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Primary Dysmenorrhea: Therapeutic Approaches and Quality of Life among Adolescents in the City of Douala (Cameroon)

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Abstract

Introduction: Primary dysmenorrhea is one of the most common gynecological disorders among adolescents. Beyond the pain, its impact on academic performance, social life, and psychological well-being makes it a significant public health concern. There is a lack of local data in Douala, despite the high student density and inequalities in access to healthcare. This study aimed to describe therapeutic approaches and assess the impact of dysmenorrhea on the quality of life of adolescents. **Methods:** This was an analytical cross-sectional study conducted from October 2023 to April 2024 in five high schools in Douala. Included were consenting menstruating adolescents under 20 years old, with parental consent. A total of 1045 adolescents were recruited, of whom 800 had dysmenorrhea. Data collected included sociodemographic characteristics, therapeutic approaches (pharmacological, traditional, non-pharmacological), and quality of life, which was assessed using the EQ-5D-5L tool. Statistical analyses included multivariate regressions. **Results:** The average age was 17.0 ± 1.3 years. Access to healthcare remained limited: only 13.5% of adolescents had consulted a doctor. Therapeutic strategies were dominated by modern medications (58%), followed by traditional practices (17.2%) and non-pharmacological methods (12.9%). Nearly 82.2% reported a decrease in academic performance, 39.7% reported absenteeism, and 46.5% suffered from anxiety related to pain. The EQ-5D-5L scale showed that 23% had mobility problems, 8% had self-care issues, 29% had problems with daily activities, and

46.5% experienced anxiety/depression. Multivariate analysis revealed strong associations: mobility (OR = 28.8; 95% CI: 7.0 - 118.5), daily activities (OR = 12.9; 95% CI: 4.6 - 42.7), autonomy (OR = 7.1; 95% CI: 1.7 - 29.8), and anxiety/depression (OR = 3.5; 95% CI: 2.2 - 5.9). **Conclusion:** Primary dysmenorrhea is extremely prevalent and profoundly affects the quality of life of adolescents in Douala, impacting academic performance, social life, and psychological well-being. These results highlight the need to integrate menstrual health into school programs, improve access to healthcare, and promote appropriate management strategies, combining pharmacological treatments and non-pharmacological interventions.

Keywords

Primary Dysmenorrhea, Therapeutic Approaches, Quality of Life, Adolescents, Cameroon

1. Introduction

Primary dysmenorrhea is one of the most common gynecological disorders during adolescence, affecting 50% - 90% of young girls, making it a major public health and school medicine issue [1]. Beyond the pain, its functional burden is substantial: a meta-analysis involving 21,573 young women estimates its prevalence at 71% and reports 20% school/university absenteeism and nearly 41% decrease in classroom concentration [2]. These impacts occur in a context of unmet menstrual health needs; globally, WHO highlights that hundreds of millions of adolescent girls do not have adequate access to information, products, and supportive school environments, which exacerbates menstrual-related morbidity and hinders learning [3]. The repercussions of dysmenorrhea go beyond the school environment, affecting mental health and quality of life. In Central Africa, data remains heterogeneous and still limited for adolescents. In Cameroon, a community study in Dschang reported a 56% prevalence of dysmenorrhea among 12-50-year-olds, with a disruption of daily activities in over 70% of participants [4]. Other African studies confirm the deterioration of quality of life among students suffering from dysmenorrhea [5]. In a metropolis like Douala, characterized by high school densities, inequalities in access to healthcare, and a diversity of information sources, it is essential to document therapeutic practices (both pharmacological and non-pharmacological), as well as the extent of their impact on adolescents' quality of life. Our study aims to fill this local knowledge gap and provide concrete tools for schools, families, and the healthcare system.

2. Methods

2.1. Type of Study and Study Framework

This is an analytical cross-sectional study with prospective data collection conducted over seven months, from October 2023 to April 2024, in five general edu-

cation high schools in the city of Douala.

2.2. Study Population

Adolescent girls under the age of 20 who had already had their first menstruation and possessed parental consent were included in our study. At the end of our survey, our sample size was 1045 adolescents, comprising 245 non-dysmenorrheic and 800 dysmenorrheic girls. Participants were classified as dysmenorrheic if they reported menstrual pain of at least moderate intensity (Visual analog scale (VAS) ≥ 4) occurring for three or more consecutive cycles, starting before or at menstruation onset and subsiding within 72 hours, in line with the IASP definition of primary dysmenorrhea. Adolescents excluded were those over 19 years old, those who refused to participate, or those with a known gynecological condition explaining the pelvic pain under study from signs indicative of a secondary cause (fibroids, adenomyosis, endometriosis, uterine malformations, etc.).

