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Development and Validation of Bengali Mental Health Literacy Assessment Tool (B-MHLAT): An Instrument to Measure Mental Health Literacy in Bengali Adults

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ABSTRACT

Background: Mental Health Literacy therefore refers to the knowledge and perceptions about mental health and mental illnesses and is vital in encouraging people to seek help and in decreasing mental health-related problems. Nevertheless, no instruments have been developed to measure "Mental Health Literacy" among the Bengali-speaking population. The purpose of this research was to extend the Mental Health Literacy Assessment Tool to create a culturally appropriate Bengali Mental Health Literacy Assessment Tool . **Methods:** The development process began with the creation of an English questionnaire divided into two parts: Part 1 for socio-demographic data and Part 2 for "mental health literacy" evaluation. Before the tool was translated into Bengali, the draft tool was reviewed by 14 experts, and the translation was done with the help of Bengali, English-speaking, as well as bilingual persons. The translated tool was then piloted on 10 Bengali adults to find out the internal consistency by applying Cronbach's Alpha method. Subsequently, the tool was used to survey 246 Bengali adults from the target communities in the North 24 Parganas district of West Bengal. To make the tool more manageable, reliable, and valid, a factor analysis was calculated on the collected data. **Results:** The Bengali Mental Health Literacy Assessment Tool had good reliability whereby the internal consistency was high at 0.89 Cronbach's Alpha. Out of the initially developed 55 items, 42 were accepted by the experts, and 33 items were obtained after the factor analysis of responses from 246 participants. **Conclusion:** The Bengali Mental Health Literacy Assessment Tool has been developed as a culturally appropriate, valid, and reliable instrument for use in India and for measuring mental health literacy in Bengali-speaking adults. It is expected that this tool will make a substantial contribution to the study and improvement of literacy about mental health and mental illnesses in this population.

Keywords: Development of Tool; Mental Health Literacy; Mental Health Literacy Assessment; Validation of Tool

INTRODUCTION

The idea of 'Mental Health Literacy' (MHL) was postulated from 'Health Literacy' and initially was specified as the knowledge and belief of people regarding mental illness that help them to identify mental disorders, take preventive measures, and manage accordingly. Later a group of Australian researchers revised the definition of 'Mental Health Literacy' as the ability to recognise mental illnesses and knowledge regarding seeking effective health care intervention within available resources (Kutcher, Wei & Coniglio, 2016).

MHL was widely accepted by various scholars as a significant determinant of the mental health status of an individual that empowers a person with the necessary knowledge and attitude to seek help from available resources in need of self and others (Chaves *et al*., 2023; Zare *et al*., 2022). Evidence was also showing that MHL level determines a person's health outcome (Haeri-Mehrizi *et al*., 2024).

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Keeping pace with the dynamic concept and construct of MHL, the assessment tools have also evolved. Over more than two and a half decades, different scholars took an interest in developing several instruments suitable for the assessment of MHL of different populations in different relevant contexts. Few mentionable tools are the Mental Health Literacy Scale (MHLS), the Mental Health Knowledge Questionnaire, the Mental Health Literacy Measure, and the Questionnaire for Assessment of MHL among Young People and another separate Questionnaire for Young Adults (Chao *et al*., 2020). Again, some structured MHL assessment tools were widely used by other researchers globally by incorporating necessary changes or in relevant versions (Alshehri *et al*., 2021; Campos *et al*., 2022; Krohne *et al*., 2022; Nejatian *et al*., 2021; Wang *et al*., 2022).

The pioneer of the MHL concept, Jorm *et al*., first introduced a vignette-based interview schedule, and this type of assessment tool was extensively used by others as well. Vignettes are describing scenarios of mental illness through which respondents' knowledge is evaluated. But few downsides of this vignette-based interview schedule are identified. First, the total score or any subscale was not designed in this tool, which were solved by other scholars in later stages by revising vignettes and adding a scoring system, adopting alternative methods. (Liu *et al*., 2023; O'Connor, Casey, & Clough, 2014).

