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Original article

Living with the pain: Perceptions, coping mechanisms, and impacts of primary dysmenorrhea among adolescents

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Abstract

Background: Primary dysmenorrhea is the leading cause of gynecologic care-seeking among adolescent females worldwide. This study assessed the perceptions, coping strategies, and outcomes of primary dysmenorrhea among female adolescent students.

Methods: A cross-sectional survey was conducted with 305 female adolescents aged 14 to 19 years, systematically sampled from Tamale Girls Senior High School. Data were collected using an interviewer-administered structured questionnaire, incorporating the Illness Perception Questionnaire-Revised (IPQ-R) to evaluate demographics, illness representations, coping strategies, and dysmenorrhea outcomes. Data analysis utilized descriptive and inferential statistics with SPSS version 21.

Results: Among participants (mean age 17.5 years), 55.7% reported severe primary dysmenorrhea pain, typically lasting two days. Most had low perceived control over their condition and did not seek care, often normalizing the pain or facing barriers such as shyness and financial constraints. Multiple regression analysis identified symptom identity ($\beta=0.411$, $p<0.001$), perceived consequences ($\beta=0.223$, $p<0.001$), and pharmacological coping ($\beta=-0.132$, $p=0.014$) as significant predictors of outcomes: higher symptom identity and consequence perception predicted worse outcomes, while greater use of pharmacological coping was linked to reduced negative effects.

Conclusion: Severe primary dysmenorrhea is prevalent among adolescent girls, adversely affecting emotional well-being and academic performance, yet care-seeking remains low due to cultural and financial obstacles. Targeted educational interventions and improved access to effective treatments are essential to mitigate its impact and support adolescent health. Stakeholders in health and education sectors should implement measures to promote the social and academic well-being of students affected by this condition.

Keywords: Adolescent, Coping Skills, Dysmenorrhea, Female, Humans, Pain Perception

Introduction

Menstruation marks a significant milestone in female reproductive health, signaling the onset of hormonal and ovulatory functions. However, for many adolescents, menstruation is accompanied by challenges, including dysmenorrhea, a common gynecological condition characterized by painful periods (1). Dysmenorrhea is broadly classified into primary and secondary types. Primary dysmenorrhea refers to menstrual pain without an underlying pathological cause, typically affecting females under 20 years old after ovulatory cycle stabilization. In contrast, secondary dysmenorrhea is associated with identifiable medical conditions (2). The pain of primary dysmenorrhea varies in intensity—mild, moderate, or severe—and can significantly impair quality of life (QoL) (3).

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Primary dysmenorrhea typically emerges within 6–12 months post-menarche, with its prevalence peaking in early adolescence and declining with age due to ovulatory maturation. It is a leading cause of absenteeism among female adolescents in both rural and urban settings, contributing to reduce QoL (3). Symptoms of primary dysmenorrhea extend beyond menstrual cramps to include headache, nausea, vomiting, diffuse abdominal pain, lower back pain, general body aches, weakness, and gastrointestinal disturbances (4). The pain, often most intense during peak menstrual flow, is driven by elevated levels of prostaglandin F2α, a chemical mediator responsible for uterine contractions and severe discomfort in affected individuals (5).

The socioeconomic burden of primary dysmenorrhea is substantial. In the United States, it is estimated to cause an annual loss of approximately 600 million working hours, equating to over $2 billion in economic costs due to absenteeism (5). For adolescents, severe primary dysmenorrhea symptoms can disrupt physical, social, and academic activities, leading to significant personal and societal impacts (6).

Global prevalence of primary dysmenorrhea varies widely, ranging from 16% to 91%, with adolescents consistently reporting the highest rates (7). Studies report prevalence rates of 84.1% in Italy, 40.7% in India, 89.7% in Nigeria, and 72% in other regions (8, 9). In Ghana, research on primary dysmenorrhea is limited, but studies indicate prevalence rates of 68.1% in the general population, 57.3% among University of Cape Coast undergraduates, and 83.6% among University for Development Studies students, with 61.2% reporting disruptions to daily activities (10, 11) Adolescents employ diverse strategies to manage primary dysmenorrhea symptoms.

