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Traditional Treatment Choices for Managing Dysmenorrhea Among Adolescent Girls: An Application of the Health Belief Model

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ABSTRACT

Background: Dysmenorrhea is a common reproductive health problem among adolescent girls and often interferes with daily activities. Various management strategies are used to alleviate dysmenorrhea, including the use of traditional medicine. This study aimed to examine the influence of Health Belief Model (HBM) constructs on the choice of traditional medicine for reducing dysmenorrhea among adolescent girls.

Subject and Methods: This quantitative study employed a cross-sectional design carried out in Boyolali Regency, Central Java, Indonesia. A total of 200 female adolescents were selected using stratified random sampling. Data were collected using a standardized questionnaire that had been tested for validity and reliability. Multivariate data analysis was conducted using path analysis to identify both direct and indirect effects among variables.

Results: The selection of traditional medicine for dysmenorrhea management among adolescent girls was directly influenced by perceived benefits (b = 1.29; 95% CI= 0.61–1.97; p < 0.001) and perceived severity (b= −0.14; 95% CI= −0.71 to 0.43; p= 0.631). Meanwhile, perceived susceptibility (b= 0.81; 95% CI= 0.17–1.45; p= 0.013), perceived barriers (b= −1.53; 95% CI= −2.29 to −0.77; p < 0.001), cues to action (b= 1.44; 95% CI= 0.80–2.09; p < 0.001), and self-efficacy (b= −0.98; 95% CI= −1.61 to −0.34; p = 0.003) had indirect effects on the choice of traditional medicine. The resulting path model demonstrated good goodness-of-fit.

Conclusion: Health Belief Model constructs can be effectively applied as a framework for understanding the selection of traditional medicine. HBM-based interventions that emphasize increasing perceived benefits and managing perceived barriers are recommended to support informed reproductive health decision-making among adolescents.

Keywords: Health Belief Model, traditional medicine, dysmenorrhea, adolescent girls

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BACKGROUND

Reproductive health encompasses physical, mental, and social well-being related to the reproductive system, its functions, and processes (WHO, 2022). One important aspect of reproductive health among adolescents is menstrual health, which has been recognized by the World Health Organi-

zation (WHO) as both a health issue and a human rights concern (WHO, 2023). Menstruation is a sign of female pubertal development and occurs as a result of the shedding of the uterine lining (endometrium), typically lasting 5–7 days each month (Ministry of Health of the Republic of Indonesia, 2018). During menstruation, many females experience symptoms such as lower back pain, dizziness, nausea, vomiting, and severe lower abdominal pain that may radiate to the legs. Although menstruation is a normal physiological process, it is frequently accompanied by menstrual pain, known as dysmenorrhea.

Dysmenorrhea is a common condition worldwide, with a global prevalence ranging from 20% to 90% (Gobba et al., 2024), affecting more than half of women globally (WHO, 2024). In Indonesia, the prevalence of dysmenorrhea ranges from 55% to 98.8%, with Central Java reporting a prevalence of 64.25% (Prabawati, 2024). A preliminary study conducted in Boyolali found that among 312 female students, 178 (57.1%) experienced irregular, sharp, and cramping pain in the lower abdomen radiating to the back, legs, groin, and vulva. Dysmenorrhea has been shown to negatively affect quality of life, increase school absenteeism, reduce academic performance, and contribute to psychological problems such as anxiety and depression (Celenay et al., 2021; Itani et al., 2022).

Senior high school adolescents represent a particularly relevant population for investigation, as they are in the early reproductive age period, experience a high prevalence of dysmenorrhea, and face direct consequences for daily functioning and academic achievement. During adolescence, health behaviors and treatment preferences are actively being formed. Therefore, understanding the factors that influence adolescents' decisions in managing menstrual pain is essential for effective health intervention planning (Situmorang et al., 2025).

Dysmenorrhea is commonly managed using pharmacological therapies, including nonsteroidal anti-inflammatory drugs (NSAIDs) and hormonal contraceptives. However, these medications are associated with potential adverse effects, particularly gastrointestinal complications (Gobba et al., 2024). Such concerns have led some adolescents to seek alternative approaches perceived as safer, including traditional medicine.

The WHO encourages the integration of traditional medicine into national health systems, provided that safety, quality, and efficacy standards are met (WHO, 2023). In Indonesia, traditional medicine is regulated under the Ministry of Health Regulation No. 007 of 2012 on the Registration of Traditional Medicines and is supervised by the National Agency of Drug and Food Control (BPOM). Numerous studies have demonstrated that herbal remedies, such as ginger, turmeric, and turmeric–tamarind preparations, are effective in significantly reducing dysmenorrhea intensity without causing systemic side effects (Sari & Listiarini, 2021; Sumardiko et al., 2023; Sutrisnawati et al., 2024).