Second, available psychometric information in this regard is very limited; no single measure is there to assess all the dimensions of the tool. Third, it is time-consuming to answer (O'Connor & Casey, 2015). Later a comprehensive mental health assessment tool was developed, which was extensively used globally, named the Mental Health Literacy Scale (MHLS) by O'Conner and Casey. Surely MHLS was easier to use and more accurate in measuring the level of MHL (O'Connor & Casey, 2015). It was translated into 45 (forty-five) languages (Dr. Matt O'Connor, n.d.). Inherently, MHLS was very well accepted and utilised by next-generation researchers. Instead of developing a new instrument, only the version was changed to get a culturally and linguistically relevant scale (Alshehri *et al*., 2021). Evidence is showing MHLS was implemented into Iranian, Arabic, Chinese, and Slovenian versions (Alshehri *et al*., 2021; Campos *et al*., 2022; Krohne *et al*., 2022; Nejatian *et al*., 2021; Wang *et al*., 2022). Sometimes this scale was changed into an adolescent version for effective implementation among the adolescent population (Riebschleger *et al*., 2022).

Despite all, the above-mentioned tools have some limitations. So, the development of a new tool to assess MHL assessment has become essential. Especially to assess the same of Bengali people. Bengali is the second most important official language among the 23 national languages and the first language of nine crore people, approximately (more than eight percent of the total population) of the Indian subcontinent. It is the native tongue of the state West Bengal, where the study was carried out (Britannica, 2024).

All existing tools are based on developed countries like Australia, the U.S.A., Canada, etc. Answering the questionnaire of domain, 'recognition of disorders' in MHLS seems to be difficult for Bengali common people . Beliefs related to mental illness also need to be approached in a culturally appropriate way. Moreover, addressing available services and resources rendered by the state in the Indian scenario is necessary, which was missing in MHLS. The aim of this study is to develop a new Bengali tool that will be easy to introduce and appropriate and relevant to measure the level of mental health literacy of Bengali adults in the current Indian scenario. The results may be treated as a diagnostic baseline to plan, design, and implement training programs for enhancing awareness and positive mental health literacy among community people.

METHODOLOGY

Study Design and Settings

A descriptive survey design was adopted to collect data from selected municipalities and panchayets of the North 24 Parganas district of West Bengal, India.

Study Participants and Eligibility Criteria

Participants were selected by a non-probability purposive sampling technique among 246 adults, aged 18-50 years, who could clearly understand, read, and write Bengali and were at least class ten standard pass participated in data collection.

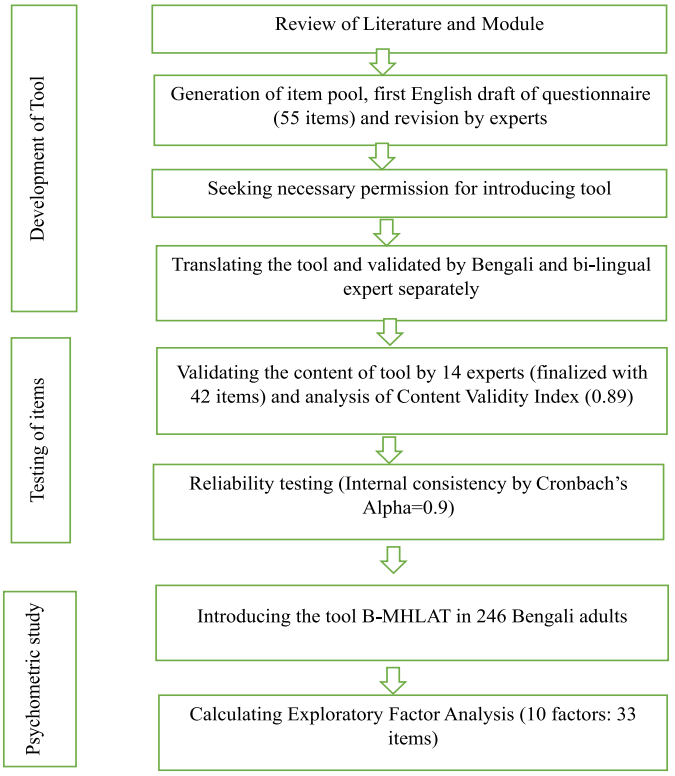

Figure 1: Flow Diagram of Bengali Mental Health Literacy Assessment Tool (B-MHLAT) Development

Study Conduct

The Bengali Mental Health Literacy Assessment Tool (B-MHLAT) was constructed in the following steps.

