

Original Article

Effectiveness of Health Belief Model-Based Psychoeducation in Enhancing Adolescent Mental Health Accessibility



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ABSTRACT

Background: Adolescent mental health is a growing public health concern, yet behavioral interventions addressing help-seeking barriers remain limited in low-resource settings. While the Health Belief Model (HBM) has been extensively applied to physical health behaviors, its relevance for improving mental health accessibility among adolescents is underexplored. This study aimed to evaluate the effectiveness of HBM-based psychoeducation in enhancing adolescents' self-awareness, self-efficacy, and emotional regulation.

Methods: A quantitative pre-experimental two-group pretest-posttest design was conducted in Bangun Rejo Village, North Sumatra, Indonesia, following the TREND reporting guideline for non-randomized evaluations. Participants included 50 adolescents aged 12–16 years, selected through cluster sampling. Inclusion criteria were residence for at least six months and parental consent, while adolescents with prior psychiatric treatment were excluded. Data were collected using an HBM-based Mental Health Accessibility Questionnaire (Cronbach's $\alpha = 0.87$), with self-awareness and self-efficacy as independent variables and mental health accessibility as the dependent variable.

Results: The experimental group showed a higher posttest score (87.60 ± 7.45 ; 95% CI [84.51, 90.69]) compared to the control group (76.48 ± 11.98 ; 95% CI [71.58, 81.38]). Between-group differences were significant ($t(48) = 3.75$, $p < 0.001$, Cohen's $d = 1.06$), indicating a large effect size.

Conclusion: HBM-based psychoeducation effectively enhances adolescents' accessibility to mental health services by improving self-awareness, self-efficacy, and emotional regulation. The findings support incorporating HBM-based approaches into school and community health programs as low-cost, culturally adaptable strategies to promote adolescent mental health in resource-limited settings.

Keywords: Accessibility; Adolescents; Health Belief Model; Mental Health; Self-Awareness; Self-Efficacy.

Implications for Practice:

- Clinicians can implement HBM-based psychoeducation to enhance adolescent self-awareness and coping skills, promoting early recognition and management of emotional distress.
- Health policymakers should incorporate behavioral frameworks into school- and community-level programs to improve access to mental health services and reduce stigma among adolescents.
- Midwifery and public health education programs in resource-limited settings can adopt HBM-informed strategies to provide cost-effective, evidence-based mental health support for adolescents.

Introduction

Adolescent mental health has become a global issue receiving increasing attention, particularly following the COVID-19 pandemic, which has significantly impacted the psychosocial well-being of adolescents in various countries. Globally, the prevalence of mental disorders in adolescents is quite high; for example, a systematic review showed that approximately 25–31% of adolescents experience common mental disorders such as depression and anxiety, with rates higher in girls ([Silva et al., 2020](#)). In sub-Saharan Africa, depression, anxiety disorders, and suicidal behavior are also found in a significant proportion of adolescents aged 10–19 ([Jörns-Presentati et al., 2021](#)). Academic pressure, digital media use, and social media exposure have been identified as risk factors for worsening adolescent mental health ([Santos et al., 2023](#)).

In Indonesia, adolescent mental health has become a serious concern. Recent national studies indicate that the prevalence of mental disorders among adolescents aged 10–17 years reaches 5.5%, while one in three adolescents reports experiencing mental health problems in the past 12 months. The most common conditions are anxiety and depression, with prevalence varying by region, gender, and school status. These findings underscore that adolescent mental health is an urgent public health issue requiring culturally and behaviorally relevant interventions. ([Dondo et al., 2023](#); [Erskine et al., 2024](#); [Pham et al., 2024](#)).

Adolescents are an age group undergoing a developmental transition, making them vulnerable to various psychosocial stressors such as academic demands, family conflict, and social media exposure. Studies show that academic stress is the most dominant source of stress in adolescents, followed by interpersonal

and family relationship problems, and socioeconomic factors ([Wu, 2024](#)). Conflict with parents, peer pressure, and concerns about the future are also frequently reported as major stressors ([Núñez-Regueiro & Núñez-Regueiro, 2021](#)). Despite the high prevalence of severe stress in adolescents, only a small proportion access counseling services or professional support, with the main barriers being stigma, lack of information, and limited facilities in schools and communities ([Fogarty et al., 2022](#)).