The choice to use traditional medicine is influenced not only by access, availability, and knowledge but also by individual perceptions of benefits, barriers, and potential risks. The Health Belief Model (HBM) provides a relevant theoretical framework for understanding such decisions, as it incorporates perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. However, HBM-based studies focusing on dysmenorrhea among adolescents remain limited and have largely emphasized medical or psychological

aspects, with insufficient exploration of individual belief systems (Alyafei & Easton, 2025).

This study aims to address this gap by examining the application of the Health Belief Model in influencing the selection of traditional medicine for dysmenorrhea management among female adolescents.

SUBJECTS AND METHOD

1. Study design

This study employed an observational analytic design with a cross-sectional approach. Data collection was conducted from June to August 2025 in Boyolali Regency, Central Java, Indonesia.

2. Population and Sample

The study population consisted of adolescent girls experiencing dysmenorrhea in Boyolali Regency, Central Java, Indonesia. A total of 200 adolescent girls with dysmenorrhea were recruited from four subdistricts—Andong, Ngemplak, Nogosari, and Simo. The study locations were selected using purposive sampling, while participants were selected through stratified random sampling.

3. Study Variables

The independent variables included perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. The dependent variable was the selection of traditional medicine for dysmenorrhea management.

4. Operational Definition of Variables

Perceived susceptibility refers to an individual's belief regarding their risk of experiencing a disease or health problem.

Perceived severity refers to an individual's subjective assessment of the seriousness of a disease or health condition, including the potential consequences if the condition is not prevented or treated.

Perceived benefits refer to an individual's evaluation of the value or effectiveness of engaging in a health behavior to reduce disease risk.

Perceived barriers refer to an individual's perception of negative factors that hinder engagement in health-related actions, such as pain, high cost, or unpleasant experiences.

Cues to action are triggering factors or prompts that motivate an individual to decide whether to adopt or reject a particular health behavior.

Self-efficacy refers to an individual's confidence in their ability to perform the behaviors required to achieve a specific outcome.

The selection of traditional medicine refers to behaviors or practices undertaken by adolescent girls to manage or relieve dysmenorrhea using traditional methods, such as the consumption of herbal remedies (e.g., turmeric, ginger, cinnamon) and therapies such as acupuncture or acupressure.

5. Research Instrument

Data were collected using a Likert-scale questionnaire consisting of 32 items. The questionnaire included six constructs—perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy—each measured by five items. The selection of traditional medicine was assessed using two items. The instrument had been tested for validity and reliability prior to data collection.

6. Data Analysis

Data analysis was conducted in several stages. Univariate analysis was performed to describe the distribution of variables. Bivariate analysis using simple logistic regression was conducted to examine the associations between independent and dependent variables. Multivariate analysis was performed using path analysis to estimate both direct and indirect effects

among variables. All analyses were conducted using STATA version 13.

7. Ethical Considerations

This study involved human participants; therefore, ethical issues including informed consent, anonymity, and data confidentiality were carefully addressed throughout the research process. Ethical approval was obtained from the Health Research Ethics Committee of Dr. Moewardi Regional General Hospital, Surakarta, Indonesia (Approval No. 1.288/VI/HREC/2025), dated June 13, 2025.

RESULTS

1. Sample characteristics

Table 1 presents the characteristics of the 200 study respondents. The majority of respondents were 16 years old (42.5%), experienced menarche at a normal age (85%), had a family history of dysmenorrhea (63%), and had a normal body mass index (54.5%). Most respondents reported experiencing moderate levels of menstrual pain (59%).

Table 1. Sample characteristics of traditional treatment choices for managing dysmenorrhea among adolescent girls: An application of the Health Belief Model

Characteristics	n	%
Age		
15 years old	36	18
16 years old	85	42.5
17 years old	76	38
18 years old	3	1.5
Age of Menarche		
<11 years old (early)	8	4
11-13 years old (normal)	170	85
>13 years old (late)	22	11
Family history of menarche		
None	74	47
Yes	126	63
Body mass index		
<18.5 kgBW/m² (underweight)	57	28.5
18.5-22.9 kgBW/m² (normal weight)	109	54.5
23.0-24.9 kgBW/m² (overweight)	12	6
25.0-29.9 kgBW/m² (obese I)	19	9.5
≥30.0 kgBW/m² (obese II)	3	1.5
Pain level		
1-3 (Low)	38	19
4-6 (Moderate)	118	59
7-9 (High)	39	19.5
10 (Severe)	5	2.5

2. Univariate analysis

The univariate analysis of continuous data showed that the mean score for perceived susceptibility was 14.84 (SD= 1.95), with a range of 8–20, while the mean perceived severity score was 13.52 (SD= 2.28), ranging from 7–20. Perceived benefits had the highest mean score at 15.70 (SD= 2.20), whereas perceived barriers had the lowest mean score at 11.78 (SD= 2.17). The mean scores for cues to action and self-efficacy were 13.81 (SD= 2.46) and 15.12 (SD= 2.05), respectively.

