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Impact of Primary Dysmenorrhoea on the Quality of Life of Schooled Female Youths in Yaounde, Cameroon

Impact de la dysménorrhée primaire sur la qualité de vie des jeunes filles scolarisées à Yaoundé, Cameroun

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ABSTRACT

Background. Primary dysmenorrhoea is one of the main reasons for gynaecological consultation. In many studies carried out across the world, it is responsible for a high frequency of school absenteeism and disruption of daily activities. This study aimed at evaluating the impact of primary dysmenorrhoea on the quality of life of schooled female youths in Yaounde, Cameroon. **Methods.** We carried out a cross-sectional analytic study in 4 secondary and high schools in Yaounde, from October 1, 2021 to May 31, 2022. We included consenting participants within the ages of 15 – 24 having menses and collected socio-demographic data, clinical data, therapeutic data and quality of life data with the help of a self-report survey. EuroQol-5 dimensions-5 levels was used to measure quality of life. Odds ratios were determined to assess the association between variables and P-value <0.05 was considered significant. **Results.** Of the 1978 participants, 1409 had primary dysmenorrhoea (frequency: 71.2 %). Mean age of the participants with primary dysmenorrhoea was 17.5±1.8 years. There was a significant difference between the perceived quality of life of those having primary dysmenorrhoea and those without (t = 17.8; p= 0.000) and we found a significant association between poor quality of life (OR= 3.9; p= 0.002), fair quality of life (OR= 5.4; p= 0.001) and primary dysmenorrhoea. **Conclusion.** Primary dysmenorrhoea is a very common problem among schooled female youths, and it affects their quality of life negatively.

RÉSUMÉ

Introduction. La dysménorrhée primaire est l'un des principaux motifs de consultation gynécologique. L'objectif de cette étude était d'évaluer l'impact de la dysménorrhée primaire sur la qualité de vie des jeunes filles scolarisées à Yaoundé, Cameroun. **Méthodes.** Nous avons réalisé une étude analytique transversale dans 4 collèges et lycées de Yaoundé, pendant 8 mois. Les participantes consentantes âgées de 15 à 24 ans ayant des menstruations ont été incluses. Nous avons recueilli des données sociodémographiques, cliniques, thérapeutiques et des données sur la qualité de vie à l'aide d'une enquête d'auto-évaluation. L'EuroQol-5 dimensions -5 niveaux a été utilisé pour mesurer la qualité de vie. Les rapports de cotes ont été déterminés pour évaluer l'association entre les variables et une valeur P <0,05 a été considérée comme significative. **Résultats.** Parmi les 1978 participantes, 1409 avaient une dysménorrhée primaire (71,2 %). L'âge moyen des participantes souffrant de dysménorrhée primaire était de 17,5±1,8 ans. Il y avait une différence significative entre la qualité de vie perçue par les personnes souffrant de dysménorrhée primaire et celles qui n'en souffraient pas (t = 17.8 ; p= 0.000) et nous avons trouvé une association significative entre une mauvaise qualité de vie (OR= 3.9 ; p= 0.002), une qualité de vie moyenne (OR= 5.4 ; p= 0.001) et la dysménorrhée primaire. **Conclusion.** La dysménorrhée primaire est un problème très fréquent chez les jeunes filles scolarisées et elle affecte négativement leur qualité de vie.

HIGHLIGHTS OF THE STUDY

What is already known on this topic
In the world, dysmenorrhoea is highly prevalent in adolescence and responsible of recurrent school absenteeism, interruption of sports and social activities
What question this study addressed
Impact on the physical, psychological and professional aspects of life of schooled female youths in Yaounde
What this study adds to our knowledge
In Yaounde also, primary dysmenorrhoea is a very common problem among schooled female youths, and it affects their quality of life negatively.
How this is relevant to practice, policy or further research.
More aggressive measures are needed to address this problem.

INTRODUCTION

Dysmenorrhoea is defined as the presence of painful cramps of uterine origin that occur during menstruation and is one of the most common causes of pelvic pain and menstrual disorders [1]. Dysmenorrhoea can be classified into two groups: primary or secondary. Primary dysmenorrhoea is defined as painful menses in women with normal pelvic anatomy and secondary dysmenorrhoea is defined as menstrual pain resulting from pelvic pathology [2].