The Health Belief Model (HBM) is a widely used behavioral theory for understanding and modifying health-related behaviors. The HBM emphasizes that an individual's likelihood of taking health-related action is determined by six main constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. In the context of mental health, these constructs can be mapped as follows: perceived susceptibility and severity relate to adolescents' recognition of psychological distress; perceived benefits and barriers influence their decision to seek professional help; cues to action include family, peers, or media prompting help-seeking; and self-efficacy determines confidence in accessing and utilizing mental health services.

Previous studies have demonstrated the effectiveness of HBM in physical health contexts—such as chronic disease prevention, reproductive health promotion, and vaccination behavior ([Barkhordari-Sharifabad et al., 2020](#); [Herlina & Virgia, 2025](#)). However, research applying HBM to mental health, particularly among adolescents, remains limited and fragmented. Unlike physical health behaviors that involve tangible risk perception (e.g., disease infection or symptom onset), mental health behaviors involve intangible and stigmatized constructs, where perceived barriers (e.g.,

shame, fear, and social judgment) are dominant. This contrast highlights a critical research gap: while HBM has been widely validated for physical health behaviors, its mechanisms in shaping mental health help-seeking and accessibility remain underexplored, especially in low-resource settings like Indonesia.

The issue of accessibility to mental health services for adolescents is not only related to the availability of facilities but is also greatly influenced by individual perceptions. Many adolescents delay seeking help because they feel their symptoms are "not severe enough" or do not yet require professional intervention ([Islam et al., 2022](#)). A study by [Radez et al. \(2021\)](#) showed that low risk perception and lack of knowledge about mental health services are significant factors that reduce help-seeking behavior among adolescents. Social stigma, uncertainty about how to access services, and internal barriers such as shame or fear also reinforce adolescents' tendency to delay or even avoid seeking help ([Goodwin et al., 2024](#)).

Structural barriers such as cost, remote service locations, and limited professional staff are also major challenges in the accessibility of adolescent mental health services. A study by [Lu et al. \(2021\)](#) showed that financial constraints, lack of insurance, and distance and transportation limitations often prevent adolescents from obtaining needed services, especially in rural areas or communities with limited resources. The number of available mental health professionals remains severely understaffed and unevenly distributed, leaving many adolescents in remote areas without access to adequate services ([Carbonell et al., 2024](#)).

Therefore, this study was conducted to address the identified research gap by applying the Health Belief Model framework to adolescent mental health accessibility in Indonesia. The specific objectives were (1)

to evaluate the effectiveness of HBM-based psychoeducation in enhancing adolescents' self-awareness, self-efficacy, and emotional regulation, and (2) to examine the extent to which these factors improve perceived accessibility to mental health services. The study hypothesized that adolescents receiving HBM-based psychoeducation would demonstrate significantly greater improvement in self-awareness, self-efficacy, and access to mental health services compared to those without intervention. This study aims to analyze the implementation of the Health Belief Model development to improve accessibility of adolescent mental health services.

Methods

Study Design

This study employed a quantitative pre-experimental design with a two-group pretest–posttest approach. The design allowed comparison of outcomes between the experimental and control groups by measuring variables before and after the intervention. This report follows the TREND statement for non-randomized evaluations to ensure transparency and methodological rigor. The intervention was based on the Health Belief Model (HBM) to enhance adolescents' emotional regulation and accessibility to mental health services.

Participants

The study was conducted in Bangun Rejo Village, Tanjung Morawa District, Deli Serdang Regency, North Sumatra, Indonesia. The population consisted of adolescents aged 12–16 years living in Hamlet V, Bangun Rejo Village. A total of 50 participants were selected using cluster random sampling. Inclusion criteria included adolescents aged 12–16 years, residing in the village for more than six months, and willing to participate with parental consent. Exclusion criteria included a history of psychiatric treatment,

developmental disorders, or refusal to participate.

The sample size ($n = 50$; 25 experimental, 25 control) was determined based on previous similar studies applying HBM-based psychoeducation to small community groups (effect size $d \approx 0.8$, $\alpha = 0.05$, power = 0.80), which supports adequacy for detecting medium-to-large effects. No participants dropped out during the study (attrition = 0%).

Instruments

Data were collected using a structured HBM-based Mental Health Accessibility Questionnaire, which consisted of three subscales: (1) Self-awareness (perceived susceptibility and severity), (2) Self-efficacy (confidence in accessing help), and (3) Emotional regulation (adaptive response and perceived benefit). The questionnaire was adapted from [Nobiling & Maykrantz \(2017\)](#) and modified for adolescent respondents in the Indonesian context. Instrument validation was reviewed by three experts in psychology and public health to ensure construct validity, and internal consistency reliability testing yielded a Cronbach's alpha of 0.87, indicating high reliability.

