

# Dysmenorrhea among female students at a teaching hospital in South-Western Nigeria

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## ABSTRACT

**Context:** Dysmenorrhea is common and can be severe, hampering women's quality of life.

**Aims:** This study aimed to assess the prevalence and factors associated with dysmenorrhea in a population of young females and to explore the impact on routine activity and proven relief measures experienced by this group.

**Settings and Design:** This is a cross-sectional, observational study among female medical and nursing students at a tertiary health care facility in South-Western Nigeria.

**Subjects and Methods:** It was a questionnaire study carried out among 360 female students. Explanatory variables were age, parity, use of combined oral contraception, and first-degree family history of dysmenorrhea. The main outcome variable was the presence of dysmenorrhea.

**Statistical Analysis Used:** Data were analyzed by Chi-square test and logistic regression ( $P < 0.05$ ).

**Results:** All respondents had attained menarche at  $12.4 \pm 1.2$  years; 299 (83.1%) reported dysmenorrhea. Primary dysmenorrhea constituted 63.6%; secondary was 19.4%. Younger respondents (teenagers) and married females were significantly less likely to suffer dysmenorrhea, while nonusers of oral contraceptives were more likely to. Period pain precluded usual activity in 48.8% of sufferers; 39.5% had missed classes on account of it; however, only 10% had sought medical care. The most effective treatment used was piroxicam (an antiprostaglandin drug). On multivariate analysis, increasing age (Odds ratio-10.6 [95% Confidence Interval: 3.4-34.0]) was significantly associated with dysmenorrhea.

**Conclusions:** Dysmenorrhea is a highly prevalent problem among this population. Women should be encouraged to seek medical care to limit the debility that arises from dysmenorrhea. Some women may benefit from investigations and definitive treatment.

**Key words:** Dysmenorrhea; medical students; Nigeria; nursing students.

## Introduction

Dysmenorrhea is pain associated with menstruation. It is a common gynecologic disorder in women of reproductive age, but the exact prevalence is difficult to estimate, as it is variably reported. A systematic review reported the global prevalence as 16.8%–81%<sup>[1]</sup> while another reported it to be 45%–90%.<sup>[2]</sup> Dysmenorrhea can be severe enough to prevent women from performing their routine activities and hamper

the quality of life. Dysmenorrhea-related absenteeism occurs in 27.3% of sufferers in a Japanese study.<sup>[3]</sup> In Nigeria, a study from Eastern Nigeria reported a 25% prevalence of dysmenorrhea, with 25% of them having debility severe

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enough to prevent them from attending school.<sup>[4]</sup> Other Nigerian studies reported much higher prevalence at 72.3% and 77.8%, respectively.<sup>[5,6]</sup>

There are two main types of dysmenorrhea: primary and secondary. Primary refers to the presence of painful menses where no underlying organic cause accounts for the pain, while secondary dysmenorrhea occurs in the presence of identifiable pathologic cause. The latter is commoner in older women and the pain is more severe before menses. It may also be associated with uterine retroversion. The production of uterine prostaglandins, which cause uterine contractions and ischemia, is responsible for menstrual pain. Endometrial cells release prostaglandins as the endometrium sloughs and menses begin. Women with more severe period pain have higher levels of prostaglandins in menstrual fluid.<sup>[2]</sup> This is why antiprostaglandin drugs (that is, nonsteroidal anti-inflammatory drugs [NSAIDs]) are often successful in the treatment.

Primary dysmenorrhea is likely to commence about 6 months to a year after menarche, at the onset of ovulatory cycles. It is more likely to be secondary if it commences for the first time after age of 25 years, in association to pelvic pathology on examination, in association with infertility, or when there is no response to NSAID treatment.<sup>[2]</sup>

The main symptom of dysmenorrhea is pain concentrated in the lower abdomen, in the umbilical region or the suprapubic region of the abdomen. Proposed risk factors for dysmenorrhea include early menarche, long and heavy menstrual flow, cigarette smoking, and nulliparity; the incidence of primary dysmenorrhea also decreases after the first delivery. Low-fat, vegetarian diets have been associated with reduced symptoms, while cigarette smoking is associated with increased dysmenorrhea.<sup>[2,7]</sup>

Several treatment measures have been used, with varying levels of relief. NSAIDs are effective in treating dysmenorrhea – much more than paracetamol (acetaminophen).<sup>[8]</sup> There is however a substantial risk of adverse effects from NSAIDs. Combined oral contraceptive pills (OCPs) give some pain relief as well.<sup>[9]</sup> Systematic reviews covering a wide range of herbal and nonherbal dietary supplements<sup>[10]</sup> and acupuncture<sup>[11]</sup> did not show adequate evidence of their effectiveness. Beta-2 adrenergic drugs have been used in the management of primary dysmenorrhea; however, there is not enough evidence at present to recommend them.<sup>[12]</sup> Other methods of limited or uncertain benefit include physical exercise<sup>[13,14]</sup> and behavioral intervention (such as relaxation techniques or pain management training).<sup>[15]</sup>

This study aimed to assess the prevalence and factors (such as relations with menarche and characteristics of the pain and menses) associated with dysmenorrhea in a population of adolescents and young adults, as well as to explore the impact on routine activity and proven relief measures experienced by this group.