Adequate hydration has been reported to alleviate pain (1), while some Ghanaian adolescents use self-medication or herbal preparations (3). Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly used but have a 20–25% failure rate with frequent or improper use (5). Ginger, known for its anti-inflammatory properties through COX-2 inhibition, has shown promise in reducing primary dysmenorrhea pain at doses of 750–2000 mg daily (12). However, inappropriate use of medications, such as the opioid analgesic tramadol, has led to adverse outcomes, including addiction, as reported in a case of a Ghanaian university student (13).

Qualitative studies in Ghana highlight the use of exercise, hydration, diet therapy, and herbal remedies, though some students opt to endure the pain without intervention (6, 14). Guided by the Common-Sense Model of Illness Representations, this study aims to explore adolescents' perceptions, coping strategies, and the impacts of primary dysmenorrhea on their lives. It seeks to identify factors influencing primary dysmenorrhea outcomes and inform the development of age-appropriate interventions to manage symptoms, reduce stigma, and raise awareness among high school adolescents. By addressing these gaps, the study contributes to improving the well-being and QoL of young females affected by this prevalent condition.

Materials & Methods

Study Design and Setting

This cross-sectional quantitative survey design conducted at Tamale Girls Senior High School, located in Wamale, a suburb of Tamale metropolis along the Tamale-Yendi Road in Ghana’s Northern Region. Established in 1998 as the first all-girls senior high school in the region, the school had a total enrollment of 1,298 female students during the 2020–2021 academic year. It operates a double-track system (green and gold tracks) with both boarding and day programs. The first-year cohort comprises 20 classes (12 green track, 8 gold track), while the second-year cohort includes 12 classes (7 green track, 5 gold track), with an average class size of 38 students. The school is supported by 90 teaching staff and 53 non-teaching staff and is equipped with facilities including a science laboratory, a home economics laboratory, and two Information and Communication Technology (ICT) laboratories. This setting was chosen due to its large adolescent female population and its representation of both urban and rural demographics in the region.

Study Variables

The dependent variables in this study were the outcomes of primary dysmenorrhea, encompassing school absenteeism, reduced concentration in class, emotional instability, decreased participation in social activities, limitations in daily activities, and sleep disturbances. These outcomes reflect the physical, academic, and psychosocial impacts of primary dysmenorrhea on adolescents. The independent

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variables included adolescents’ perceptions of primary dysmenorrhea, assessed using the Illness Perception Questionnaire-Revised (IPQ-R), and their coping strategies, such as self-medication, herbal remedies, hydration, exercise, or non-intervention. These variables were selected based on the Common-Sense Model of Illness Representations, which posits that individuals’ perceptions of an illness influence their coping behaviors and health outcomes.

Sample Size Determination

The sample size was calculated using Yamane’s (1967) formula for finite populations: where: population size (1,298 students) and margin of error (0.05, corresponding to a 95% confidence level). Thus, a minimum sample size of 302 students was determined. To account for potential non-response or incomplete data, 305 participants were systematically sampled from the school’s enrollment list of 1,298 students.

Sampling Technique

A systematic sampling method was employed to select participants. The sampling frame consisted of the school’s enrollment register, listing all 1,298 students. A sampling interval was calculated by dividing the population size by the desired sample size (1,298 \div 305 \approx 4), resulting in the selection of every 4th student on the list. If a selected student was absent or declined participation, the next student on the list was included as a replacement to ensure the target sample size was met. This approach ensured a representative sample across the green and gold tracks and different class years.

Inclusion and Exclusion Criteria

Eligible participants were female students aged 14–19 years who had experienced menarche, had been enrolled at Tamale Girls Senior High School for at least one year, and provided informed consent to participate. The one-year enrollment criterion ensured participants were sufficiently acclimated to the school environment. Exclusion criteria included newly admitted students (less than one year at the school) and students with chronic medical conditions or those using medications that could influence menstrual cycles or pain perception (e.g., hormonal contraceptives or analgesics for unrelated conditions). These criteria minimized confounding factors and ensured the study focused on primary dysmenorrhea rather than secondary dysmenorrhea or other health-related influences.