Generation of Items

Extensive literature reviewed regarding mental health literacy, knowledge, attitude, belief, misconceptions of different populations about mental health and mental illnesses, the current scenario of mental health in the world as well as India, existing assessment tools to assess mental health literacy, etc.

The tool developed into two parts in the English language. Part 1 contained sociodemographic information consisting of 10 items. In part 2, the Mental Health Literacy Assessment Tool was first drafted with 55 items. Questions were designed with 4 (four) numbers of multiple-choice questions (MCQ) covering domains of knowledge regarding mental health and how to maintain good mental health, knowledge regarding causes, warning signs, and types of mental illnesses, knowledge regarding management and available resources of mental illnesses, and belief about mental illnesses. In part 2, total mental health literacy of respondents was rated as per the scoring system—1 (one) mark for one correct response and 0 (zero) for the wrong one, ranging from 0 to 55.

Validation of Content

Content validity of the tool was done by 14 experts in the fields of psychiatric medicine, psychiatric nursing, community medicine, and clinical psychology. Based on the relevancy and appropriateness of each item of the socio-demographic tool and B-MHLAT, the expert's agreement is marked as 01 (one) and disagreement as 0 (zero). Item-wise Content Validity Ratio (CVR) was calculated and finally Content Validity Index (CVI) The CVI is the average CVR score of all questions in the test.

In part 1, among the 10 items, 1 item was removed and 1 was added on the expert's recommendation. Ultimately, 10 items were finalized. In part 2, 15 items were removed, 07 items were modified, and 02 were added. Part 2 was finalised with 42 (forty-two) items after validation.

Bengali Translation

The English language of the Mental Health Literacy Assessment Tool was vividly examined by an English language expert. Then it was translated into Bengali. A copy of the Bengali questionnaire was examined and scrutinised by a Bengali language expert. Multiple attempts were made to remove discrepancies, ambiguity, the use of jargon, and syntax. The focus of attempts was to attain an easy-to-understand and culturally relevant questionnaire.

The tool was also back translated by a bilingual expert proficient in both English and Bengali, who had no prior knowledge of the original tool. This process allowed for a comparison between the original and translated versions to identify and address any inconsistencies or errors.

Reliability Testing

The Bengali version of MHLAT was introduced in 10 adults following sample inclusion criteria to ascertain the understandability of the questionnaire and calculate the reliability of the tool. Collected data were assessed for internal consistency by calculating Cronbach's alpha, which was 0.9. It implies the tool is reliable and excellent (Festucci *et al.*, 2024).

Study Tool

B-MHLAT is a structured questionnaire that is developed to assess mental health literacy among Bengali common people. The tool consisted of 42 multiple-response questions based on domains: I. knowledge regarding mental health and how to maintain good mental health (03 items), II. knowledge regarding causes (05 items), III. warning signs (05 items), IV. types of mental illnesses (05 items), V. knowledge regarding management and available resources of mental illnesses (12 items), VI. belief about mental illnesses (12 items). For each correct response, there is 1 (one) and 0 (zero) for the wrong one, ranging from 0 to 42.

Data Collection

Study participants were selected according to inclusion criteria and voluntary participation from selected communities of North 24 Parganas, West Bengal. Written informed consent was obtained, and anonymity and confidentiality of collected information were promised to them individually. First, the socio-demographic proforma was printed, and then, after completion of that, the B-MHLAT Bengali questionnaire was filled out by 246 Bengali adults themselves by the paper-pencil method, and on average, the time taken was 30 minutes. Data were collected during 03 (three) months.

Statistical Analysis

Collected data were organised in a Microsoft Excel sheet. Socio-demographic information was described in frequency and percentage. Content validity index is also expressed as the mean of the Content Validity Ratio. Cronbach's Alpha was calculated to test internal consistency reliability.

An exploratory factor analysis (EFA) was done with the help of principal component analysis and Varimax rotation to ascertain an acceptable level of explanation (Tian *et al*., 2023). The Bartlett Sphericity Test was done to measure the general significance of the correlation matrix and to determine its appropriateness for factor analysis. Kaiser–Meyer–Olkin measure of sampling adequacy (MSA) done to identify whether data are suitable for factor analysis (dos Santos *et al*., 2024). Exploratory factor analyses were analysed using IBM SPSS Statistics (version 26) for item reduction.