## Subjects and Methods

It was a descriptive study carried out among female medical and nursing students at University College Hospital, Ibadan, a tertiary health care facility and referral center in South-Western Nigeria. The sample size was calculated with a formula for cross-sectional surveys,  $P = Z^2pq/d^2$ , where the prevalence  $P$  was assumed to be 72.3%, giving a minimum sample of 308.<sup>[5]</sup> The study setting was their hostels of residence on the hospital premises.

The tool was a self-administered questionnaire with open- and closed-ended questions on their demographic data, menstrual and gynecological history, features associated with dysmenorrhea, and the treatment methods in use. All consenting female students living at the study setting (hostels) were eligible to participate in the study. There were no exclusion criteria. Explanatory variables included age, parity, use of OCPs, and first-degree family history of dysmenorrhea. The main outcome variable was the presence of dysmenorrhea. Dysmenorrhea was described as pain during menses. The research was carried out in accordance with the Declaration of Helsinki. Written informed consent was obtained from respondents before recruitment. Data were analyzed with IBM SPSS Statistics 20.0 (IBM, New York, USA) by Chi-square test and logistic regression analysis.  $P < 0.05$  was considered statistically significant.

## Results

Three hundred and seventy-five questionnaires were distributed, of which 360 responded (giving a response rate of 96%). They were fairly evenly distributed as 191 medical students (53.1%) and 169 nursing students (46.9%). The mean age of respondents was  $22.2 \pm 1.7$  years. All had attained menarche, averagely at  $12.4 \pm 1.2$  years. The range of menarche was 10–16 years. Their menses lasted from 3 to 8 days; only one had an 8-day cycle. The cycle length ranged from 20 to 35 days (only one was 20 days). The modal menstrual duration was 5 days in a 28-day cycle. Two hundred and ninety-nine (83.1%) women reported dysmenorrhea. In 142 (39.4%) respondents, dysmenorrhea was experienced from around menarche and 86 (23.9%) experienced it within a year of menarche.

Sixty-eight (18.9%) respondents reported sexual activity. Fifty-one (14.2%) used contraception, of which 36 (10.0%) used combined OCPs, 6 (1.7%) used condoms, and 6 (1.7%) used Postinor (levonorgestrel emergency contraception). No one had a history of cigarette smoking. Table 1 shows the sociodemographic characteristics of the study participants. Younger participants (teenagers) and married females were significantly less likely to suffer dysmenorrhea. Those who did not use OCPs or were from the Ibo tribe were significantly more likely to have dysmenorrhea. There was no significant association between the presence of dysmenorrhea and body mass index ( $P = 0.64$ ) or age at menarche ( $P = 0.07$ ).

In 263 (86.2%) respondents, the pain started at the beginning of the menstrual period. In 246 (93.5% of this subgroup) respondents, the pain spontaneously reduced as the period progressed; in 5 (1.9%) respondents, it got worse over the days. Primary dysmenorrhea was computed as dysmenorrhea commencing near menarche, as well as coinciding with the onset of menstrual periods, and getting better as the period progresses. This gave a prevalence of 63.6% (229) and a secondary dysmenorrhea prevalence of 19.4% (60 respondents). Associated symptoms are outlined in Table 2. There was no difference in the ratio of medical

students to nursing students who sought medical treatment for dysmenorrhea ( $P = 0.45$ ). Proxies to assess pain severity are listed in Table 3. The pain was significant enough to preclude normal activity in 48.8%. Relief of the pain was mostly sought from analgesics, in 245 (81.9%) respondents. Other methods used were drinking hot beverages in 6 (2.0%), resting in 6 (2.0%), and exercise in 2 (0.7%) respondents. Forty (13.4%) others did not use anything to stop the pain. Only 105 (35.1%) of the students who experienced dysmenorrhea actually experienced relief from the method used. This relief was mostly obtained by analgesia (in 75, or 71.4%), specifically acetaminophen and NSAIDs. The most common NSAID reported to be effective was piroxicam, in 33 (31.4% of this subgroup) respondents.

The characteristics that showed significant association on univariate analysis, as well as some related features, were subjected to multivariate analysis. Increasing age (odds ratio OR 10.6 [95% confidence interval: 3.4–34.0]) was the only significant association with dysmenorrhea, when corrected for tribe, OCP use, first-degree family history, and history of PID [Table 4].