Table 2. Univariate analysis of continuous data of Traditional Treatment Choices for Managing Dysmenorrhea Among Adolescent Girls: An Application of the Health Belief Model

Variables	Mean	SD	Min.	Max.
Perceived susceptibility	14.84	1.95	8	20
Perceived severity	13.52	2.28	7	20
Perceived benefit	15.70	2.20	9	20
Perceived barrier	11.78	2.17	5	19
Cues to action	13.81	2.46	5	20
Self-efficacy	15.12	2.05	9	20

The univariate analysis of categorical data indicated that the majority of respondents had high perceived susceptibility (58.5%) and high perceived severity (52%). Perceived benefits were predominantly in the high category (73%), while perceived barriers were mostly classified as strong (57.5%). Most respondents reported high levels of cues to action (56.5%) and self-efficacy (67%). The choice of treatment was evenly divided between traditional and pharmacological methods, with each accounting for 50% of responses.

Table 3. Univariate Analysis of Categorical Data of Traditional Treatment Choices for Managing Dysmenorrhea Among Adolescent Girls: An Application of the Health Belief Model

Variables	n	%
Perceived susceptibility		
Low	83	41.5
High	117	58.5
Perceived severity		
Low	96	48
High	104	52
Perceived benefit		
Low	54	27
High	146	73
Perceived barrier		
Low	85	42.5
High	115	57.5
Cues to action		
Low	87	43.5
High	113	56.5
Self-efficacy		
Low	66	33
High	134	67
Menarche treatment		
Traditional	100	50
Pharmacology	100	50

3. Bivariate analysis

Based on Table 3, the bivariate analysis showed that several constructs of the Health Belief Model were significantly associated with the selection of traditional medicine for dysmenorrhea management among adolescent girls.

Perceived susceptibility was not significantly associated with the selection of

traditional medicine. A one-unit increase in the perceived susceptibility score was associated with a decrease in the odds of choosing traditional medicine (OR= 0.88; 95% CI = 0.50 to 1.55; p = 0.667).

Similarly, perceived severity was not significantly related to the selection of traditional medicine. Each one-unit increase in the perceived severity score was associated with lower odds of choosing traditional medicine (OR = 0.92; 95% CI= 0.52 to 1.60; p = 0.777).

In contrast, perceived benefits showed a significant positive association with the selection of traditional medicine. A one-unit increase in the perceived benefit score increased the odds of choosing traditional medicine by 3.62 times (OR = 3.62; 95% CI= 1.83 to 7.15; p < 0.001). Perceived barriers were significantly and negatively associated with the selection of traditional medicine. Each one-unit increase in the perceived barrier score reduced the odds of choosing traditional medicine by 55% (OR= 0.45; 95% CI = 0.25 to 0.80; p = 0.007).

Cues to action were not significantly associated with the selection of traditional medicine. A one-unit increase in the cues to action score was associated with higher odds of choosing traditional medicine, although this relationship was not statistically significant (OR = 1.33; 95% CI = 0.75 to 2.33; p = 0.319). Self-efficacy was also not significantly associated with the selection of traditional medicine (OR= 1.00; 95% CI= 0.55 to 1.80; p = 1.000).

Table 3. Results of Simple Logistic Regression Analysis of Factors Influencing the Selection of Traditional Medicine for Dysmenorrhea Management

Independent Variables	Pharmachology treatment		Traditional treatment		Total		95% CI		
	n	%	n	%	N	%	OR	Lower limit	Upper limit	p
Perceived susceptibility										
Low	40	48.2	43	51.8	83	100	0.88	0.50	1.55	0.667
High	60	51.3	57	48.7	117	100				
Perceived severity										
Low	47	49	49	51	96	100	0.92	0.52	1.60	0.777
High	53	51.0	51	49.0	104	100				
Perceived benefit										
Low	39	72.2	15	27.8	54	100	3.62	1.83	7.15	<0.001
High	61	41.8	85	58.2	146	100				
Perceived barrier										
Low	33	38.8	52	61.1	85	100	0.45	0.25	0.80	0.007
High	87	58.3	48	41.7	115	100				
Cues to action										
Low	47	54.0	40	46.0	87	100	1.33	0.75	2.33	0.319
High	53	46.9	60	53.1	113	100				
Self-efficacy										
Low	33	50.0	33	50.0	66	100	1.00	0.55	1.80	1.000
High	67	50.0	67	50.0	134	100				