Intervention

The intervention was a structured HBM-based psychoeducation program delivered over four sessions across four weeks (one session per week, 60 minutes each). Each session addressed specific HBM constructs: perceived susceptibility and severity (Session 1), perceived benefits and barriers (Session 2), cues to action and self-efficacy (Session 3), and skill application for emotional regulation (Session 4). The sessions were facilitated by a certified health psychologist with experience in adolescent mental health promotion, assisted by two trained facilitators from the community health post.

A detailed Standard Operating Procedure (SOP) guided session implementation, including the use of interactive discussions, role-play, and group reflection. Fidelity was monitored using an observation checklist, and safety was maintained through real-time supervision by a clinical psychologist. The control group received no intervention during the study but was offered the psychoeducation afterward for ethical consideration.

Data Collection

Data collection was conducted in June–August 2025. Two trained enumerators administered the questionnaires and recorded observational notes following a standardized workflow. The pretest was performed one week before the intervention, and the posttest was administered one week after the final session. Data were entered and stored in both Microsoft Excel and SPSS (version 26) files under password protection.

Missing data were handled using listwise deletion if less than 5% of responses were incomplete; no imputation was necessary as response completeness reached 100%. Qualitative notes from participants and observers were used to enrich the interpretation of the quantitative results.

Data Analysis

Descriptive statistics (mean, standard deviation, minimum, maximum) were used to summarize participant characteristics and outcome variables. Normality was tested using the Kolmogorov–Smirnov test, and homogeneity of variance was verified with Levene's test. Independent t-tests were used to assess mean differences between groups, while paired t-tests compared pretest–posttest differences within groups.

Effect sizes (Cohen's d) and 95% confidence intervals (CIs) were calculated for all significant comparisons, with the

significance threshold set at $\alpha = 0.05$. The reporting format followed APA 7 guidelines, with p-values reported as $p < 0.001$ where applicable (instead of $p = 0.000$).

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee, Faculty of Medicine, Universitas Islam Sumatera Utara (Approval No. 281/KEP/FK-UISU/VI/2025). Written informed consent was obtained from both participants and their parents/guardians after explanation of study aims, procedures, and confidentiality. All data were anonymized using participant codes to ensure privacy and data protection in accordance with national ethical standards.

Results

Table 1 illustrates the demographic characteristics of participants ($n = 50$). The majority were female (36 participants; 72%), while 14 (28%) were male. In terms of educational background, most participants (23, 46%) were in senior high school or its equivalent, followed by junior high school (19, 38%) and elementary school (8, 16%). This distribution indicates that the participants were predominantly adolescent females with a secondary education background.

Table 1 Respondent characteristics (n=50)

Characteristics	n	%
Gender		
Man	14	28
Woman	36	72
Education		
Elementary School	8	16
Junior High School/Equivalent	19	38
High School/Equivalent	23	46

Table 2 illustrates the comparison of learning outcome scores before and after the intervention in both experimental and control groups. The experimental group showed a significant increase in mean score from 66.00 ± 7.06 (95% CI [63.09, 68.91]) at pretest to 87.60 ± 7.45 (95% CI [84.51, 90.69]) at posttest. The control group also improved from 64.96 ± 7.63 (95% CI [61.83, 68.09]) to 76.48 ± 11.98 (95% CI [71.58, 81.38]), though the increase was smaller.

An independent-samples *t*-test revealed a significant difference in posttest mean scores between groups ($t(48) = 3.75$, $p < 0.001$, Cohen’s $d = 1.06$), indicating a large effect size. These findings confirm that the HBM-based psychoeducation program effectively improved adolescent mental health accessibility outcomes.