The prevalence of dysmenorrhoea varies between 16% and 93% and severe pain perceived in 2% to 29%, with primary dysmenorrhoea being the most common gynaecologic complaint in women of child bearing age [3,4]. The pain and recurring symptoms impact the activity of these girls, affecting their daily lives for several days a month and substantially impairing their quality of life [3].

Globally, in terms of quality of life, dysmenorrhoea is responsible for short-term but recurrent school absenteeism, interruption of sports and social activities, with about 14-52% of school absenteeism reported in adolescent girls in the United States of America (U.S.A) [3]. In 2005, the prevalence of primary dysmenorrhoea in Canada was 60%. The study showed limited activity in 15% and 51% of women with mild and moderate to severe symptoms, respectively [5].

In Africa, a study conducted in Ethiopia in 2020 revealed a prevalence of primary dysmenorrhoea of 64.7% with 65% of them reporting absenteeism from school as the main impact of their menstrual pain [6]. In Cameroon, a study done in 2020 in Dschang, West region, revealed a prevalence of dysmenorrhoea of 56.20% with daily activities affected in 73.25% of those having dysmenorrhoea [7]. Another study carried out in 2019 on female students in Yaounde, revealed a high prevalence of dysmenorrhoea of 75.5% with 15-19 years old as the most represented age group [8]. It is in this direction that we propose to study the impact of primary dysmenorrhoea on the quality of life of schooled female youths in Yaounde, Cameroon, more specifically to determine the socio-demographic, clinical, therapeutic characteristics of those with primary dysmenorrhoea and to evaluate the physical, psychological and professional impact. We had as hypothesis "Primary dysmenorrhoea may have an impact on the physical, psychological and professional aspects of life of schooled female youths in Yaounde. It may restrict their usual daily activities, school activities and may also lead to depression".

METHODS

This cross-sectional and analytic study was conducted from October 1, 2021 to May 31, 2022 (8 months) in 4 secondary and high schools in Yaounde (Government Practising High School, High School General Leclerc, Government Bilingual High School Yaounde and Government Bilingual High School Etoug-Ebe).

The minimum sample size was determined by a formula proposed by Charan and Biswas for cross-sectional analytic studies: $n= 2 (Z_{\alpha/2} + Z_{\beta})^2 P (1-P) / (p_1 – p_2)^2$ [9]. n= Desired number of samples; $Z_{\alpha/2}$= Critical value and a standard value for the corresponding level of confidence. (At 95% CI or 5% type I error it is 1.96); Z_{β}= It is the desired power (0.84 for 80% power); P= pooled prevalence= (P1 +P2)/2; p_1= Proportion of those with primary dysmenorrhoea; p_2= Proportion of those without primary dysmenorrhoea. The proportions were obtained from a study conducted in Cameroon in 2020 [10]. Minimum sample size obtained was; n= 39 for both groups, with and without dysmenorrhoea. The sampling method used was non-probability convenience sampling. The convenience criterion was easily accessible public schools with at least 5000 students and above.

Ethical clearances were issued by the Institutional Ethical Committee of the University of Yaounde 1 (Number: 175/ UY1/ FMSB/VDRC/CSD) and the Centre Regional Ethics Committee for Human Health Research (Number: 0700/ CRERSH/ 2022). We also got authorisations from the school executives and the Ministry of Education. We carried out the study in accordance with the Helsinki declaration on research involving human subjects. Questionnaires were anonymous and data were used only for research purposes.

Socio-demographic, clinical characteristics and therapeutic characteristics of participants were documented. Severity of pain was assessed with the 0-10 Numeric Rating Scale. The Personal Health Questionnaire-9 and General Anxiety Disorder-7 scales were used to assess the psychological impact. Quality of life as a whole was measured using the EurooQol-5 dimensions-5 levels. It is a standardized measure of health-related quality of life developed by the EuroQol group to provide a simple, generic questionnaire for use in clinical studies, economic appraisal, quality care and public health studies. It essentially consists of the EuroQol-5 dimensions descriptive system (mobility, self-care, usual activities, pain / discomfort and anxiety / depression) and the EuroQol Visual Analog Scale (self-rated health on a vertical visual analog scale ranging from 0 to 100, with 0= worst health you can imagine and 100= best health). The EuroQol Visual Analog Scale was used

as a quantitative measure of health outcome that reflected the participant's own judgement [11]. It was also interpreted qualitatively with the help of the standard VAS interpretation intervals. Adapting it to the EQ VAS gave cut-off points and a score interpretation of; 0 – 25= severe limitations / poor quality of life, 26 – 55= moderate limitations / fair quality of life, 56 – 95= slight limitations / good quality of life and 100 – 96= no limitations / excellent quality of life [12].