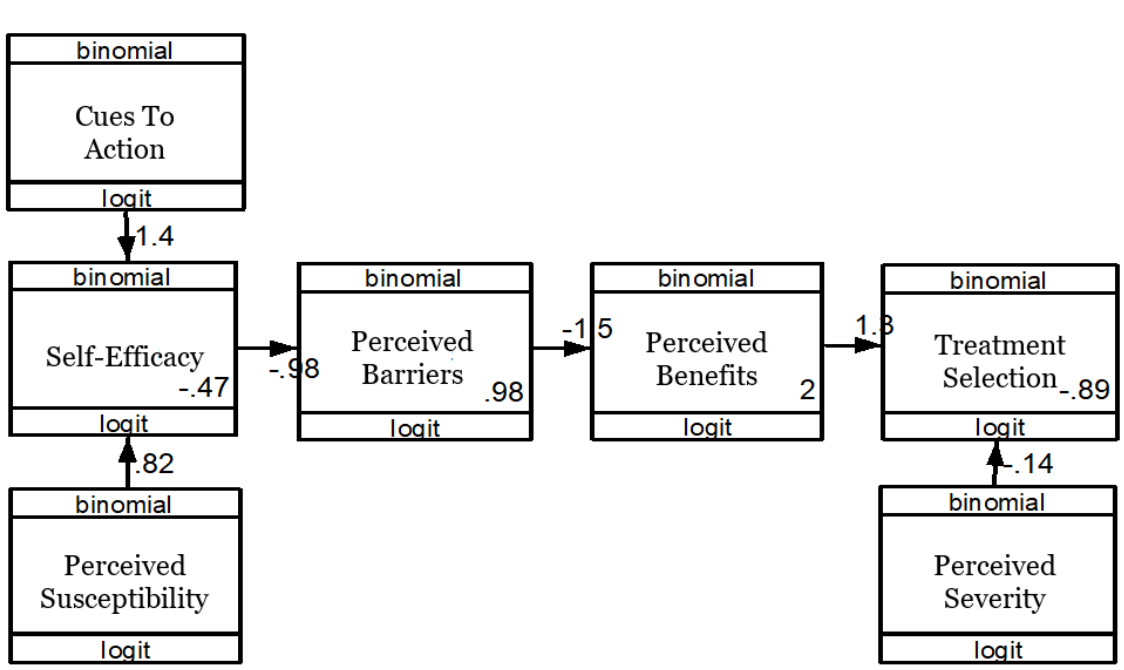

Figure 1. Path diagram of the Health Belief Model constructs and the selection of traditional treatment to reduce dysmenorrhea among adolescent girls

4. Multivariate Analysis with Path Analysis

This research uses path analysis to determine the magnitude of the direct and indirect effects of the analyzed variables. Figure 1 presents the model specification illustrating the relationships among the study variables. Within this theoretical framework, the selection of traditional treatment is directly influenced by perceived benefits and perceived severity. Perceived benefits are affected by perceived barriers and self-efficacy, while self-efficacy is influenced by cues to action and perceived susceptibility. The study includes seven observed variables, consisting of three exogenous variables and four endogenous variables, with a total of six estimated parameters. The calculation of the degrees of freedom yielded a value of 15, indicating that the proposed research model is appropriate for path analysis.

Table 4 presents the results of the path analysis conducted on data from 200 respondents. The tested model demonstrates a very good level of model fit, as indicated by the Akaike Information Criterion value of 982.4716 and the Bayesian Information Criterion value of 1015.455.

Table 4 indicates that perceived benefits and perceived severity are directly associated with the selection of traditional treatment. There is a positive relationship between perceived benefits and the selection of traditional treatment (b = 1.29; 95% CI: 0.61 to 1.97; $p < 0.001$), suggesting that higher perceived benefits increase the likelihood of choosing traditional treatment. In contrast, perceived severity is associated with a lower likelihood of selecting traditional treatment (b = −0.14; 95% CI: −0.71 to 0.43; $p = 0.631$); however, this association is not statistically significant.

The selection of traditional treatment is indirectly influenced by perceived barriers, perceived susceptibility, self-efficacy, and cues to action. Perceived barriers (b =

−1.53; 95% CI: −2.29 to −0.77; p < 0.001) and self-efficacy (b = −0.98; 95% CI: −1.61 to −0.34; p = 0.003) are associated with a reduction in perceived benefits.

Self-efficacy increases in response to cues to action (b = 1.44; 95% CI: 0.80 to 2.09; p < 0.001) and perceived susceptibility (b = 0.81; 95% CI: 0.17 to 1.45; p = 0.013).