2.3. Sampling and Sample Size

The choice of a non-probabilistic cluster sampling method was justified by logistical feasibility and by the balanced representativeness of the five districts of Douala. The sampling was a non-probabilistic stratified cluster. As one school was chosen in each district except for the Monakoa district, which was difficult to access. For our survey, the selected high schools were the Akwa High School in the 1st district, the New Bell Bilingual High School in the 2nd district, the Oyack High School in the 3rd district, the Bonaberi Multidisciplinary High School in the 4th district, and the Bepanda Bilingual High School in the 5th district. The main target of our study was students in the secondary, first, and final-year classes. The minimum sample size was determined using Lorentz's formula.

$$N = \left[(T)^2 \times p(1-p) \right] / (m)^2$$

where

N = required sample size.

T = 95% confidence interval, which is 1.96.

p = prevalence of primary dysmenorrhea in Cameroon in Yaoundé in 2023: 71.2% [6].

m = margin of error at 5% (standard value 0.05).

Thus:

$$N = \left[(1.96)^2 \times 0.712(1-0.712) \right] / 0.05^2$$

N = 315 cases.

Although the minimum required sample size was 315, a total of 1045 adolescents were recruited to increase the statistical power of the study.

2.4. Data Collection

Data were prospectively collected using a survey form that included the following variables:

- **Socio-demographic characteristics:** age, class year, marital status, height, weight, body mass index
- **Use of the healthcare system:** whether or not a doctor was consulted for dysmenorrhea
- **Therapeutic approaches:** medications used (paracetamol, ibuprofen, other), traditional methods, participation in sports activities, and use of local heat.
- **Quality of life assessment:** We used the EuroQoL (European Quality of Life) to evaluate the impact of dysmenorrhea on the quality of life of adolescents, distinguishing 5 domains: anxiety, mobility, usual activities, pain, and self-care. Each domain was rated from 1 to 5. The overall score, called the utility score, assesses the quality of life. The interpretation of this score offered three possibilities:
  - Minimal impact: a score between 1 and 5.
  - Moderate impact: a score between 6 and 15.
  - Severe impact: a score between 16 and 25.

2.5. Statistical Analysis

The collected data were entered into the software Epi Info version 7.2.4. Analyses were conducted using SPSS v25. Data are presented as means ± standard deviation and frequencies (%). For bivariate comparisons, the χ^2 test (or Fisher's test) was used for categorical variables, and the Student's t-test (or Mann-Whitney test) for continuous variables. Associations between explanatory factors (age, level of study, physical activity, etc.) and (i) therapeutic recourse (NSAIDs, self-medication), (ii) school impact, and (iii) quality of life were evaluated using multivariate regression models: logistic regression for binary outcomes, ordinal logistic for EQ-5D-5L dimension levels, and negative binomial for counts (days of absenteeism). The level of significance was set at $p < 0.05$.

2.6. Ethical Considerations

To conduct this study, we first obtained approval from the Ethics Committee of the University of Douala, then permission from the regional health delegations of the Littoral region, and finally, consent from the principals of the different secondary schools.

3. Results

3.1. Socio-Demographic Characteristics

The average age of the adolescents was 17.00 ± 1.26 years, with a range from 13 to 19 years. The age group of 17 to 19 years was the most represented, accounting for 48.2% (Figure 1). Regarding marital status, 99.7% of the adolescents were single.

3.2. Use of the Healthcare System

Figure 2 highlights a low use of the healthcare system for dysmenorrhea among

adolescents: only 13.5% have ever consulted a doctor, while 86.5% have never sought medical advice.

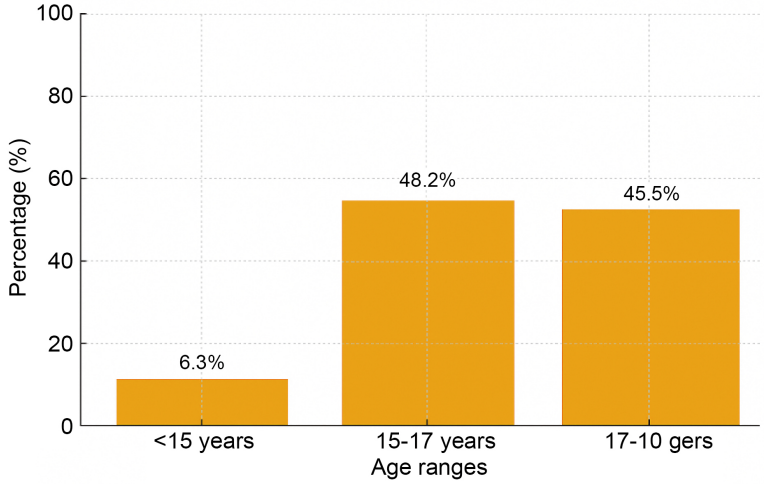

Figure 1. Distribution of adolescents by age group.