Inclusion criteria

- Participants with the ages 15-24 having menses
- Participants who agreed to participate in the study

Exclusion criteria

- Participants with a history of amenorrhea of at least 1year
- Participants with unusable questionnaires

Statistical analysis

Data was entered into Epi info version 7.2.4 statistical software package and analysed with the IBM SPSS (Statistical Package for Social Sciences) version 23. Chi-square, Student's *t* test and Fisher's exact test were employed to determine the association between different variables. *P* values less than 0.05 and 95% confidence interval (CI) were used as cut-off points to determine statistical significance of associations among different variables.

RESULTS

The frequency of primary dysmenorrhoea was 71.2% (1409 participants out of 1978). Mean age of participants with primary dysmenorrhoea was 17.5±1.8 years. A great majority of the participants were singles (Table 1).

Table 1: Socio-demographic characteristics of participants

Characteristics		N	%
Age	15-19	1241	88.1
	20-24	168	11.9
Marital status	Single	1400	99.4
	Married	9	0.6

The mean age of menarche of those having primary dysmenorrhoea was 12.7±1.3 years ranging from 7 to 17 years. Most of the participants had a regular cycle. Close to half of them experienced pain frequently and 42.6% experienced mild pain, 37.9% moderate pain and 19.5% severe pain. The most associated symptoms to the pain were fatigue and headache (Table 2).

Table 2: Clinical characteristics of participants

Variables		N	%
Gravida	0	1368	97.1
	1	36	2.5
	≥2	5	0.4
Para	0	1379	97.9
	1	27	1.9
	≥2	3	0.2
Regularity	Regular	1065	75.6
	Irregular	137	9.7
	Not known	207	14.7

Table 2: Clinical characteristics of participants

Variables		N	%
Frequency of pain	Frequent	689	48.9
	Sometimes	388	27.5
	Rarely	332	23.6
Duration of pain	<48 hours	1108	78.6
	48-72 hours	301	21.4
Pain intensity	Mild	600	42.6
	Moderate	534	37.9
	Severe	275	19.5
Symptoms	Fatigue	513	36.4
	Headache	338	24
	Dizziness	323	22.9
	Nausea	287	20.4
	Diarrhoea	228	16.2
	Irritability	117	8.3
Family history of dysmenorrhoea	Yes	1105	78.4
	No	252	17.9
	Not known	52	3.7

Among the participants with primary dysmenorrhoea, 71.4% took synthetic drugs (Non-steroidal anti-inflammatory drugs, paracetamol, anti-spasmodics, combined oral contraceptive pills), 8.9% took herbal drugs and 32.1% used non-pharmacological methods (rest, heat therapy, physical exercises) to relieve pain. About 81.3% found the methods effective (Table 3).

Table 3: Management of pain

Variable	N	%
Synthetic drugs	1006	71.4
Herbal drugs	125	8.9
Non-pharmacological	452	32.1
Consultation	305	21.6
Self-medication	701	49.8

Concerning the professional and psychological impacts of primary dysmenorrhoea on quality of life, close to half of the participants reported it disrupted their school activities with 28% reporting school absenteeism, 83.2% were found to have a depressive disorder due to the pain during periods and 76.1% were found to have an anxiety disorder. A significant association was found between primary dysmenorrhoea and school absenteeism (OR= 40.9%; 95% CI: 13.0-128.2; p value= 0.00), depression (OR= 4.9; 95% CI: 3.8-6.4; p value= 0.00) and anxiety (OR= 5.3; 95% CI: 4.1-6.9; p value= 0.00) (Table 4).