Table 4. Results of path analysis applying the Health Belief Model to the selection of traditional treatment for reducing dysmenorrhea among female adolescents

Independent Variables			Path coef. (b)	95% CI		p
				Lower limit	Upper limit	
Direct effect						
Traditional pain treatment selection	←	Perceived benefit	1.29	0.61	1.97	<0.001
	←	Perceived severity	-0.14	-0.71	0.43	0.631
Indirect effect						
Perceived benefit	←	Perceived barrier	-1.53	-2.29	-0.77	<0.001
Perceived barrier	←	Self-efficacy	-0.98	-1.61	-0.34	0.003
Self-efficacy	←	Cues to action	1.44	0.80	2.09	<0.001
	←	Perceived susceptibility	0.81	0.17	1.45	0.013
N Observation = 200						
Log likelihood = -481.24						
AIC = 982.47						
BIC = 1015.46						

DISCUSSION

1. Effect of Perceived Benefits on the Selection of Traditional Treatment

The path analysis results indicate that perceived benefits have a direct and positive effect on the selection of traditional treatment to reduce dysmenorrhea among adolescent girls, and this relationship is statistically significant (b = 1.29; 95% CI: 0.61 to 1.97; p < 0.001). This finding suggests that the higher the adolescents' perception of the benefits of traditional treatment for dysmenorrhea relief, the greater the likelihood that they will choose traditional treatment compared with those who perceive fewer benefits. This result is consistent with a study conducted in Ghana by Amoateng et al. (2019), which reported that adolescents with dysmenorrhea who were aware of the perceived benefits and effectiveness of complementary treatments were more inclined to use them.

A study in southern Spain also demonstrated a positive association between perceived benefits and the use of nonpharmacological treatments, where 73.2% of women with dysmenorrhea used such methods, and their decisions were influenced by beliefs about benefits and family influence (Fernández et al., 2020). Meanwhile, qualitative research in Tanzania revealed that limited information, cultural beliefs, and negative perceptions of modern medicine encouraged adolescents to prefer traditional practices such as rest, drinking warm water, and herbal remedies (Cherenack et al., 2023).

Evidence from multiple studies indicates that trust in the effectiveness of complementary treatments may arise from

clinical evidence and significantly influence patient choice (Guo et al., 2021; Cho et al., 2025). Research in Malaysia further reported that women with higher perceived benefits were more likely to choose complementary treatments for menstrual pain (Zulkarnain et al., 2024). Other studies have similarly emphasized that beliefs regarding the benefits of complementary methods play an important role in decisions to use both conventional and nonconventional care (Matheson and Durand, 2024).

2. Effect of Perceived Severity on the Selection of Traditional Treatment

The path analysis shows that perceived severity has a direct and negative effect on the selection of traditional treatment for reducing dysmenorrhea among adolescent girls; however, this relationship is not statistically significant (b = −0.14; 95% CI: −0.71 to 0.43; p= 0.631). This finding indicates that, among adolescents experiencing dysmenorrhea, the level of perceived severity is not a key determinant of choosing traditional treatment. This result does not fully align with the basic assumptions of the Health Belief Model, which positions perceived severity as a central predictor of health behavior.

International studies report similar findings, showing that beliefs about the severity of dysmenorrhea are not consistently associated with pain self-management strategies, which are more strongly influenced by perceptions of treatment effectiveness (French and Hellman, 2020).

Qualitative research by Chen et al. (2019) found that adolescents with severe dysmenorrhea were often concerned about the risk of analgesic overdose, leading them to explore various pain management approaches, including nonmedical treatments and social support. In contrast, Armour et al. (2019) reported that individuals who perceived dysmenorrhea as a serious condition were more likely to seek conventional medical care, whereas those who trusted complementary approaches tended to use traditional treatments either concurrently or as alternatives.

Research by Fernández et al. (2020) among female university students in Spain also showed that although most participants experienced moderate to severe pain, pain intensity did not necessarily correlate with the choice of nonpharmacological therapies. Similar findings were reported by Midilli et al. (2015) in Turkey, indicating that the use of complementary therapies was more strongly influenced by perceived benefits and ease of access than by symptom severity.

3. Effect of Perceived Barriers on the Selection of Traditional Treatment

The path analysis demonstrates that perceived barriers have an indirect and negative effect on the selection of traditional treatment for reducing dysmenorrhea among adolescent girls through perceived benefits, and this effect is statistically significant (b= −1.53; 95% CI: −2.29 to −0.77; p<0.001). Higher perceived barriers, such as limited availability of materials or services, concerns about side effects, and lack of social or environmental support, reduce adolescents' perceptions of the benefits of traditional treatment.

This finding is consistent with the literature emphasizing perceived barriers as a central factor in the use of complementary and traditional therapies. Structural barriers such as access and cost, perceptual barriers such as safety concerns and fear of side effects, and social or informational barriers such as limited knowledge or support can reduce confidence in intervention effectiveness, thereby weakening intentions and adoption

behaviors (Chatterjee, 2023; Najibi et al., 2025).