Data Collection Instrument

Data were collected using a structured questionnaire incorporating the Illness Perception Questionnaire-Revised (IPQ-R), a validated tool designed to assess illness perceptions based on the Common-Sense Model. The IPQ-R evaluates dimensions such as timeline, consequences, control, treatment, coherence, and emotional representations of an illness. The questionnaire was adapted to focus on Primary dysmenorrhea and included sections on coping strategies and Primary dysmenorrhea outcomes. The IPQ-R has demonstrated robust psychometric properties, with reported Cronbach’s alpha values for internal reliability: timeline subscale (0.89), consequence subscale (0.84), control subscale (0.81), treatment subscale (0.80), coherence subscale (0.87), and emotional subscale (0.88) (15, 16). To further ensure content validity, the questionnaire was reviewed by experts in adolescent health and gynecology to confirm its relevance to the study objectives and cultural appropriateness for the Ghanaian context.

Pretesting of the Questionnaire

The questionnaire was pretested among female students at Tamale Senior High School, a mixed-gender institution in the Tamale metropolis with a similar demographic profile to the study setting. A sample of 30 students completed the questionnaire to evaluate its clarity, comprehensibility, and ability to address the study objectives. The pretest also assessed the time required to complete the questionnaire (approximately 15–20 minutes) and solicited feedback on question wording and structure. No significant issues were identified, and the questionnaire was deemed appropriate for use without modifications. The pretest ensured the instrument’s reliability and suitability for the target population.

Data Collection Procedure

The survey was administered in a classroom setting during regular school hours to ensure a controlled environment and maximize participation. Trained research assistants explained the study’s purpose, obtained informed consent, and distributed the questionnaires. Participants completed the self-administered questionnaires anonymously to ensure confidentiality and encourage honest responses. The research team was available to clarify questions

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without influencing responses. Completed questionnaires were collected immediately to minimize loss and ensure data integrity.

Ethical Considerations

Ethical approval was sought and obtained from the Institutional Review Board (IRB) of the Noguchi Memorial Institute for Medical Research of the University of Ghana with an approval number NMIMR-IRB CPN 016/22-23. Ethical principles were observed in accordance with the Declaration of Helsink. Informed consent was obtained from all participants, and parental consent was sought for students under 16 years, in accordance with Ghanaian ethical guidelines. Participation was voluntary, and students were informed of their right to withdraw at any time without consequences. Data were anonymized, stored securely, and accessible only to the research team to protect participant confidentiality.

Results

Socio-Demographic Characteristics of Respondents

Table 1 summarizes the socio-demographic characteristics of the 305 female students at Tamale Girls Senior High School who participated in the study.

The majority (89.8%) were boarding students, while 10.2% were day students. The mean age was 17.5 years (SD=1.01), with 80.3% aged 16–18 years, 16.7% aged 19 years or older, and 3.0% aged 15 years or younger. Religious affiliation was predominantly Islamic (68.5%), with 31.5% identifying as Christian. Over half of the respondents (53.8%) were second-year students, while 46.2% were third-year students. The Dagomba ethnic group was the most represented (50.5%), followed by other tribes (28.1%), Mamprusi (8.9%), Konkomba (7.9%), and Gonja (4.6%). Regarding primary dysmenorrhea, 21.0% reported experiencing it for three years, while 12.8% reported one year. Pain duration was most commonly two days (38.4%), with only 1.9% experiencing pain for five days or more. Pain severity was reported as severe by 55.7%, moderate by 26.6%, and mild by 17.7%.

Table 2 presents the illness representations of primary dysmenorrhea among respondents, measured using the Illness Perception Questionnaire-Revised (IPQ-R) across six domains: identity, causes, timeline, consequences, control, and coherence. Higher mean scores indicate stronger perceptions in each domain. The identity domain had the highest mean score (28.6, SD=6.63), suggesting that respondents strongly associated their symptoms with primary dysmenorrhea. Mean scores were also high for causes (15.7, SD=3.16), timeline (11.7, SD=2.72), consequences (14.4, SD=4.11), and coherence (10.6, SD=2.9), indicating positive perceptions regarding the cause, duration, impact, and understanding of primary dysmenorrhea. However, the control domain had a low mean score (7.2, SD=2.5), reflecting a negative perception of their ability to manage or control primary dysmenorrhea symptoms.