Ethical Consideration

This study got ethical approval from the Ethical Committee of College of Medicine, Sagore Dutta Hospital, India, with reference number CMSDH/IEC/82/07-2023 on 19th July, 2023.

RESULTS

Sociodemographic Profile

The respondents were 18 to 50 years of age, with a mean age of 30.8 years (standard deviation 10.99);

51.6% were female, 58.9% were married, and 57.3% resided in a rural area. Most of them (89%) were Hindu; 39% of people belonged to nuclear families. Educational qualification was higher secondary for more than 32% of participants, and 30.5% were businessmen. Most (89%) did not have any previous exposure to a mental health awareness program, and a maximum (56.5%) of subjects did not have any previous experience of observing or caring for a person with mental illness in Table 1.

Table 1: Sociodemographic Characteristics of Participants (n=246)

Sociodemographic Characteristics		**Frequency**	**Percentage (%)**
Age in years (Mean±SD)		30.8±10.99	
Gender	Male	127	48.4
	Female	119	51.6
Residential area	Rural	141	57.3
	Sub-urban	36	14.7
	Urban	69	28
Religion	Hindu	219	89
	Muslim	24	9.8
	Christian	3	1.2
Marital status	Unmarried	145	58.9
	Married	96	39
	Widow/ widower	3	1.1
	Divorcee	2	1
Educational status	Secondary	55	22.4
	Higher Secondary	79	32.1
	Graduate	74	30.1
	Postgraduate and above	38	15.4
Type of family	Nuclear	84	34.1
	Joint	96	39
	Single Parent	66	26.8
Occupation	Service	38	15.5
	Business	75	30.5
	Self-employed	28	11.4
	Retired	9	3.7
	Homemaker	18	7.3
	Student	37	15
	Unemployed	41	16.6
Whether any previous exposure to mental health awareness programme / survey	No	219	89
	Yes	27	11
Whether any previous experience of observing or caring person with mental illness other than clinical area	No	139	56.5
	Yes	107	43.5

Content Validity

Based on item-wise consensus of 14 experts of different related disciplines, the Content Validity Index (CVI) was calculated. Finally, the calculated Content Validity Index (CVI) of part 1, the socio-demographic tool, was 0.93, and part 2, MHLAT, was 0.89. It implies that both the part of the tool is valid and able to cover the target population.

Reliability

B-MHLAT in the Bengali language was introduced among 10 adults for reliability testing. The questionnaire was easy to understand. Internal consistency was calculated by Cronbach's alpha, which was 0.9. It implies the tool is reliable and excellent.

Factor analysis and Item Reduction

An exploratory factor analysis (EFA) was done with the help of principal component analysis and Varimax rotation and 0.50 was set as the minimum level of factor loading. Variance in each dimension is indicated by the communality of the scale. It was evaluated to ascertain an acceptable level of explanation. All the communalities of the scale were over 0.50 according to calculated results in Table 2.

Table 2: Results from a Factor Analysis of Bengali Mental Health Literacy Assessment Tool (B-MHLAT)

Rotated Component Matrix										
	Component									
Question (Q) no. and Domain (D)no.	1	2	3	4	5	6	7	8	9	10
Q40D3	0.769									
Q39D3	0.723									
Q32D3	0.714									
Q38D3	0.689									
Q31D3	0.670									
Q6D2	0.618									
Q37D3	0.617									
Q42D3	0.591									
Q41D3	0.583									
Q8D2		0.733								
Q12D2		0.729								
Q13D2		0.704								
Q3D1		0.672								
Q2D1		0.640								
Q7D2		0.581								
Q30D1		0.579								
Q16D2			0.717							
Q17D2			0.681							

Q19D1			0.588							
Q9D2				0.743						
Q33D3				0.668						
Q1D1				0.513						
Q29D1					0.817					
Q28D1					0.746					
Q18D2						0.716				
Q10D2						0.569				
Q11D2						0.544				
Q21D1							0.763			
Q23D1								-0.729		
Q27D1								0.626		
Q36D3									0.784	
Q34D3										0.753
Q15D2										-0.535

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 8 iterations.; Source: Own survey result

The Bartlett Sphericity Test, which measures the statistical probability that the correlation matrix has, is an important way to measure general significance of the correlation matrix. The findings were significant, Chi-Square (χ^2) (n = 215) = 2024.675 (p<0.001), which determines its appropriateness for factor analysis. If the Kaiser–Meyer–Olkin measure of sampling adequacy (MSA), (done to identify whether data are suitable for factor analysis) values are more than 0.700, it is thought about appropriate for factor analysis.