Studies among adolescents with dysmenorrhea further highlight the role of contextual barriers. Wati et al. (2024) reported that limited access to traditional materials, concerns about drug side effects, insufficient social support, and the influence of myths and cultural beliefs shaped adolescents' experiences in managing menstrual pain. These barriers reduced perceived benefits of traditional treatment and led some adolescents to shift toward pharmacological options.

Qualitative research published in PLOS Global Public Health also identified concerns about side effects, lack of reliable information, limited access to services, and social stigma as barriers that reduced confidence in nonprescription interventions and hindered help seeking behavior (Cherenack et al., 2023). Gagnon et al. (2024) further emphasized that perceived benefits increase when informational, social, and access barriers are addressed, underscoring the role of barriers in shaping benefit expectations and pain management choices.

4. Effect of Self Efficacy on the Selection of Traditional Treatment

The path analysis indicates that self-efficacy has an indirect and negative effect on the selection of traditional treatment for reducing dysmenorrhea among adolescent girls through perceived barriers, and this effect is statistically significant (b = −0.98; 95% CI: −1.61 to −0.34; p = 0.003). Higher self-efficacy in managing menstrual pain is associated with lower perceived barriers to using traditional treatment, thereby increasing the tendency to adopt non-pharmacological strategies. Thus, self-efficacy plays an important role in reducing perceived barriers and significantly influences treatment selection behavior.

Research in China has shown that self-efficacy is a key factor in dysmenorrhea self-care, with higher self-efficacy associated with more diverse and well controlled treatment strategies (Chen et al., 2023). Additionally, self-efficacy has been linked to reduced perceptions of barriers, supporting more rational and effective treatment decisions among adolescents (Wang et al., 2025). Adolescents with high self-efficacy tend to view barriers as manageable, resulting in broader treatment choices beyond traditional therapy alone.

Perceived barriers have been identified as an important mediator in the relationship between self-efficacy and health behavior, including the selection of traditional treatment (Thsuma et al., 2017). Within the Health Belief Model framework, barriers are a major predictor of health behavior, while self-efficacy helps reduce these barriers and increases the likelihood of effective action. These findings are consistent with international evidence highlighting self-efficacy and perceived barriers as key factors in health care decision making (Chen, 2023; Zulimartin et al., 2025).

5. Effect of Cues to Action on the Selection of Traditional Treatment

The path analysis shows that cues to action have an indirect and positive effect on the selection of traditional treatment for reducing dysmenorrhea among adolescent girls through self-efficacy, and this effect is statistically significant (b= 1.44; 95% CI= 0.80 to 2.09; p <0.001). These findings suggest that cues to action, such as health education and environmental or social support, can enhance adolescents' self-efficacy and influence their decision to choose traditional treatment for menstrual pain. This result aligns with the Health Belief Model, which identifies cues to action as triggers of health behavior and self-

efficacy as a strong predictor of behavioral adoption (Jones et al., 2015; Alyafei and Easton Carr, 2025).

Research in Iran demonstrated that HBM based educational interventions strengthened cues to action and self-efficacy, leading to improved menstrual health behaviors among high school students (Eghbal et al., 2023). Similarly, other studies have shown that adolescents with higher self-efficacy are more likely to select treatment strategies they perceive as effective, including traditional therapies (Nada, 2017; Chen, 2023; Dixon, 2024).

Studies in Ghana reported that adolescents with dysmenorrhea commonly used complementary and alternative medicine such as warm compresses, rest, herbal teas, massage, and light physical activity because these methods were perceived as effective, accessible, and culturally appropriate (Amoateng et al., 2019; Samba, 2019). This highlights that traditional treatment remains a popular choice among adolescent girls, particularly in Indonesia and other settings with strong traditional health practices.

6. Effect of Perceived Susceptibility on the Selection of Traditional Treatment

The path analysis indicates that perceived susceptibility has an indirect and positive effect on the selection of traditional treatment for reducing dysmenorrhea among adolescent girls through self-efficacy, and this effect is statistically significant. This finding suggests that higher perceived susceptibility to dysmenorrhea increases the likelihood of choosing traditional treatment. This result is consistent with the Health Belief Model, which emphasizes that awareness of vulnerability motivates individuals to seek coping strategies, with self efficacy acting as a key determining factor (Eghbal et al., 2023).

Correlational research by Luthfiandini et al. (2020) showed that self-efficacy served as an important mediator in enhancing adolescents' ability to manage menstrual pain (p= 0.004; r= 0.24). Similarly, other studies have found that perceived susceptibility is significantly associated with reproductive health behaviors when supported by high self-efficacy (Setyaningsih et al., 2022).