Table 4: Professional and psychological impacts

Variables		Primary dysm N (%)	No dysm N (%)	P
Disruption of school activities	Yes	763 (54.2)	27 (8.5)	0.00
	No	646 (45.8)	291 (91.5)	
School absenteeism	Yes	395 (28)	3 (0.9)	0.00
	No	1014 (72)	315 (99.1)	
Depression	Yes	1172 (83.2)	159 (50)	0.00
	No	237 (16.8)	159 (50)	
Anxiety	Yes	1072 (76.1)	119 (37.4)	0.00
	No	337 (23.9)	199 (62.6)	

Dysm: dysmenorrhoea

With the EQ-5D-5L dimensions, we found a significant association between problems with mobility (OR=15.6; 95% CI: 9.2-26.4; p= 0.00), self-care (OR= 18.2; 95% CI:

5.8-57.2; p= 0.00), usual daily activities (OR= 5.6; 95% CI: 3.9-7.9; p= 0.00), anxiety / depression (OR= 3.1; 95% CI: 2.3-4.1; p=0.00) and primary dysmenorrhoea (Table 5).

Table 5: EQ-5D-5L dimensions

Variables		Primary dysm N (%)	No dysm N (%)	P
Mobility	Problem	613 (43.6)	15 (4.7)	0.00
	No problem	796 (56.4)	303 (95.3)	
Self-care	Problem	208 (14.8)	3 (0.9)	0.00
	No problem	1201 (85.2)	315 (99.1)	
Usual activities	Problem	638 (45.3)	41 (12.9)	0.00
	No problem	771 (54.7)	277 (87.1)	
Anxiety depression	Problem	665 (47.2)	71 (22.3)	0.00
	No problem	744 (52.8)	247 (77.7)	

Dysm: dysmnorrhea

We also found a significant difference between the overall perceived quality of life of those with primary dysmenorrhoea and those without (mean difference= 23; 95% CI: 20.5-25.5; t value= 17.8; p value= 0.00) (Table 6).

Table 6: Total mean scores of perceived quality of life

EQ-VAS	Primary dysm dysmenorrhoea N (%)		No dysm N (%)		t value	P
	Mean	SD	Mean	SD		
Perceived quality of life score	66.2	22.4	89.2	11.9	17.8	0.00

Dysm: dysmenorrhoea

A significant association was found between poor quality of life (OR= 3.9; 95% CI: 2.1-17.8; p value= 0.002), fair quality of life (OR= 5.4; 95% CI: 3.3-25.6; p value= 0.001) and primary dysmenorrhoea (Table 7).

Table 7: Perceived quality of life

Quality of life	Primary dysm N (%)	No dysm N (%)	P value
Poor	74 (5.3)	1 (0.3)	0.002
Fair	419 (29.7)	5 (1.6)	0.001
Good	891 (63.2)	225 (70.8)	0.071
Excellent	25 (1.8)	87 (27.3)	0.241

Dysm: dysmenorrhoea

DISCUSSION

Frequency of primary dysmenorrhoea

The frequency of primary dysmenorrhoea in our study was 71.2%. This could be due to the fact that we were in the youth population range and dysmenorrhoea is most common among girls below the age of 25 [13]. Similar frequencies were found in studies carried out in Nigeria in 2018 by Saka *et al* of 71.8% and in India in 2016 by Omidvar *et al* of 70.2% [14,15]. However, our observed frequency was lower than those reported in studies carried out in Iran in 2015 by Habibi *et al* and in Lebanon in 2021 by Karout *et al* which were 89.1% and 80.9% respectively but higher than those reported in studies carried out in Georgia in 2012 by Gagua *et al* (52.07%) and in Ethiopia in 2020 by Azagew *et al* (64.7%) [6,16–18]. A study carried out in Cameroon in 2020 by Ongbayokolak *et al* reported a slightly lower frequency of 66.17% [10]. These differences could be due to different diagnostic tools or attitudes of some cultures towards menstruation and the various definitions of primary dysmenorrhoea.