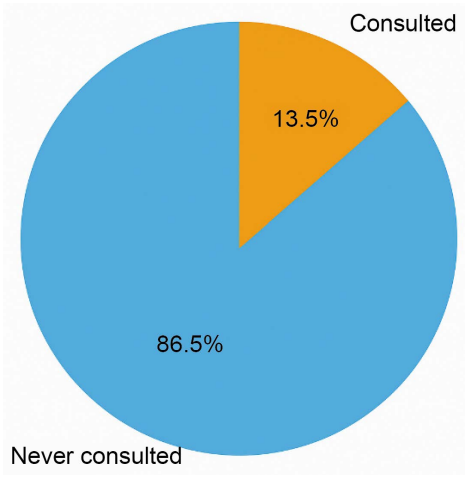

Figure 2. Distribution according to medical consultation usage.

3.3. Therapeutic Approaches

The table shows that the predominant strategy to relieve dysmenorrhea among adolescents is the use of modern medications, accounting for 58%. In other words, nearly 6 out of 10 adolescents report using "modern" pharmacological methods. In second place, traditional practices (herbs/teas) are ingrained, representing 17.3%. Non-pharmacological methods account for 12.9%, approximately 1 in 8. Conversely, 8% report not using any method. This subgroup may reflect either pain perceived as tolerable or barriers (lack of information, normalization of pain, cost/access, fear of side effects, stigmatization). This group constitutes a priority target for menstrual education and analgesia protocols in schools. Finally, the non-response rate remains low at 3.9% (Table 1).

Table 1. Therapeutic approaches used by adolescents to relieve pain.

Domain	Approach	Number (n)	Percentage (%)
Pharmacological	Modern medications (analgesics, anti-inflammatories, antispasmodics)	464	58.0
Traditional	Herbs, teas	138	17.2
Non-pharmacological	Sports, local heat, rest	103	12.9
Other	No method used	95	11.9

3.4. Impact of Dysmenorrhea on Quality of Life

3.4.1. Impact on Daily Life

Among the dysmenorrheic adolescents surveyed, the vast majority reported a notable decline in their academic performance. Specifically, 82.2% indicated a decrease in their academic achievements, highlighting the significant impact of pain on concentration and productivity. Nearly four out of ten adolescents (39.7%) repeatedly missed classes due to painful symptoms, but only 11.7% reported a direct impact on their grades. Socially, dysmenorrhea also affected interactions: 30.2% of the adolescents reported a deterioration in their relationships with those around them (Table 2).

Table 2. Distribution of Adolescents according to impact on daily life.

Variables	Number (N)	Percentage (%)
Decrease in academic performance	554	82.2%
School absenteeism	266	39.7%
Impact on academic grades	78	11.7%
Impact on relationships with peers	202	30.2%

3.4.2. Evaluation of Quality of Life According to EuroQoL-5D-5L

The evaluation of quality of life according to EuroQoL-5D-5L highlights that the majority of dysmenorrheic adolescents did not report major problems with their autonomy or mobility. Specifically, 77.0% stated they had no limitations in their movements, while 92.0% experienced no difficulty in self-care activities. However, a significant proportion did experience functional limitations: approximately 23.0% reported mobility difficulties, and nearly 8.0% declared restrictions in their self-care. Regarding daily activities, about 29.2% reported a partial or total inability to perform their usual tasks. The pain dimension appeared central: while 60.9% of adolescents reported mild pain, more than 38.8% described moderate to extreme pain, underscoring the significant physical impact of dysmenorrhea. Psychologically, a little over half (53.5%) reported no anxiety, but 46.5% experienced varying degrees of anxiety, ranging from mild to extreme. These results indicate a significant impact of dysmenorrhea not only on physical health but also on psychological well-being and participation in daily activities (Table 3).

Table 3. Distribution of adolescents according to euroquality of life-5D-5L.