Table 1. Socio-demographic characteristics of respondent's illness representation (perception) of female adolescents about primary dysmenorrhea

Variable	Category	Frequency (N=305)	Percentage (%)
Age	15 and below	9	3.0
	16–18	245	80.3
	19 and above	51	16.7
Religious affiliation	Muslim	209	68.5
	Christian	96	31.5
Residential status	Boarding student	274	89.8
	Day student	31	10.2
Duration of dysmenorrhea	Six months	42	13.8
	One year	39	12.8
	Two years	50	16.4
	Three years	64	21.0
	Four years	54	17.7
	Five years and above	56	18.4
Duration of pain	Few hours	36	11.8
	One day	78	25.6
	Two days	117	38.4
	Three days	23	7.5
	Four days	45	14.8
	Five days and above	6	1.9
Year of study	Second year	164	53.8
	Third year	141	46.2
Severity of pain	Mild	54	17.7
	Moderate	81	26.6
	Severe	170	55.7
Ethnicity	Dagomba	154	50.5
	Mamprusi	27	8.9
	Konkomba	24	7.9
	Gonja	14	4.6
	Other tribes	86	28.1

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Table 2. Illness representation (perception) of female adolescents about primary dysmenorrhea

Domain of Representation	N	Min*	Max**	Mean	SD
Identity	305	9.0	44.0	28.6	6.6
Causes	305	5.0	25.0	15.7	3.2
Timeline	305	4.0	20.0	11.7	2.7
Consequences	305	5.0	25.0	14.4	4.1
Control	305	3.0	15.0	7.2	2.5
Coherence	305	4.0	20.0	10.6	2.9

*Minimum; **Maximum

Coping behaviors used by adolescents to manage primary dysmenorrhea

Of the respondents, 83.0% reported not seeking care for in the past six months, while 17.0% sought care. When asked about lifetime care-seeking behavior, 36.1% had ever sought care for primary dysmenorrhea, whereas 63.9% had not. Among those who never sought care, 58.0% considered primary dysmenorrhea a normal phenomenon, 19.0% cited shyness, 16.0% reported financial barriers, 3.0% noted lack of nearby health facilities, and 4.0% mentioned other reasons, including lack of effective treatment or peer influence. These findings are illustrated in Figure 1.

Table 3. Pharmacological coping behaviors used by adolescents to manage primary dysmenorrhea

Coping Strategy	Response	Frequency (N=305)	Percentage (%)	Mean	SD
Pain Prescription Medications	Always	27	8.9	4.3	1.2
	Sometimes	51	16.7		
	Never	227	74.4		
Over-the-Counter Medications	Always	51	16.7	3.7	1.4
	Sometimes	111	36.4		
	Never	143	46.8		
Hormonal Contraceptives	Always	13	4.3	4.8	0.8
	Sometimes	17	5.6		
	Never	275	90.2		
Medications for Diarrhea	Always	8	2.6	4.8	0.8
	Sometimes	26	8.5		
	Never	271	88.9		
Medications for Constipation	Always	3	1.0	4.8	0.6
	Sometimes	20	6.6		
	Never	282	92.5		
Medications for Nausea/Vomiting	Always	7	2.3	4.8	0.7
	Sometimes	18	5.9		
	Never	280	91.8		

Pharmacological coping behaviors

Pharmacological coping behaviors were assessed using a 5-point Likert scale (1=always, 5=never), with lower mean scores indicating greater utilization.

Over-the-counter (OTC) medications were the most commonly used (mean=3.7, SD=1.4), with 46.8% never using them, 36.4% using them sometimes, and 16.7% using them always. Medications for constipation were the least utilized (mean=4.8, SD=0.6), with 92.5% never using them. Other pharmacological strategies, including pain prescription medications (mean=4.3, SD=1.2), hormonal contraceptives (mean=4.8, SD=0.8), medications for diarrhea (mean=4.7, SD=0.8), and medications for nausea and vomiting (mean=4.8, SD=0.7), were rarely used, with never-use rates ranging from 74.4% to 96.5% (Table 3).

Non-pharmacological coping behaviors

Non-pharmacological coping behaviors were also measured using a 5-point Likert scale (1=always, 5=never). Rest was the most utilized strategy (mean=2.7, SD=1.3), with 38.3% always using it, 43.9% using it sometimes, and 17.7% never using it. Relaxation was the second most common (mean=2.7, SD=1.4), with 40.0% always and 38.0% sometimes using it. Massage from a friend was the least utilized (mean=4.6, SD=0.9), with 83.2% never using it. Other strategies, such as dietary supplements (mean=4.1, SD=1.4), special diets (mean=3.5, SD=1.6), self-