Socio-demographic characteristics

The mean age of participants with primary dysmenorrhoea in our study was 17.5±1.8 years. This result is in line with that of a study in Ghana in 2019 by Conney *et al* which reported a mean age of 17 years amongst high school students with primary dysmenorrhoea. However, our result differs from the mean ages of 16.03 and 21 years found in studies carried out by Gagua *et al* in 2012 (schools and universities) and in Pakistan in 2020 by Khalid *et al* (high school students) respectively [17,19,20]. This variation could be due to the selected age groups of females and the study populations themselves. More so, the higher mean age found in by Khalid *et al* could be due to the war slowing down education in Pakistan.

Most of the participants with primary dysmenorrhoea in our study were single (99.4%). This could be due to the high proportion of teenagers.

Clinical characteristics

Onset of menses generally occurs at 10 to 15years of age, with a normal duration of 3 – 7 days [21]. In this study, the mean age of menarche of participants with primary dysmenorrhoea was 12.7 ± 1.3 (ranging from 7 to 17 years) with the majority (86.8%) having a normal duration of flow and 75.6% having a regular cycle. Correspondingly, Gagua *et al* in 2012 , Conney *et al* in 2019 and Karout *et al* in 2021 reported a mean age of menarche ranging from 12 to 12.58 years with 76.8% having a regular cycle, 69% having a normal duration of flow with the majority of the participants having a regular cycle and 91.2% having a normal duration of flow and 85.4% having a regular cycle respectively [17–19]. However, higher means of menarche of 13.3 years and 13 years were observed by Habibi *et al* in 2015 and in India in 2013 by Shah *et al* respectively [16,22]. These variations could be due to genetic and environmental factors.

More than half of the participants with primary dysmenorrhoea (78.4%) had a family history of dysmenorrhoea. Likewise, Omidvar *et al* in 2016 reported more than half (64.5%) had a family history of dysmenorrhoea [15]. Furthermore, in documentations, having a family history of dysmenorrhoea is considered a risk factor of dysmenorrhoea [23]. This could as a result of genetic factors or similar lifestyle and way of living. Another explanation for this may be that daughters of mothers with menstrual pain may also experience the same symptoms due to behaviour learned from their mothers.

Close to half (48.9%) of the participants with primary dysmenorrhoea experienced pain frequently, 27.5% sometimes and 23.6% rarely. Disparately, Omidvar *et al* in 2016 reported that more than half (68.2%) experienced pain frequently, 20.0% sometimes and 11.8% rarely [15]. Karout *et al* in 2021 reported that more than half (55.3%) of the participants with primary dysmenorrhoea

experienced pain frequently [18]. This could be due to the individual participants' perception of pain and frequency. Close to half of the participants with primary dysmenorrhoea (42.60%) experienced mild pain, 37.9% moderate pain and 19.5% severe pain. This pattern is similar to that reported by Khalid *et al* in 2020, where the majority of participants with primary dysmenorrhoea had mild pain (39%), 37.8% moderate pain and 23.2% severe pain [20]. Contrastingly, Conney *et al* in 2019, Azagew *et al* in 2020 and Karout *et al* in 2021 reported that 52.6%, 60.8% and 56% respectively, had moderate [6,18,19]. The variation in the intensity of pain among studies may be due to divergent pain perception among participants in the various countries and different scales being used to assess the pain severity.

The most associated symptoms to primary dysmenorrhoea were fatigue (36.4%), headaches (24.0%) and dizziness (22.9%). Only 20.4% and 16.2% of the participants reported nausea and diarrhoea respectively. Similar symptoms have been reported by Gagua *et al* in 2012, who highlighted fatigue (38.4%) and headache (38.4%) as the most associated symptoms [17]. Closely, Ongbayokolak *et al* in 2020, reported the most associated symptoms were fatigue (42.9%), nausea (25.8%), dizziness and diarrhoea (each 25.1%) [10]. The alternating drop and rising levels of oestrogen and progesterone may alter serotonin and dopamine which are neurotransmitters responsible for mood, sleep and motivation thus may result in lack of sleep which can lead to extreme fatigue, headaches [24]. Also, the pain may cause sleep disturbances too, leading to fatigue [13]. Different symptoms were reported by, Shah *et al* in 2013 who highlighted dizziness, nausea and vomiting as the most associated symptoms [22]. Karout *et al* in 2021 found out that irritability (78.2%), fatigue (61.6%) and tender breasts (46.5%) were the most associated symptoms to primary dysmenorrhoea [18]. These differences may be due to cultural factors, environmental factors and lifestyle habits.