Table 2. Comparison of pretest and posttest scores between experimental and control groups

Group	Time	Mean $\pm$ SD	95% CI	<i>t</i>	<i>p</i> -value	Effect Size (<i>d</i>)
Experimental ($n = 25$)	Pretest	66.00 ± 7.06	[63.09, 68.91]	–	–	–
	Posttest	87.60 ± 7.45	[84.51, 90.69]	9.26	< 0.001	–
Control ($n = 25$)	Pretest	64.96 ± 7.63	[61.83, 68.09]	–	–	–
	Posttest	76.48 ± 11.98	[71.58, 81.38]	4.06	< 0.001	–
Between Groups (Posttest)		–	–	3.75	< 0.001	1.06

Table 3 illustrates the frequency distribution of participants’ anxiety levels

before and after the intervention. The term “Moderate” has replaced “Currently” for

consistency with APA terminology. In the experimental group, the proportion of adolescents with low anxiety increased from 18 (72%) at pretest to 23 (92%) at posttest, while those with high anxiety decreased from 3 (12%) to 0 (0%). In contrast, the control group showed minimal change across categories. These results indicate that the HBM-based psychoeducation reduced anxiety and improved emotional regulation among adolescents.

Table 3. Distribution of anxiety levels before and after the intervention

Anxiety Level	Experimental Group (n = 25)	
	Pretest n (%)	Posttest n (%)
Low	18 (72)	23 (92)
Moderate	4 (16)	2 (8)
High	3 (12)	0 (0)

Table 4 summarizes the results of the statistical tests analyzing the implementation of the Health Belief Model-based psychoeducation program. The experimental group showed a mean improvement of 21.6 points ($t(24) = 9.26, p < 0.001$), while the control group improved by 11.52 points ($t(24) = 4.06, p < 0.001$). Between-group analysis showed a significant difference in posttest means ($t(48) = 3.75, p < 0.001$, Cohen's $d = 1.06$, 95% CI [5.02, 17.22]).

These findings indicate that the HBM-based intervention had a large and statistically significant effect on adolescents' self-awareness, self-efficacy, and emotional regulation related to mental health accessibility.

Table 4. Statistical analysis of HBM-based intervention effectiveness

Comparison	Mean Difference	95% CI	<i>t</i>	df	<i>p</i> -value	Effect Size (<i>d</i>)
Experimental (Pre-Post)	21.60	[16.93, 26.27]	9.26	24	< 0.001	1.86
Control (Pre-Post)	11.52	[5.81, 17.23]	4.06	24	< 0.001	0.81
Posttest (Exp vs Ctrl)	11.12	[5.02, 17.22]	3.75	48	< 0.001	1.06

The intervention significantly improved outcomes across all measures. Adolescents in the experimental group demonstrated greater gains in self-awareness, self-efficacy, and emotional regulation compared to those in the control group. The large effect size suggests that the Health Belief Model-based psychoeducation is an effective behavioral strategy for enhancing adolescent mental health accessibility in the Indonesian community setting.

Discussion

The present study demonstrates that the Health Belief Model (HBM)-based psychoeducation program effectively enhanced adolescents' mental health

accessibility by improving self-awareness, self-efficacy, and emotional regulation. The intervention successfully encouraged behavioral change without reliance on intensive clinical resources, suggesting its suitability for low-resource community settings such as rural Indonesia.

These findings support the theoretical foundation of the Health Belief Model, which posits that an individual's engagement in health-promoting behaviors is influenced by their perception of susceptibility, severity, benefits, and barriers, as well as their level of self-efficacy. In this study, increased self-awareness enabled adolescents to recognize emotional distress and personal vulnerability better (perceived

susceptibility and severity), which subsequently strengthened their motivation to seek help and adopt adaptive emotional regulation strategies (perceived benefit). This mechanism aligns with HBM principles indicating that changes in perception can mediate improvements in help-seeking and behavioral accessibility ([Nobiling & Maykrantz, 2017](#)).

Moreover, self-efficacy emerged as a critical mediator linking psychoeducation to improved accessibility ([Özaslan et al., 2024](#)). Adolescents who gained confidence in their ability to manage stress and navigate health systems were more likely to overcome psychological barriers such as fear, stigma, and uncertainty—factors commonly inhibiting help-seeking behavior ([O'Neill et al., 2023](#)). This process mirrors Bandura's self-efficacy theory, which highlights belief in one's capabilities as a core determinant of behavioral persistence ([Mikkelsen et al., 2020](#)).