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massaging (mean=3.1, SD=1.4), heat application (mean=3.6, SD=1.5), and distraction (mean=3.8, SD=1.5), had varying utilization rates, with never-use rates ranging from 32.8% to 61.7%. (Table 4)

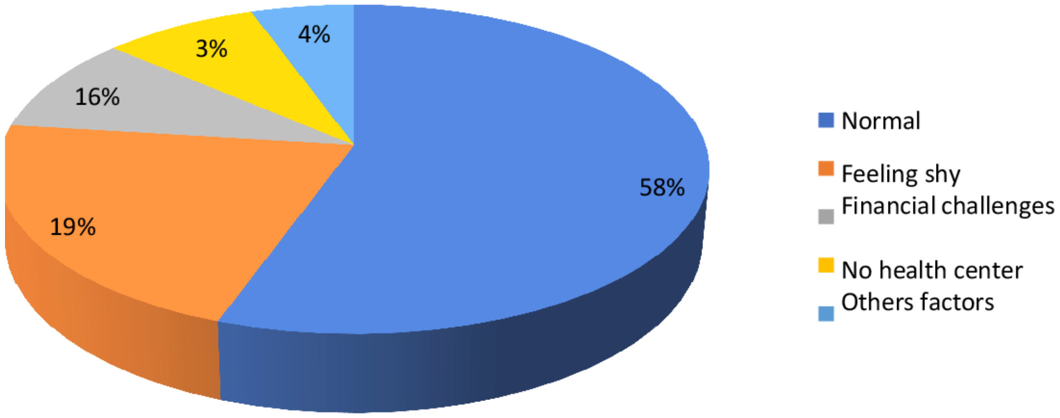

Figure 1 Reasons why respondents failed to seek care for primary dysmenorrhea

Table 4 Non-pharmacological coping behaviors used by adolescents to manage primary dysmenorrhea

Non-Pharmacological Coping Strategy	Response	Frequency (N=305)	Percentage (%)	Mean	SD
Dietary Supplements	Always	43	14.1	4.1	1.4
	Sometimes	51	16.7		
	Never	211	69.2		
Relaxation	Always	122	40.0	2.7	1.4
	Sometimes	116	38.0		
	Never	67	21.9		
Special Diet	Always	83	27.2	3.5	1.6
	Sometimes	65	21.3		
	Never	157	51.5		
Massage (from a Friend)	Always	11	3.6	4.6	0.9
	Sometimes	40	13.1		
	Never	254	83.2		
Self-Massaging (Rubbing Abdomen)	Always	81	26.5	3.1	1.4
	Sometimes	124	40.7		
	Never	100	32.8		
Rest	Always	117	38.3	2.7	1.3
	Sometimes	134	43.9		
	Never	54	17.7		
Heat	Always	71	23.3	3.6	1.6
	Sometimes	73	23.9		
	Never	161	52.8		
Distraction (Music, Reading)	Always	61	20.0	3.8	1.5
	Sometimes	56	18.4		
	Never	188	61.7		

Outcomes of primary dysmenorrhea among adolescents

Table 5 presents the outcomes of primary dysmenorrhea, measured on a 5-point Likert scale (1 = always, 5 = never). Emotional instability was the most prevalent outcome (mean = 2.3, SD = 1.3), with 51.9% always experiencing it and 12.4% never experiencing it. Reduced concentration in class was the second most common (mean = 2.4, SD = 1.3), reported always by 46.2% and never by 17.7%. Absenteeism from class was the least reported outcome (mean = 4.22, SD = 1.3), with 70.9% never experiencing it. Other outcomes included limited daily activity (mean = 2.56, SD =

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1.44), sleep disturbance (mean = 2.7, SD = 1.5), and decreased social activities (mean = 2.7, SD = 1.4), with always-experienced rates ranging from 42.0% to 44.9%.