Additional evidence indicates that perceived susceptibility to dysmenorrhea encourages individuals to improve self-care behaviors, including selecting treatments perceived as effective and safe, such as traditional therapies (Poncelas Cabero et al., 2025; Nada, 2017). Traditional treatment is often chosen by adolescents as an alternative or complement to conventional therapy because it is perceived as more natural, associated with fewer side effects, and feasible to perform independently with social support.

AUTHORS CONTRIBUTION

AK: conceptualization, methodology, analysis, drafting; AD: conceptualization, supervision, review; BM: methodology, analysis, validation, review; RGHN: data collection, curation, review; RPF: resources, validation, review.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

REFERENCE

Alyafei A, Easton-Carr R (2025) The health belief model of behavior change. in: statpearls. treasure island (fl): StatPearls Publishing. Available at: https://www.statpearls.com/point-of-care/161679

Amoateng P, Nsiah K, Appiah R, Acheampong P (2019). Use of complementary and alternative medicine among high school girls with dysmenorrhea in Ghana. BMC Complementary and Alternative Medicine, 19(1): 63. Doi: 10.1186/s12906-019-2474-2

Chen L, Tang L, Guo S, Kaminga AC, Xu H (2019). Primary dysmenorrhea and self-care strategies among Chinese college girls: a cross-sectional study. BMJ open. 9(9): e026813. Doi: 10.1136/bmjopen-2018-026813

Chen J, Duan Y, Zhang Y, Zhang X, Chu M, Shi Y, Zhang X (2023). Self-care behavior and associated factors of nursing students with dysmenorrhea: a structural equation model. J Nurs Manag. 8820772. Doi: 10.1155/2023/8820772.

Cherenack EM, Rubli J, Melara A, Ezaldein N, King A, Alcaide ML, Sikkema KJ (2023). Adolescent girls' descriptions of dysmenorrhea and barriers to dysmenorrhea management in Moshi, Tanzania: A qualitative study. PLOS global public health. 3(7): e0001544. Doi: 10.1371/journal.pgph.0001544

Cho SI, Jung HJ, Park M, Kim DI (2025). Effectiveness and safety of herbal medicine on treatment of dysmenorrhea: An analysis of a multicenter, prospective observational study. IMR. 101209. Doi: 10.1016/j.imr.2025.101209.

Eghbal SB, Kenari ZA, Ashouri A, Rouhani-Tonekaboni N, Kasmaei P, Mehrabian F, Karimy M, Rezaei F, et al. (2023). The effectiveness of educational program based on health belief model on promotion of puberty health concepts among teen girls: a cross-sectional study in north of Iran. BMC Womens Health. 23(1):239. Doi: 10.1186/s12905-023-02391-3.

French L, Hellman K (2020). Beliefs about dysmenorrhea and their relationship to self-management. J Pediatr Adolesc Gynecol. 33(6): 625–631. Doi: 10.1016/j.jpag.2020.08.010

Gagnon MM, Brilz AR, Alberts NM, Gordon JL, Risling TL, Stinson JN (2024). Understanding adolescents' experiences with menstrual pain to inform the user-centered design of a mindfulness-based app: mixed methods investigation study. JMIR Pediatrics and Parenting. 7(1): e54658. Doi: 10.2196/54658

Gobba S, Kibone W, Kiguba R (2024). Self-reported gastrointestinal adverse effects of non-steroidal anti-inflammatory drugs in female students with dysmenorrhoea at Makerere University: prevalence, discontinuation and associated factors. BMJ Open. Doi: 10.1136/bmjopen-2023-079660.

Guo Y, Liu FY, Shen Y, Xu JY, Xie LZ, Li SY, Ding DN, et al. (2021). Complementary and alternative medicine for dysmenorrhea caused by endometriosis: a review of utilization and mechanism. Evid Based Complement Alternat Med. 6663602. Doi: 10.1155/2021/6663602.

Itani R, Soubra L, Karout S, Rahme D, Karout L, Khojah HMJ (2022). Primary dysmenorrhea: pathophysiology, diagnosis, and treatment

updates. Korean J Fam Med. 43(2): 101-8. Doi: :10.4082/kjfm.21.0103.

Jones CL, Jensen JD, Scherr CL, Brown NR, Christy K, Weaver J (2015). The health belief model as an explanatory framework in communication research: exploring parallel, serial, and moderated mediation. Health Commun. 30(6):566-76. Doi: 10.10-80/10410236.2013.873363.