In this study calculated MSA value was 0.794, so data are appropriate for factor analysis in Table 3. The new analysis results validate the 10 (ten) dimensional structure that has been defined theoretically in the research. The Kaiser–Meyer–Olkin MSA result was 0.794. The 10 dimensions describe a total of 58.9% of the variance among the items in the study. The Bartlett's Test of Sphericity authenticates that significant and all communalities were more than the required value of 0.500 in Table 3.

Table 3: Kaiser-Meyer-Olkin (KMO) Measure and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.794
Bartlett's Test of Sphericity	Approx. Chi-Square	2024.675
	df	528
	Sig.	0.000

Note: df = Degree of freedom, Sig. = Significant; Source: Own survey result

Finally, four numbers of factors for the scale were derived because the analysis of the factor solution consisted of 58.9% data variation in Table 4.

Table 4: Total Variance Explained

Total Variance Explained									
Component	**Initial Eigen values**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	4.803	14.555	14.555	4.803	14.555	14.555	4.448	13.480	13.480
2	4.392	13.310	27.866	4.392	13.310	27.866	3.632	11.005	24.484
3	1.620	4.908	32.774	1.620	4.908	32.774	1.678	5.084	29.568
4	1.462	4.432	37.206	1.462	4.432	37.206	1.663	5.038	34.607
5	1.391	4.215	41.421	1.391	4.215	41.421	1.567	4.749	39.355
6	1.324	4.012	45.433	1.324	4.012	45.433	1.505	4.561	43.916
7	1.194	3.618	49.051	1.194	3.618	49.051	1.246	3.776	47.692
8	1.155	3.499	52.550	1.155	3.499	52.550	1.244	3.771	51.463
9	1.061	3.216	55.765	1.061	3.216	55.765	1.226	3.714	55.176
10	1.030	3.122	58.888	1.030	3.122	58.888	1.225	3.711	58.888
11	0.970	2.939	61.827						
12	0.941	2.852	64.679						
13	0.892	2.702	67.381						
14	0.858	2.600	69.981						
15	0.839	2.543	72.524						
16	0.755	2.288	74.812						
17	0.739	2.239	77.050						
18	0.675	2.047	79.097						
19	0.664	2.012	81.110						
20	0.649	1.965	83.075						
21	0.575	1.742	84.817						
22	0.539	1.635	86.452						
23	0.529	1.604	88.056						
24	0.504	1.527	89.583						
25	0.471	1.428	91.011						
26	0.442	1.341	92.351						
27	0.430	1.303	93.654						
28	0.415	1.258	94.912						
29	0.397	1.202	96.113						
30	0.342	1.037	97.151						
31	0.325	0.984	98.135						
32	0.315	0.956	99.091						
33	0.300	0.909	100.000						

Note: Extraction Method: Principal Component Analysis; Source: Own survey result

The 4 (four) factors recognised as a portion of this EFA correspond with the theoretical concept of this research. Factor 1 gathers 9 items, Factor 2 gathers 7 items, Factor 3 gathers 3 items, Factor 4 gathers 3 items, Factor 5 gathers 2 items, Factor 6 gathers 3 items, Factor 7 gathers 1 item, Factor 8 gathers 2 items, Factor 9 gathers 1 item, and finally, Factor 10 includes 2. So, out of 42 items, by factor analysis, only 33 items have been considered in Table 2.

DISCUSSION

The formulation of the Bengali Mental Health Literacy Assessment Tool (B-MHLAT) is a notable outcome in the broad area of mental health literacy, especially focusing on the Bengali population. This questionnaire, which targeted the different aspects of knowledge, including mental health, causes and symptoms of mental illnesses, management strategies and available resources, and societal beliefs, was also highly reliable and valid. The tool was translated into Bengali more carefully and pretested with 10 participants to examine whether the tool was comprehensible and culturally sensitive. The tool also has a high Content Validity Index (CVI) at 0.89, and the internal consistency of the B-MHLAT is also evident with Cronbach's alpha coefficient.