Table 5. Outcomes of primary dysmenorrhea among adolescents

Outcomes	Response	Frequency (N=305)	Percentage (%)	Mean	SD
Emotional Instability	Always	158	51.9	2.3	1.3
	Sometimes	109	35.7		
	Never	38	12.4		
Limited Daily Activity	Always	137	44.9	2.6	1.4
	Sometimes	101	33.1		
	Never	67	22.0		
Sleep Disturbance	Always	128	42.0	2.7	1.5
	Sometimes	96	31.5		
	Never	81	26.6		
Reduced Concentration	Always	141	46.2	2.4	1.3
	Sometimes	110	36.1		
	Never	54	17.7		
Decreased Social Activities	Always	135	44.3	2.7	1.4
	Sometimes	96	31.5		
	Never	74	24.3		
Absenteeism from Class	Always	27	8.8	4.2	1.3
	Sometimes	62	20.3		
	Never	216	70.9		

Table 6 Relationships between illness representation, coping behaviors, and outcomes of primary dysmenorrhea

	Emotional Instability Rho	Limited Daily Activity Rho	Sleep Disturbance Rho	Reduced Concentration Rho	Decreased Social Activities Rho	Absenteeism from Class Rho
Representation						
1. Identity	0.194**	0.218**	0.339**	0.347**	0.322**	0.266**
2. Causes	0.027	0.019	0.020	0.071	0.069	-0.009
3. Timeline	0.049	0.095	0.047	0.090	0.025	0.071
4. Consequences	0.347**	0.138*	0.203**	0.203**	0.193**	0.197**
5. Control	0.057	0.084	0.045	0.022	-0.003	0.060
6. Coherence	0.019	0.037	0.088	0.064	0.071	0.006
Coping Strategies						
1. Pharmacological	0.005	-0.027	-0.049	0.088	0.057	0.019
2.NonPharmacological	0.097	0.141*	0.020	0.029	0.069	-0.009

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

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Relationships between illness representation, coping behaviors, and outcomes of primary dysmenorrhea

Pearson product-moment correlation analysis was conducted to explore relationships between illness representation domains, coping behaviors, and primary dysmenorrhea outcomes (Table 6). The identity domain showed significant positive correlations with all outcomes: emotional instability (r = 0.194, p<0.01), limited daily activity (r = 0.218, p<0.01), sleep disturbance (r=0.339, p<0.01), reduced concentration (r = 0.347, p<0.01), decreased social activities (r = 0.322, p<0.01), and absenteeism (r = 0.266, p<0.01). These correlations, ranging from weak to moderate, suggest that stronger identification with primary dysmenorrhea symptoms is associated with greater impacts on these outcomes. Consequences domain also showed significant correlations with limited daily activity (r = 0.138, p<0.05), sleep disturbance (r = 0.203, p <0.01), reduced concentration (r = 0.203, p<0.01), decreased social activities (r = 0.193, p<0.01), and absenteeism (r= 0.197, p<0.01), indicating that perceived severity of consequences exacerbates these outcomes. Non-pharmacological coping behaviors showed a weak significant correlation with limited daily activity ($r = 0.141$, $p<0.05$). No significant correlations were found for causes, timeline, control, coherence, or pharmacological coping with any outcomes.

Factors predicting outcomes of primary dysmenorrhea among adolescents

Multiple linear regression analysis was conducted to identify predictors of primary dysmenorrhea outcomes (Table 7). The model explained 24.3% of the variance in primary dysmenorrhea outcomes ($R^2 = 0.243$, $F(8,296) = 11.848$, $p<0.001$). Significant predictors included identity ($\beta = 0.411$, $p<0.001$), consequences ($\beta = 0.223$, $p<0.001$), and pharmacological coping ($\beta = -0.132$, $p = 0.014$). Higher identity and consequences scores were associated with worse outcomes, while greater use of pharmacological coping strategies was associated with reduced negative outcomes. Causes, timeline, control, coherence, and non-pharmacological coping were not significant predictors.

Table 7. Factors predicting outcomes of primary dysmenorrhea among adolescents

Variable	Standardized Coefficients (β)	t	Sig.
(Constant)		2.678	0.008
Identity	0.411	7.716	0.000
Causes	-0.019	-0.346	0.730
Timeline	-0.045	-0.806	0.421
Consequences	0.223	3.850	0.000
Control	0.070	1.333	0.184
Coherence	0.003	0.059	0.953
Pharmacological Coping	-0.132	-2.474	0.014
Non-Pharmacological Coping	0.055	1.060	0.290

Model Summary: $R^2 = 0.243$, $F(8,296) = 11.848$, $p<0.001$

Discussion

Socio-Demographic Characteristics of Respondents

The study participants, aged 14–19 years, represent the typical adolescent age range for senior high school students in Ghana, aligning with the period when primary dysmenorrhea is most prevalent and severe, particularly among females under 25 years (14). The predominance of Muslim participants (68.5%) reflects the religious demographics of Ghana’s Northern Region, where Islam is more prevalent compared to Christianity, the national majority. The high proportion of boarding students (89.8%) is consistent with the school’s structure, where boarding facilities accommodate the majority of students, potentially influencing access to coping resources and healthcare.