The findings are consistent with previous studies in similar low-resource settings. For example, [Barkhordari-Sharifabad et al. \(2020\)](#) and [Herlina & Virginia \(2025\)](#) reported that HBM-based education improved adolescent knowledge and perceived control in reproductive health. Likewise, [Sari Br Sembiring et al. \(2024\)](#) found that community-based HBM education increased adolescents' motivation to access mental health resources. In contrast, studies conducted in high-income contexts such as by [Yu et al. \(2024\)](#) and [King et al. \(2011\)](#) found mixed outcomes—suggesting that while psychoeducation improved knowledge, behavioral change remained limited due to entrenched stigma or lack of systemic follow-up. This contrast underscores the importance of culturally and contextually grounded interventions when applying HBM in mental health promotion.

The present study extends this evidence by illustrating that HBM

constructs are dynamically interrelated in shaping adolescent mental health behavior. Self-awareness may function as an initial trigger (cognitive appraisal of susceptibility), self-efficacy as a mediator (belief in coping capability), and emotional regulation as an outcome pathway leading to improved accessibility. Such integration reinforces recent models that conceptualize psychological insight as a catalyst for behavior modification ([Compas et al., 2017](#); [Khawar et al., 2023](#)).

Contextually, the study contributes to addressing adolescent mental health disparities in Indonesia, where access to mental health services remains constrained by stigma, limited infrastructure, and scarcity of trained professionals ([Carbonell et al., 2024](#); [Lu et al., 2021](#)). The use of psychoeducation delivered through community and school channels offers a feasible, low-cost approach to bridge these systemic gaps. This aligns with recommendations from WHO-SEARO, which emphasize school-based interventions as a scalable model in resource-limited settings ([Xu et al., 2020](#)).

Despite its strengths, several limitations should be acknowledged. First, the data relied on self-reported measures, which may be subject to social desirability or recall bias. Second, the intervention duration was relatively short (four sessions over four weeks), which may limit assessment of long-term behavioral sustainability. Third, the study was conducted in a single rural community with a modest sample size, potentially constraining generalizability to diverse adolescent populations. Future studies should incorporate longitudinal follow-up and qualitative exploration to capture sustained behavioral change and contextual influences on HBM constructs.

Implications and limitations

This study highlights that Health Belief Model (HBM)-based psychoeducation effectively enhances adolescent self-awareness, self-efficacy, and emotional regulation, thereby improving access to mental health services. Integrating this model into school and community programs can promote early help-seeking and reduce stigma through culturally sensitive, low-cost interventions suitable for rural contexts.

However, the absence of long-term follow-up limits conclusions about sustained behavioral change, and the culturally homogeneous sample restricts generalizability to more diverse adolescent populations. In addition, reliance on self-reported data may introduce response bias. Future research should include longitudinal and multicenter designs to evaluate long-term and cross-cultural applicability of HBM-based interventions.

Relevance to Practice

The findings of this study provide clear direction for nursing and public health practice by demonstrating that Health Belief Model-based psychoeducation can be effectively integrated into adolescent mental health promotion at the community and school levels. Nurses, school health personnel, and community health workers can apply HBM principles to design counseling, health education, and peer-support programs that enhance adolescents' self-awareness and self-efficacy in managing emotional challenges. These actions not only strengthen early identification of mental health problems but also foster a supportive environment that reduces stigma and encourages help-seeking behavior. By embedding HBM-based approaches into routine health promotion activities, practitioners can bridge gaps in accessibility and contribute to sustainable, culturally responsive adolescent mental health care.

Conclusion

This study aimed to evaluate the effectiveness of Health Belief Model-based psychoeducation in improving adolescents' accessibility to mental health services. The intervention significantly enhanced self-awareness, self-efficacy, and emotional regulation, supporting positive behavioral change. These findings suggest that applying behavioral frameworks like the HBM can strengthen community and school-based mental health promotion. Integrating HBM-based psychoeducation into public health practice offers a sustainable and culturally adaptable strategy to reduce stigma and improve adolescent mental well-being.

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CrediT Authorship Contributions Statement

Isyos Sari Sembiring: Conceptualization, Methodology, Supervision

Perkasa Ginting: Software, Validation, Formal Analysis

Basaria Manurung: Writing - Review & Editing, Data Curation

Lidya Natalia Sinuhaji: Investigation, Resources, Project Administration

Herna Rinayanti Manurung: Writing - Original Draft, Review & Editing

Grace Laura Fidela Pane: Writing - Original Draft, Visualization, Funding Acquisition

Oktaviani Zebua: Writing - Original Draft, Visualization, Funding Acquisition

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Conflicts of Interest

There is no conflict of interest.

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Supplementary Materials

Supplementary File S1: Questionnaire contains the full questionnaire used for data collection.

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