## Discussion

Dysmenorrhea had a high prevalence in this study (over four-fifths of the participants), alluding to the pervasiveness of the debility among young women. This was lower than other reports from Nigeria.<sup>[4,5]</sup> This may have been due to the fact that the study group may have a higher threshold for reporting the pain, as they were undergoing medical training. Furthermore, the group consisted of young adults, as well as adolescents. The previous reports studied adolescents only, most of whom may not have developed secondary dysmenorrhea yet. This is further buttressed by analysis showing that those in their 20s were significantly more likely to have dysmenorrhea than the adolescents. A fifth of this study's participants' symptoms were ascribed to secondary dysmenorrhea.

**Table 1: Sociodemographic characteristics of respondents**

	Respondents with dysmenorrhea N=299	Respondents without dysmenorrhea N=61	Total	P
Age group (years)				
≤19	6 (28.6)	15 (71.4)	21 (5.8)	<0.001
20-24	267 (85.9)	44 (14.1)	311 (86.4)	
≥25	26 (92.9)	2 (7.1)	28 (7.8)	
Course of study				
Nursing	141 (83.4)	28 (16.6)	169 (46.9)	0.858
Medicine	158 (82.7)	33 (17.3)	191 (53.1)	
Marital status				
Single	269 (84.6)	49 (15.4)	318 (88.3)	0.033
Married	30 (71.4)	12 (28.6)	42 (11.7)	
Parity				
Nulliparous	287 (83.9)	55 (16.1)	342 (95.0)	0.057
Parous	12 (66.7)	6 (33.3)	18 (5.0)	
Tribe				
Yoruba	192 (78.7)	52 (21.3)	244 (67.8)	0.001
Ibo	107 (92.2)	9 (7.8)	116 (32.2)	
Religion				
Christianity	229 (84.2)	43 (15.8)	272 (75.0)	0.313
Islam	70 (79.5)	18 (20.5)	88 (24.4)	
Use of oral contraceptive pills				
Use	24 (66.7)	12 (33.3)	36 (10.0)	0.006
Non- use	275 (84.9)	49 (15.1)	324 (90.0)	
Total	299 (83.1)	61 (16.9)	360	

**Table 2: Symptoms associated with dysmenorrhea among the study participants**

Symptom	Frequency (%) (n=299)
Tiredness	264 (88.3)
Nausea	112 (37.5)
Vomiting	51 (17.1)
Headache	41 (13.7)
Dizziness	142 (47.5)
Heavy flow	88 (29.4)
Pain radiates to back/lower limbs	79 (26.4)
Noncyclical pelvic pain	19 (6.4)
Dyspareunia	20 (6.7)

**Table 3: Proxies to determine severity of dysmenorrhea**

Feature	Frequency (%) (n=299)
Pain prevents routine activities	146 (48.8)
Pain severe enough to make them miss classes	118 (39.5)
Had presented to a doctor on account of pain	30 (10.0)
Had been admitted in a hospital	12 (4.0)
Have had investigations to evaluate the pain	6 (1.7)

**Table 4: Logistic regression of features associated with dysmenorrhea**

Variable	OR	95% CI	P
Age (years)			
≤19	Ref		
20-24	10.6	3.4-34.1	<0.001
≥25	72.9	8.4-632.9	<0.001
Tribe			
Ibo	2.3	0.8-6.2	0.1
Yoruba	Ref		
Parity			
Nulliparous	11.3	0.9-145.0	0.06
Parous	Ref		
Use of OCPs			
Yes	Ref		
No	0.9	0.1-8.1	0.91
1 <sup>st</sup> degree family history of dysmenorrhea			
Yes	2.0	0.9-4.3	0.07
No	Ref		
History of pelvic inflammatory disease			
Yes	Ref		
No	3.6	0.9-15.0	0.07

The single women were more likely to have period pain than those who were married. This may be a pointer to the recognized association of period pain with nulliparity and the diminishing of the pain with the first parous experience.<sup>[16]</sup> This was not supported by multivariate analysis, however. The association of dysmenorrhea with early menarche, prolonged menses, and cigarette smoking could not be determined from this study, as these factors were not demonstrated in this population. Most respondents were likely to be suffering from primary dysmenorrhea, as can be inferred from the early commencement of pain following menarche and the onset of pain with menstrual periods which diminishes as the period progresses. The limitation of this classification of primary and secondary amenorrhea, as described in this study, is that these classes are definitively differentiated by identifying or ruling out pelvic pathology in the patient. However, this study did not involve clinical data or medical records; indeed, most of them had never sought medical help. Hence, this classification just gives a general pointer to the distribution of the participants' symptoms.