Management of pain

Close to three-quarters of the participants with primary dysmenorrhoea (71.4%) took synthetic drugs (Non-steroidal anti-inflammatory drugs, paracetamol, anti-spasmodics, combined oral contraceptive pills), 8.9% took herbal drugs and 32.1% used non-pharmacological methods (rest, heat therapy, physical exercises) to relieve pain. More than three-quarters (81.3%) found the treatment effective. Our results are in accordance with the study carried out by Karout *et al* in 2021 who reported that 76.4% had taken synthetic drugs and only 37.1% of them had consulted while 62.9% practiced self-medication [18]. However, this differs greatly from the study carried out in the Menoua region, Cameroon by Ongbayokolak *et al*, where only 37.7% took synthetic drugs with a majority who sought medical advice first (51.8%) and 94.1% found treatment effective [10]. The variation in trend and pattern of therapeutic choices could be due to the supplies and availability of drugs in different countries, financial factors, previous satisfying self-medication and home-left medications. It could also be due to could be due to the divergent cultural and traditional beliefs in the various countries.

Impact of primary dysmenorrhoea on quality of life

There was a significant association between school absenteeism and primary dysmenorrhoea. We found our frequency of school absenteeism higher than that reported by Burnett *et al* in 2005 of only 17% [5]. Higher frequencies were observed by Ogunfowokan and Babatunde in 2010 (37%), Omidvar *et al* in 2016 (50.1%), Gagua *et al* in 2012 (56.9%) and Azagew *et al* in 2020 (65%) [6,15,17,25]. These differences could be due to different disciplinary measures and management of primary dysmenorrhoea implemented in the various countries.

We found a significant association between depression, anxiety and primary dysmenorrhoea. During periods, the rising and falling levels of oestrogen and progesterone can affect neurotransmitters serotonin and dopamine, which both influence mood and motivation, leading to depression and anxiety in some cases [24]. Contrastingly, Karout *et al* in 2021 reported just 56.9% were depressive and 36.2% were anxious due to the pain [18]. Gagua *et al* in 2012, reported 26.09% had anxiety and Azagew *et al* in 2020, reported only 15% had anxiety due to pain [6,17]. These variations could be due to the various diagnostic tools used, environmental factors and social factors.

We found a significant association between primary dysmenorrhoea and mobility problems, self-care problems, and daily activity problems. Statistically significant differences were found when comparing the mean perceived quality of life scores between participants with primary dysmenorrhoea and those without. Also, a statistical association was found between poor, fair quality of life and primary dysmenorrhoea. These results compared to a study done in Spain in 2019 by Fernández-Martínez *et al*, using the same quality of life scale on female students with dysmenorrhoea show similarities in the fact that they also found a statistically significant diffrerence in the mean score of perceived quality of life between participants with dysmenorrhoea and those without. However, it differs in the fact they did not find a significant association between dysmenorrhoea and the EQ-5D-5L dimensions [26].

This discrepancy could be due to dissimilar cultures, environmental factors, individual perception of uneasiness and discomfort and variation in the pain threshold perception among participants in different countries.

Limits and strengths

- The self-reporting nature might have resulted in recall bias and this may have had an impact on the reported results. Nevertheless, careful selection of the research questions was done and a time limitation within 1 year was set in order to reduce the effect of the recall bias.
- The collection of data from only public schools, the inaccessibility of some classrooms and the refusal of some girls to participate may have influenced the results through sampling bias. However, we recruited a large number of participants that was more than the representative population according to the sample

size calculated to reduce the effect of the sampling bias.
- The inability of the EQ VAS to determine the quality of life an individual qualitatively and the adaptation for qualitative interpretation with the standard VAS intervals may have led to misclassification bias. Nonetheless, we used the most accurate measurements available of the standard VAS and the categorisation of individuals and data points into groups was thought out carefully.

CONCLUSION

Primary dysmenorrhoea is frequent. Younger ones are most affected. Primary dysmenorrhoea negatively alters quality of life, restricting usual daily activities, disrupting school activities and increasing the risk of depression and anxiety.

FINANCING

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