Dimensions	Modalities	Number (N)	Percentage (%)
Mobility	No problem	616	77.0%
	Slight problems	136	17.0%
	Moderate problems	21	2.6%
	Severe problems	17	2.1%
	Unable to move	10	1.3%
Self-care	No problem	736	92.0%
	Slight problems	46	5.7%
	Moderate problems	13	1.6%
	Severe problems	4	0.5%
	Unable to wash myself	2	0.2%
Usual activities	No problem	566	70.8%
	Slight problems	167	20.9%
	Moderate problems	44	5.5%
	Severe problems	14	1.8%
	Unable to perform my activities	8	1.0%
Pain	No pain	0	0%
	Slight pain	487	60.9%
	Moderate pain	179	22.4%
	Severe pain	94	11.8%
	Extreme pain	37	4.6%
Anxiety	Not anxious	428	53.5%
	Slightly anxious	274	34.2%
	Moderately anxious	50	6.3%
	Severely anxious	27	3.4%
	Extremely anxious	21	2.6%

3.4.3. Severity of the Impact on Adolescents' Quality of Life

The analysis of the overall impact of dysmenorrhea on quality of life shows that more than half of the adolescents (54.8%) experienced what was considered a minimal impact, indicating moderate discomfort but still compatible with continuing most activities. However, nearly one-third (33.3%) reported a moderate impact, reflecting a clearer limitation of daily and social activities. Finally, about 11.9% of the adolescents experienced a severe impact, with major repercussions on their academic, social, and psychological functioning. These results illustrate that, while the majority of adolescents adapt to dysmenorrhea, a significant proportion suffer substantial impairment in their quality of life, warranting particular attention in terms of screening and appropriate management (Table 4).

Table 4. Distribution of adolescents according to severity of impact.

Variables	Number (N = 800)	Percentage (%)
Minimal (5)	439	54.8%
Moderate (6 - 15)	266	33.3%
Severe (16 - 25)	95	11.9%

3.4.4. Multivariate Analysis between QoL Domains and Dysmenorrhea

The multivariate analysis highlights strong and significant associations between dysmenorrhea and several dimensions of quality of life. Functionally, adolescents with mobility limitations were nearly 29 times more likely to have dysmenorrhea (OR = 28.8; 95% CI: 7.02 - 118.5; $p < 0.001$). Similarly, the presence of self-care issues increased the probability of dysmenorrhea by about 7 times (OR = 7.15; 95% CI: 1.72 - 29.75; $p < 0.001$). The inability to perform usual activities was also strongly associated, with the risk nearly 13 times higher (OR = 12.86; 95% CI: 4.55 - 42.71; $p < 0.001$). Finally, the psychological dimensions were significant: adolescents suffering from anxiety or depression were over 3 times more likely to have dysmenorrhea (OR = 3.52; 95% CI: 2.16 - 5.89; $p < 0.001$). These results reflect the global impact of dysmenorrhea, affecting physical, functional, and psychological domains. They underscore the importance of integrated management strategies that go beyond symptomatic pain treatment to also target emotional well-being and the preservation of adolescents' functional capacities (Table 5).

Table 5. Multivariate analysis of the impact of dysmenorrhea on quality of life (EQ-5D-5L).

Dimensions	Dysmenorrheic Adolescents N (%)	Non-Dysmenorrheic Adolescents N (%)	OR (IC95 %)	p-value
Mobility	186 (23.2%)	614 (76.8%)	28.8 (7.02 - 118.5)	0.00
Self-care	63 (7.9%)	737 (92.1%)	7.15 (1.72 - 29.75)	0.00
Usual activities	234 (29.2%)	566 (70.8%)	12.86 (4.55 - 42.71)	0.00
Anxiety/depression	372 (46.5%)	428 (53.5%)	3.52 (2.16 - 5.89)	0.00

3.4.5. Academic and Psychological Impact of Dysmenorrhea on Quality of Life

The analysis of the academic and psychological repercussions of dysmenorrhea shows a particularly significant impact. More than eight out of ten adolescents (82.2%), which equates to 658 girls, reported a decline in their academic performance. Additionally, approximately 40% (318) of the adolescents reported school absenteeism related to menstrual pain, indicating a notable disruption in academic attendance. Psychologically, nearly half of the adolescents, 46.5% (372), suffered from anxiety related to their symptoms, while 53.5% reported not feeling anxious. These associations are highly significant, with high odds ratios, especially for the decline in academic performance (OR = 16.37, 95% CI = 11.39 - 23.54, $p = 0.00$) and absenteeism (OR not calculable as no cases were reported among non-dysmenorrheic individuals). These results emphasize that dysmenorrhea extends

far beyond the biological sphere to become a major academic and psychological issue. It compromises both academic success and the emotional balance of adolescents (Table 6).

Table 6. Multivariate analysis of academic and psychological impact.