They mostly reported tiredness as the major symptom associated with dysmenorrhea. This may contribute to the

inability to perform routine activity reported by a significant proportion of them. Absenteeism from school also featured prominently in this study. Despite having some medical knowledge and easy access to medical services, this did not seem to improve their health-seeking behavior as only a tenth of sufferers had ever presented to a doctor on account of the pain. This is in keeping with a global attitude, probably due to the fact that most women consider it to be a normal part of menses, or do not think that treatment will help.<sup>[2]</sup> Despite this, many respondents had tried using analgesia, probably self-medicated, and often unsuccessfully. An NSAID, piroxicam, appeared to be the singularly most effective analgesic for dysmenorrhea identified among participants in this survey. These medications are available over the counter in the study area; therefore, the use of piroxicam may have been influenced by recommendations from peers or pharmacists, rather than any comparison with other NSAIDs.

It may be of benefit to recommend OCPs for some of these young women, as there is some evidence of their usefulness in the treatment of dysmenorrhea.<sup>[9]</sup> This will thus serve a dual purpose for them, as many of them were unmarried and unlikely to desire pregnancy at the time.

## Conclusions

Dysmenorrhea is a highly prevalent problem among this sample of young women, and it affects their quality of life significantly. Women should be encouraged to seek medical care, which may be pharmacologic or nonpharmacologic, to limit the debility that arises from dysmenorrhea. Some women could also benefit from investigations and definitive treatment of secondary dysmenorrhea when they seek medical care.

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## Conflicts of interest

There are no conflicts of interest.

## References

1. Latthe P, Latthe M, Say L, Gülmezoglu M, Khan KS. WHO systematic review of prevalence of chronic pelvic pain: A neglected reproductive health morbidity. *BMC Public Health* 2006;6:177.
2. Proctor M, Farquhar C. Diagnosis and management of dysmenorrhoea. *BMJ* 2006;332:1134-8.
3. Osuga Y, Hayashi K, Kobayashi Y, Toyokawa S, Momoeda M, Koga K, *et al.* Dysmenorrhea in Japanese women. *Int J Gynaecol Obstet* 2005;88:82-3.
4. Nwankwo TO, Aniebue UU, Aniebue PN. Menstrual disorders in adolescent school girls in Enugu, Nigeria. *J Pediatr Adolesc Gynecol* 2010;23:358-63.
5. Thomas KD, Okonofua FE, Chiboka O. A study of the menstrual patterns of adolescents in Ile-Ife, Nigeria. *Int J Gynaecol Obstet* 1990;33:31-4.

6. Amu EO, Bamidele JO. Prevalence of menstrual disorders among adolescent girls in Osogbo, South Western Nigeria. *Int J Adolesc Med Health* 2014;26:101-6.
7. Latthe P, Mignini L, Gray R, Hills R, Khan K. Factors predisposing women to chronic pelvic pain: Systematic review. *BMJ* 2006;332:749-55.
8. Marjoribanks J, Ayeleke RO, Farquhar C, Proctor M. Nonsteroidal anti-inflammatory drugs for dysmenorrhoea. *Cochrane Database Syst Rev* 2015;1:CD001751.
9. Wong CL, Farquhar C, Roberts H, Proctor M. Oral contraceptive pill as treatment for primary dysmenorrhoea. *Cochrane Database Syst Rev* 2009;4:CD002120.
10. Pattanittum P, Kunyanone N, Brown J, Sangkomkamhang US, Barnes J, Seyfoddin V, *et al.* Dietary supplements for dysmenorrhoea. *Cochrane Database Syst Rev* 2016;3:CD002124.
11. Smith CA, Crowther CA, Petrucco O, Beilby J, Dent H. Acupuncture to treat primary dysmenorrhea in women: A randomized controlled trial. *Evid Based Complement Alternat Med* 2011;2011:612464.
12. Fedorowicz Z, Nasser M, Jagannath VA, Beaman JH, Ejaz K, van Zuuren EJ. Beta2-adrenoceptor agonists for dysmenorrhoea. *Cochrane Database Syst Rev* 2012;5:CD008585.
13. Israel RG, Sutton M, O'Brien KF. Effects of aerobic training on primary dysmenorrhea symptomatology in college females. *J Am Coll Health* 1985;33:241-4.
14. Brown J, Brown S. Exercise for dysmenorrhoea. *Cochrane Database Syst Rev* 2010;2:CD004142.
15. Proctor ML, Murphy PA, Pattison HM, Suckling J, Farquhar CM. Behavioural interventions for primary and secondary dysmenorrhoea. *Cochrane Database Syst Rev* 2007;3:CD002248.
16. Weissman AM, Hartz AJ, Hansen MD, Johnson SR. The natural history of primary dysmenorrhoea: A longitudinal study. *BJOG* 2004;111:345-52.