MHL tools have been translated and culturally adapted across the world, especially in English-speaking nations. One such example is the Mental Health Literacy Scale (MHLS), which has been designed to measure different aspects of MHL, such as the knowledge about mental disorders, beliefs about the effectiveness of treatment, and attitude towards stigma (O'Connor & Casey, 2015). Like the MHLS, the B-MHLAT assesses the respondent across the different domains of mental health literacy and, as such, captures a more holistic picture of the respondent's knowledge and beliefs about mental health. However, the MHLS is applicable for all the English-speaking nations, while the B-MHLAT is designed to lay down the need of bridging the cocktail of cultural beliefs and 'beliefs' of the Bengali population, and that makes this factor significant and useful.

In the last few years, there has been an appreciation of the fact that it is time to develop culturally sensitive MHL instruments. The scarcity of mental health literacy has been pointed out in India that would address the cultural and product linguistic diversity of the inhabitants (Altweck *et al*., 2015; Kim *et al*., 2024). Similarly, B-MHLAT has taken the same direction by focusing on the Bengali-speaking population, as they have cultural beliefs towards mental health perception and stigma. This is important as it aligns the tool with the culture of the practice, and due to this, people will be accepting of the tool.

The study has noted that translating the mental health literacy tools and using culturally appropriate ones is essential to make it meaningful and salient of the concepts to the target population. Like the cross-cultural translation of the Depression Literacy Questionnaire (D-Lit) and other MHL tools, several methods have been applied (Choudhry *et al*., 2019). As with the B-MHLAT, cultural appropriateness and pretesting were used to ensure that the tool was comprehensible and thus increase the reliability and validity of these studies.

The B-MHLAT passed through a validation process using the scoping of the Content Validity Index (CVI) and Cronbach's Alpha, which are used in other psychometric tests. For instance, the creation of the Mental Health Knowledge Schedule MAKS includes psychometric tests to confirm the credibility and accuracy of the tool (Wei *et al.*, 2016). The CVI of 0.89 and the internal reliability shown by the B-MHLAT suggest that it is just as accurate and consistent as other MHL instruments that are being used at present. The findings showed that overall, the B-MHLAT is a reliable and suitable measure for measuring mental health literacy among the Bengali population.

For the reason of cultural relevance and practical use, the possibilities of the B-MHLAT are obvious. It encouraged all the participants to complete all the activities and enhanced awareness of mental health services and the existing policies on the same. This tool is different from some of the other tools that are used only for the purposes of assessing literacy, as the B-MHLAT is both an assessment and a teaching tool.

Limitation

The study limitations include the pretesting was conducted with only ten participants, which is sufficient for validity testing but not for external validity. Future research should involve a larger, more diverse sample of Bengali-speaking individuals to enhance external validity and explore the applicability of the B-MHLAT in other Bengali-speaking populations, such as those in Tripura or Bangladesh, to assess its cross-cultural versatility. Additionally, the study did not examine the tool's direct impact on participants' actual mental health, highlighting the need for future research to investigate how changes in mental health literacy, as assessed by the B-MHLAT, influence behaviors like help-seeking and stigma. Longitudinal studies could also evaluate the tool's

effectiveness in an educational context, comparing mental health literacy before and after its use.

CONCLUSION

The construction of the B-MHLAT is a definite advancement in the evaluation of mental health literacy among Bengalis. The cultural sensitivity of the tool, the high reliability coefficient, and the fact that it can be used both as an evaluation and as a learning tool put this tool in a good position to benefit mental health workers, teachers, and policymakers. Thus, besides establishing the B-MHLAT as a valid and reliable toolkit for assessing mental health literacy among the Bengali-speaking population, the study also demonstrated its potential for building better mental health by informing the existing cultural beliefs and practices. Future research should extend this study to understand the other areas where the tool can be used and the impact it can have on Bengali-speaking adults regarding 'mental health literacy' and stigma reduction.

Conflict of Interest

The authors declare that they have no competing interests.

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