Ministry of Health of the Republic of Indonesia. (2018). The Ministry of Health emphasizes menstrual hygiene management through school health programs. (in Indonesia). Jakarta: Ministry of Health of the Republic of Indonesia.https://kemkes.go.id/id/kemenkes-tekankan-manajemen-kebersihan-menstruasi-melalui-uks

Midilli TS, Yasar N, Baysal E (2015). Dysmenorrhea characteristics of female university students and their attitudes towards complementary and alternative medicine and methods. Holist Nurs Pract. 29(4): 194–204. Doi:10.-1097/HNP.0000000000000094

Nada CD, Fourianalistyawati E (2017). Self-efficacy and sleep quality of adolescents who experience dysmenorrhea. Jurnal Psikologi Ulayat. 4(2): 175–187. Doi: 10.24854/jpu63

Najibi SM, Sarikhani Y, Hajimonfarednejad M, Nimrouzi M, Hashempur MH (2025). A scoping review of the barriers and facilitators in the use of traditional, complementary, and integrative medicine: insights for health policy development. J Health Popul Nutr. 44(1):188. Doi: 10.1186/s41043-025-00934-y.

Fernández ML, Onieva-Zafra MD, Abreu-Sánchez A, Ramos-Pichardo JD, Iglesias-López MT, Fernández-Martínez E (2020). Management of primary dysmenorrhea among university students in the south of Spain and family influence. IJERPH. 17(15): 5570. Doi: 10.3390/ijerph17155570

Poncelas-Cabero PM, Andina-Díaz E, Leirós-Rodríguez R, Serrano-Gemes G, Rodríguez-Nogueira Ó (2025). Experiences and perceptions of primary dysmenorrhea mediating management behaviors: A systematic review of qualitative evidence and meta-aggregation. Eur J Obstet Gynecol Reprod Biol. 114094. Doi: 10.1016/j.ejogrb.2025.114094

Sari ID, Listiarini UD (2021). The Effect of Acupressure and Ginger Consumption on Dysmenorrhea Intensity in Female Adolescent. (in Indonesia). J Ilm Univ Batanghari Jambi. 21(1):215-20. Doi: 10.33087/jiubj.v21i1.1154

Setyaningsih W, Yudianti I, Mansur H (2022). Perceived susceptibility, barriers, and cues to action as determinant factors of reproductive health behavior. Int J Public Health. 11(3): 884-892. Doi: 10.11591/ijphs.v11i3.2-1576

Situmorang H, Sutanto RL, Tjoa K, Rivaldo R (2025). Association between primary dysmenorrhoea on quality of life, mental health and academic performance among medical students in Indonesia: a cross-sectional study. BMJ Open. 15(1):e093237. Doi: 10.11-36/bmjopen-2024-093237

Sumardiko DS, Roswandi MR, Purwitasari N, Hamsidi R (2023). The effect of abdominal massage and kunyit asam herbs to reduce primary menstrual pain (dysmenorrhea). J Vocational Health Studi. 7(2):126–31. Doi:10.20-473/jvhs.V7.I2.2023.126-131.

Sutrisnawati N, Jayatmi I, Ciptiasrini U (2024). Pengaruh pemberian kunyit asam dan massage effleurage terhadap penurunan nyeri dismenore

primer pada remaja putri di PMB E tahun 2024. Innovative J Soc Sci Res. 4(3):4564-75. Doi: 10.31004/innovative.v4i3.10823

Wang S, Wei J, Zhang P, Song J, Chen J, Li G (2025). The chain mediating effect of self-efficacy and health literacy between proactive personality and health-promoting behaviors among Chinese college students. Sci Rep. 15(1):16101. Doi: 10.1038/s41598-025-00936-0.

Wati AS, Tampubolon MM, Utami S (2024). Overview of Adolescent Girls' Experiences in Managing Dysmenorrhea. Innovative: J Soc Sci Res. 4(6): 4297-4315. https://j-innovative.org/-index.php/Innovative/article/view/16782

WHO (2022). Reproductive health in the South-East Asia Region. cited 2025 May 5. https://www.who.int/south-eastasia/health-topics/reproductive-health

WHO (2023). Menstrual health, not just hygiene: the path toward a strong cross-sectoral response. cited 2025 May 7. https://www.who.int/news/-item/28-05-2023-menstrual-health-not-just-hygiene-the-path-toward-a-strong-cross-sectoral-response

WHO (2024). Global report reveals major gaps in menstrual health and hygiene in schools. Cited 2025 Apr 26. https://www.who.int/news/item/28-05-2024-global-report-reveals-major-gaps-in-menstrual-health-and-hygiene-in-schools

Zulimartin H, Harzif AK, Shadrina A, Harahap JS, Tanjung A, Muharam R (2025). Prevalence, Severity, and Self-Medication for Dysmenorrhea among Female Adolescents in Indonesia. Majalah Kedokteran Bandung (MKB).

Zulkarnain AI, Samri F, Hisham SR, Ismail S, Harun SN, Bahari MB, Ismail I (2024). Use of complementary and alternative therapies for the treatment of dysmenorrhea among undergraduate pharmacy students in Malaysia: A cross-sectional study. BMC Complementary Medicine and Therapies, 24(1): 108. Doi: 10.1186/-s12906-024-04018-5.