationwide.

The validation of this tool carries significant practical implications across several sectors. In healthcare services, the tool can serve as a rapid assessment tool for clinicians to gauge a patient's mental health literacy, allowing for more tailored communication and improved treatment adherence.

In educational settings, the tool provides a standardized metric for school counselors and administrators to evaluate the effectiveness of mental health awareness programs and identify specific knowledge gaps among students.

Finally, from a public policy perspective, this tool offers a reliable means for government agencies to benchmark population-level literacy and assess the impact of large-scale public health campaigns. By making these applied contributions explicit, this study provides a clear pathway for translating psychometric research into actionable social and clinical improvements.

Data availability

The datasets used and/or analysed during the current study available from the corresponding author on reasonable request.

Received: 27 November 2025; Accepted: 23 March 2026

Published online: 31 March 2026

References

- Chua, S. N. The economic cost of mental disorders in Malaysia. *Lancet Psychiatry*. 7 (4), e23. [https://doi.org/10.1016/S2215-0366\(20\)30091-](https://doi.org/10.1016/S2215-0366(20)30091-) (2020).
- Institute for Public Health (National Health and Morbidity Survey (NHMS) 2023: Non-Communicable Diseases and Healthcare Demand: Technical Report; (2024).
- Lee, M. F. & Lai, C. S. Exploring Learners' Mental Health Profile: A study in Universiti Tun Hussein Onn Malaysia. In: *IOP Conference Series: Materials Science and Engineering*, Vol. 226, 12194 (IOP Publishing, 2017). <https://doi.org/10.1088/1757-899X/226/1/012194>.
- Rasido, I., Hasan, H. & Riyadi, N. E. W. Mental health literacy study of Tadulako university students. *Bull. Couns. Psychother.* (2025). <https://doi.org/10.51214/002025071157000>
- Jorm, A. F. Mental health literacy. Public knowledge and beliefs about mental disorders. *Br. J. Psychiatry*. 177 (5), 396–401. <https://doi.org/10.1192/bjp.177.5.396> (2000).
- Kutcher, S., Bagnell, A. & Wei, Y. Mental health literacy in secondary schools: a Canadian approach. *Child Adolesc. Psychiatr. Clin. N. Am.* 24 (2), 233–244. <https://doi.org/10.1016/j.chc.2014.11.007> (2015).
- Campos, L. et al. Mental health literacy questionnaire-short version for adults (MHLq-SVa): validation study in China, India, Indonesia, Portugal, Thailand, and the United States. *BMC Psychiatry*. 22 (1), 713. <https://doi.org/10.1186/s12888-022-04308-0> (2022).
- O'Connor, M. & Casey, L. The Mental Health Literacy Scale (MHLS): A new scale-based measure of mental health literacy. *Psychiatry Res.* 229 (1–2), 511–516. <https://doi.org/10.1016/j.psychres.2015.05.064> (2015).
- Yusoff, M. S. & ABC of Response process validation and face validity index calculation. *Educ. Med. J.* (2019). <https://doi.org/10.21315/eimj2019.11.3.6>
- Yusoff, M. S. B., Arifin, W. N. & Hadie, S. N. H. ABC of questionnaire development and validation for survey research. *Educ. Med. J.* 13 (1), 97–108. <https://doi.org/10.21315/eimj2021.13.1.10> (2021).
- Cruchinho, P. et al. Translation, cross-cultural adaptation, and validation of measurement instruments: a practical guideline for novice researchers. *J. Multidisciplinary Healthc.* 17, 2701–2728. (2024). <https://doi.org/10.2147/JMDH.S419714>
- Amirah, S. N., Afnan, M. & Nashriq, A. I. Sociodemographic factors of mental health literacy among housewives living in low cost apartments in Puchong, Selangor, Malaysia. *Malaysian J. Med. Health Sci.* 1 (6 (1), 121–125 (2020). <http://psasir.upm.edu.my/id/eprint/76930/>
- Polit, D. F. & Beck, C. T. The content validity index: are you sure you know what's being reported? Critique and recommendations. *Res. Nurs. Health.* 29 (5), 489–497. <https://doi.org/10.1002/nur.20147> (2006).
- Polit, D. F., Beck, C. T. & Owen, S. V. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res. Nurs. Health.* 30 (4), 459–467. <https://doi.org/10.1002/nur.20199> (2007).
- Yusoff, M. S. ABC of content validation and content validity index calculation. *Educ. Med. J.* 11 (2), 49–54. <https://doi.org/10.21315/eimj2019.11.2.6> (2019).
- Andrew Chin, R. W. et al. Investigating validity evidence of the Malay translation of the Copenhagen Burnout Inventory. *J. Taibah Univ. Med. Sci.* 13 (1), 1–9. <https://doi.org/10.1016/j.jtumed.2017.06.003> (2017).
- Mahadi, N. F. et al. Malay language translation and validation of the oldenburg burnout inventory measuring burnout. *Educ. Med. J.* 10 (2), 27–40. <https://doi.org/10.21315/eimj2018.10.2.4> (2018).
- Montagni, I. & González Caballero, J. L. Validation of the mental health literacy scale in French university students. *Behav. Sci.* 12 (8), 259. <https://doi.org/10.3390/bs12080259> (2022).
- BinDhim, N. F. et al. Validation and psychometric testing of the Arabic version of the mental health literacy scale among the Saudi Arabian general population. *Int. J. Mental Health Syst.* 17 (1), 42. (2023). <https://doi.org/10.1186/s13033-023-00615-5>
- Heizomi, H., Kouzekanani, K., Asghari Jafarabad, M. & Allahverdipour, H. psychometric properties of the Persian version of mental health literacy scale. *Int. J. Women's Health Volume.* 12, 513–520. <https://doi.org/10.2147/ijwh.s252348> (2020).
- Jumbe, S., Nyali, J. & Newby, C. Translation of the mental health literacy questionnaire for young adults into Chichewa for use in Malawi: preliminary validation and reliability results. *Int. J. Mental Health Syst.* (2023). <https://doi.org/10.1186/s13033-023-00586-7>
- Neto, D. D., Rocha, I., Figueiras, M. J. & Da Silva, A. N. Measuring mental health literacy: adaptation and validation of the portuguese version of the mental health literacy scale (MHLS). *Eur. J. Mental Health.* 16 (1), 64–77. <https://doi.org/10.5708/ejmh.16.2021.1.5> (2021).
- Dias, P., Campos, L., Almeida, H. & Palha, F. Mental health literacy in young adults: adaptation and psychometric properties of the mental health literacy questionnaire. *Int. J. Environ. Res. Public Health.* 15 (7), 1318. <https://doi.org/10.3390/ijerph15071318> (2018).
- Lu, C., Lien, Y., Chao, H., Lin, H. & Tsai, I. A structural equation Modeling of mental health literacy in healthcare students. *Int. J. Environ. Res. Public Health.* 18 (24), 13264. <https://doi.org/10.3390/ijerph182413264> (2021).
- Zare, S. et al. Adolescent mental health literacy questionnaire: investigating psychometric properties in Iranian female students. *Biomed. Res. Int.* (2022). <https://doi.org/10.1155/2022/7210221>
- Günaydin, N., Özpulat, F., Öztaş, D. & Açıkgöz, İ. The validity and reliability study of mental health literacy in young adults (MHLq). *Konuralp Med. J.* 15 (2), 219–227. <https://doi.org/10.18521/kt.d.1210310> (2023).