Over half of the participants (55.7%) reported severe menstrual pain, with 26.6% and 17.7% experiencing moderate and mild pain, respectively. This aligns with definitions of Primary dysmenorrhea that encompass varying pain intensities, often requiring medication or impacting daily functioning (10). In contrast, a study among university students in Northern Ghana reported a higher prevalence of moderate pain (11) suggesting variability in pain perception influenced by factors such as age, psychological state, and cultural context. Pain duration, averaging three days, was consistent with previous findings in Ghana (4, 17). The subjective nature of pain, shaped by genetic, developmental, and socio-cultural factors, likely contributes to these variations (4).

Illness Representations of Primary Dysmenorrhea

The study utilized the Common-Sense Model of Illness Representations to explore adolescents’ perceptions of Primary dysmenorrhea across six domains: identity, causes, timeline, consequences, control, and coherence. The high mean score for the identity domain (28.6) indicates that participants strongly associated their symptoms with Primary dysmenorrhea, with pain being the most frequently reported symptom (51.9% always experienced). Secondary symptoms, including fatigue, joint stiffness, dizziness, sleep difficulties, and headache, were also prevalent, corroborating findings from prior studies (4, 7, 14). Somatic symptoms such as nausea and vomiting are linked to prostaglandin activity, which drives uterine contractions and pain in Primary dysmenorrhea (4, 5).

Participants' causal attributions varied, with over half (58%) attributing Primary dysmenorrhea to dietary factors. This perception is supported by evidence linking reduced fruit and vegetable intake or high consumption of coffee, sugar, alcohol, and salt to increased Primary dysmenorrhea severity (14) Approximately one-third associated Primary dysmenorrhea with family history, consistent with studies reporting a strong genetic predisposition (odds ratio of 20.7) (10, 14). However, conflicting findings exist, as Karanth and Liya (2018) found no significant association with family history, possibly due to differences in study populations or methodologies. Stress was identified as a cause by a minority, aligning with research linking academic or work-related stress to Primary dysmenorrhea (14, 18). The uncertainty among participants about causes (e.g., germs, poor medical care) underscores the need for targeted education to correct misconceptions and promote effective coping strategies.

The timeline domain revealed that most participants held chronic beliefs about Primary dysmenorrhea, expecting symptoms to persist but improve over time, consistent with findings that pain severity decreases with age or post-childbirth (19, 20). Regarding consequences, approximately half perceived Primary dysmenorrhea as a serious condition with significant impacts on their lives, supporting studies that link perceived severity to care-seeking behavior (19). However, only one-third reported financial implications, and fewer noted social stigma, suggesting that personal and academic impacts may outweigh social consequences in this population.

Control beliefs were notably low (mean=7.2), indicating that participants felt limited ability to manage Primary dysmenorrhea symptoms, a finding consistent with (19), who noted neutral control beliefs as a barrier to care-seeking. Coherence, reflecting understanding of Primary dysmenorrhea, was also low, with nearly half of participants viewing the condition as a mystery. Misconceptions, such as beliefs that Primary dysmenorrhea is a punishment or linked to virginity, have been reported elsewhere (21), highlighting the role of poor coherence in perpetuating unhelpful practices. Enhanced education could improve understanding and encourage care-seeking from conventional healthcare providers (19).

Coping Strategies for Primary Dysmenorrhea

Despite the high prevalence of Primary dysmenorrhea, only 17.0% of participants sought care in the past six months, and 36.1% had ever sought care, consistent with low care-seeking rates reported in Ghana (16–19.4%) and Spain (34.8%) (4, 10). The primary reason for not seeking care was the perception of Primary dysmenorrhea as a normal phenomenon (58%), reflecting cultural narratives that normalize menstrual pain as a "natural" part of womanhood (14, 19). Other barriers included shyness (19%), financial constraints (16%), and lack of accessible health facilities (3%), aligning with findings from (22). These barriers underscore Primary dysmenorrhea's public health significance, as untreated symptoms exacerbate negative outcomes.