Variables	Modalities	Dysmenorrheic Adolescents N (%)	Non-Dysmenorrheic Adolescents N(%)	p-value	OR (IC95%)
Decrease in Academic Performance	Yes	658 (82.2%)	53 (22.0%)	0.00	16.37 (11.39 - 23.54)
	No	142 (17.8%)	188 (78.0%)		
School Absenteeism	Yes	318 (39.7%)	0 (0.0%)	0.00	NC
	No	482 (60.3%)	241 (100%)		
Anxiety	Yes	372 (46.5%)	84 (36.3%)	0.00	3.52 (2.16 - 5.89)
	No	428 (53.5%)	147 (63.6%)		

4. Discussion

Our results highlight a limited use of the formal healthcare system, with only 13.5% of adolescents having consulted a healthcare professional for their menstrual pain. This low medical consultation rate confirms the prevalence of self-medication and traditional practices in managing dysmenorrhea. Recent school surveys in Sub-Saharan Africa report similar findings, with over 70% of adolescents using analgesics for self-medication and a strong prevalence of home remedies such as teas or local heat [7] [8]. These behaviors can be attributed to the cultural normalization of menstrual pain, limited access to healthcare services, and financial constraints [1].

The dominant pharmacological strategy in our cohort was the use of modern medications (58%), particularly analgesics and anti-inflammatories. Although this aligns with international recommendations, which position non-steroidal anti-inflammatory drugs (NSAIDs) as the first-line treatment [9], the use of these drugs is often inconsistent in terms of dosage and adherence. Meanwhile, only 12.9% of adolescents reported using non-pharmacological methods (physical exercise, local heat, rest), even though recent meta-analyses confirm their effectiveness in reducing pain intensity [10] [11]. This underscores the need for enhanced therapeutic education in schools, incorporating the rational use of NSAIDs and promoting complementary approaches.

The academic impact of dysmenorrhea in our study is particularly concerning: more than eight out of ten adolescents reported a decline in performance, and four out of ten reported absenteeism. These proportions are significantly higher than those observed in an international meta-analysis reporting 20% absenteeism and 41% reduced concentration [2]. These discrepancies could reflect contextual differences, including limited access to effective treatments and the persistence of taboos around menstruation in Cameroonian schools. Nonetheless, these findings align with recent reports from Nigeria and Cameroon, where dysmenorrhea is

identified as a major determinant of academic failure and absenteeism [6] [12].

Psychologically, nearly half of the adolescents in our cohort exhibited anxiety associated with dysmenorrhea. This high prevalence confirms the link between menstrual pain and psychological distress described in several recent studies. In Ethiopia, a cross-sectional study reports a significant association between dysmenorrhea and anxiety symptoms [13], while in Europe, a longitudinal survey showed that dysmenorrhea is a predictive factor for anxiety-depressive disorders into early adulthood [14]. This indicates the necessity of including psychological support in management strategies.

Lastly, our multivariate analysis highlights the multidimensional impact of dysmenorrhea on quality of life (mobility, autonomy, daily activities, anxiety/depression), with high odds ratios. These results are consistent with recent data from high-income countries such as Japan and Hungary, where population surveys also show significant deterioration in the quality of life of dysmenorrheic adolescents [15] [16]. The universality of this impact advocates for comprehensive menstrual health policies, adapted to local contexts but based on international standards.

5. Strengths and Limitations of the Study

This study has several strengths. It is one of the few investigations conducted in Douala on primary dysmenorrhea among school-going adolescents, with a large sample representative of the city's five districts. The rigorous methodology, including a standardized questionnaire and validated quality-of-life indicators, strengthens the reliability of the findings. The quantitative approach provided objective insights into therapeutic behaviors and their impact on daily life. However, certain limitations must be acknowledged. The cross-sectional design does not allow causal relationships to be established between pain severity and quality of life impairment. Data were self-reported, which may introduce recall and social desirability biases. Moreover, the inclusion of only school-attending adolescents excludes out-of-school girls, potentially underestimating the true prevalence of dysmenorrhea in the general population.

6. Conclusion

Primary dysmenorrhea remains a common and underestimated public health concern among adolescent girls in Douala. Our study revealed a high prevalence of moderate to severe menstrual pain, often trivialized and inadequately managed. Self-medication was the main therapeutic approach, while medical consultation was uncommon. These patterns reflect both a lack of menstrual health education and limited access to adolescent-friendly healthcare services. The functional impact of school absenteeism, sleep disturbances, and reduced concentration highlights the urgent need to integrate menstrual health into school health programs and to strengthen the training of healthcare providers in listening to and managing gynecological pain. Coordinated community, educational, and healthcare interventions could not only improve the quality of life of adolescents but also re-

duce the psychosocial and academic consequences of dysmenorrhea.

Conflicts of Interest

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

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