27. Nejatian, M., Tehrani, H., Momeniyan, V. & Jafari, A. A modified version of the mental health literacy scale (MHLS) in Iranian people. *BMC Psychiatry*. **21** (1). <https://doi.org/10.1186/s12888-021-03050-3> (2021).
28. Jorm, A. F. et al. Mental health literacy: a survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *Med. J. Aust.* **166** (4), 182–186 (1997). <https://pubmed.ncbi.nlm.nih.gov/9066546/>
29. Kutcher, S., Wei, Y. & Coniglio, C. Mental health literacy: Past, Present and Future. *Can. J. Psychiatry*. **61** (3), 154–158. <https://doi.org/10.1177/0706743715616609> (2016).
30. Özpulat, F., Öztaş, D. & Günaydin, N. Reliability and validity of the positive Mental Health literacy scale in Turkish adolescents. *Alpha Psychiatry*. **23** (2), 76–81. <https://doi.org/10.5152/alphapsychiatry.2022.21165> (2022).
31. Institute for Public Health (IPH). National Institutes of Health, Ministry of Health Malaysia 92020) National Health and Morbidity Survey (NHMS) 2019: 1: NCDs- Non-Communicable Diseases : Risk Factors and other Health Problems.
32. Low, K. Y. *Validation of the mental health literacy questionnaire (MHLQ) among undergraduate students in Malaysia* (Doctoral dissertation, UTAR). (2023).
33. Peşkırcı, T. & Uslu, E. The relationship between mental health literacy and community attitudes towards mental illness: is myths about schizophrenia a mediator? *Curr. Psychol.* **43** (39), 30519–30530. <https://doi.org/10.1007/s12144-024-06499-z> (2024).
34. Andersen, L. W. Absolute vs. relative effects—implications for subgroup analyses. *Trials* **22** (1), 50. <https://doi.org/10.1186/s13063-020-05005-7> (2021).
35. Moll, S., Zanhour, M., Patten, S. B., Stuart, H. & MacDermid, J. Evaluating mental health literacy in the workplace: Development and psychometric properties of a vignette-based tool. *J. Occup. Rehabil.* **27** (4), 601–611. <https://doi.org/10.1007/s10926-017-9695-0> (2017).
36. ElKhalil, R. et al. I. Measurement properties of the Mental Health Literacy Scale(MHLS): A systematic review. *Asian J. Psychiatry*. **101**, 104214. <https://doi.org/10.1136/bmjopen-2023-081394> (2024).

Author contributions

TSMY and MZJ were responsible for the concept development and supervision of the overall research with LC providing technical details. MA, KP, AAA & SSS are responsible in the data collection and management. MZJ, AAA & SSS are responsible for data curation and analysis. TSMY, MZJ & AAA constructed the draft manuscript. All authors contributed to the writing of the manuscript, reviewing and approving the final manuscript.

Funding

This study was made possible by funding provided by the National Institutes of Health, Ministry of Health Malaysia with reference number NMRR ID-22-01887-XCU.

Declarations

Competing interests

The authors declare no competing interests.

Ethics approval

Ethics approval was obtained from the Medical Research & Ethics Committee, Ministry of Health Malaysia with the following reference 22-01887-XCU dated 29th May 2023. All methods in this study were carried out in accordance with relevant guidelines and regulations as outlined by MREC Malaysia.

Consent for publication

Consent was obtained via online form where participants clicked the button “I consent to participate” before participating in answering the questionnaire.

Additional information

Correspondence and requests for materials should be addressed to M.Z.J.

Reprints and permissions information is available at www.nature.com/reprints.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Open Access This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

© The Author(s) 2026