Pharmacological coping strategies were underutilized, with over-the-counter (OTC) medications being the most common (53.2% used sometimes or always). Self-medication was prevalent, consistent with reports of trial-and-error approaches leading to potential drug misuse (21). Hormonal contraceptives, effective for Primary dysmenorrhea management (5), were rarely used (9.9%), possibly due to cultural or religious barriers or lack of awareness, contrasting with higher use in settings like Northern Ireland (23).

Non-pharmacological strategies were more common, with rest (82.2%) and relaxation (78.0%) being the most utilized, consistent with studies in Ghana (6, 10). Special diets, used by 48.5% of participants, align with evidence that low-salt, low-sugar, and high-fruit diets reduce Primary dysmenorrhea severity (24). Self-massaging (67.2%) was more common than friend-administered massage (16.7%), supporting the efficacy of techniques like effleurage massage (25). Heat application (47.2%) was less common, possibly due to limited access to materials in boarding schools, despite its proven effectiveness (26). Distraction (38.4%) and dietary supplements (30.8%) were underutilized, potentially due to limited access to gadgets or awareness of supplements' benefits (27).

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Outcomes of Primary Dysmenorrhea

Primary dysmenorrhea significantly impacted participants' quality of life. Emotional instability was the most prevalent outcome (51.9% always experienced), consistent with reports of mood swings, irritability, and depression during menstruation (14). Limited daily activities (44.9%) and sleep disturbances (42.0%) were also common, aligning with findings that Primary dysmenorrhea disrupts self-care and academic performance (10). Reduced concentration in class (46.2%) and decreased social activities (44.3%) further highlight Primary dysmenorrhea's academic and social toll, consistent with global studies (7). Absenteeism was less common (8.8%), possibly due to boarding school structures that encourage attendance, contrasting with higher rates (20–33%) reported elsewhere (7).

The regression analysis identified identity, consequences, and pharmacological coping as significant predictors of Primary dysmenorrhea outcomes, explaining 24.3% of the variance. Stronger identification with Primary dysmenorrhea symptoms and perceived severity increased negative outcomes, while pharmacological coping mitigated them, underscoring the need for accessible and effective treatments.

To mitigate the adverse effects of primary dysmenorrhea among adolescents, it is crucial to implement comprehensive public health education that dispels myths and challenges the normalization of menstrual pain. Educational initiatives should aim to increase awareness of the causes, risks, and significance of professional care to discourage self-medication and encourage effective coping strategies. Improving access to safe and effective pharmacological treatments, such as over-the-counter analgesics and hormonal contraceptives, through collaboration between schools, parents, and education authorities, is essential to reduce unmanaged pain and related complications. Additionally, promoting non-pharmacological coping strategies—like dietary modifications, heat therapy, and providing designated relaxation areas within schools—can offer valuable symptom relief. Healthcare providers must cultivate supportive, stigma-free environments that encourage adolescents to seek care, ensuring that services address both the primary symptoms and associated effects such as nausea and fatigue. Training healthcare staff in empathetic, adolescent-centered care will further enhance health-seeking behaviors and overall management of dysmenorrhea.

Conclusion

This study provides critical insights into the perceptions, coping strategies, and outcomes of primary dysmenorrhea among female adolescents at Tamale Girls Senior High School, guided by the Common-Sense Model of Illness Representations. The findings highlight the high prevalence of severe primary dysmenorrhea (55.7%), its significant impact on emotional stability, academic performance, and daily activities, and the low rate of care-seeking (17.0% in the past six months) due to cultural normalization, shyness, and financial barriers. Adolescents' illness representations revealed strong identification with primary dysmenorrhea symptoms but poor perceived control and coherence, contributing to ineffective coping and persistent negative outcomes. Non-pharmacological strategies, particularly rest and relaxation, were more commonly used than pharmacological options, with self-medication posing risks of misuse.

The study underscores the public health importance of primary dysmenorrhea, as its outcomes disrupt adolescents' quality of life and academic success. Interventions should prioritize education to correct misconceptions, improve access to effective pharmacological and non-pharmacological treatments, and foster supportive healthcare environments. Future research should explore longitudinal impacts of primary dysmenorrhea, evaluate the effectiveness of school-based interventions, and investigate cultural and religious influences on care-seeking behaviors to inform tailored strategies for adolescent health in Ghana and similar settings.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this article.

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