

# The impact of dysmenorrhea on activities of Ghanaian undergraduate students

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## ABSTRACT

**Background and Aim:** Dysmenorrhea is one of the leading causes of gynecological hospital visits globally, with resultant physical, psychological, academic, and social consequences. There exists a paucity of research on dysmenorrhea in Ghana and those available focus on the adolescent population. Our study intends to add to the body of knowledge by describing the negative experiences of dysmenorrhea among undergraduate females.

**Methodology:** The study was a descriptive, cross-sectional study involving 200 female undergraduate students (100 medical and 100 nonmedical students) of the University of Cape Coast, Ghana. Data were analyzed using standardized and acceptable statistical tools.  $P < 0.05$  was considered to be statistically significant.

**Results:** Dysmenorrhea caused significant disturbance in academic and nonacademic activities of the respondents, thus increasing with increase in severity of the menstrual pain. It resulted in mood disturbances, disruption in social interaction (relationship with colleagues and university staff), limitation in sleep, and hospital admission in 39.9%, 19.1%, 10.1%, and 5.4%, respectively. Furthermore, it resulted in disruption in academic activities of the respondents (42.3%), lack of concentration (41.7%), inability to study (23.2%), and school absenteeism (12.5%).

**Conclusion:** Dysmenorrhea is a major public health burden among females of reproductive age. We advocate that it should be given much more priority and attention than its receiving presently in Ghana, so as to reduce the negative consequences attached with it.

**Key words:** Dysmenorrhea; Ghana; impact; undergraduate.

## Introduction

Dysmenorrhea is one of the leading causes of gynecological hospital visits globally.<sup>[1]</sup> Classically, it has been divided into primary and secondary. In the former, there is a normal pelvic anatomy, while in the later, there is an underlying cause.<sup>[2]</sup>

It is thought that prostaglandin  $F_2^{\alpha}$ , a potent myometrial stimulant and vasoconstrictor, is produced by the secretory endometrium. This substance causes a decrease in myometrial blood flow and induces contraction to shed the endothelium in the menstrual phase of the menstrual cycle.

This is evidenced by the high levels of these prostaglandins in the menstruum of females with severe dysmenorrhea. Other studies have implicated various other substances in the pathophysiology of dysmenorrhea.<sup>[3,4]</sup>

Morbidity due to dysmenorrhea represents a substantial public health burden<sup>[5]</sup> with attendant physical, psychological, and social consequences. Studies have shown that 10%–20% of

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females experience significant impairment in their activities of daily living and diminished quality of life resulting from varying degrees of dysmenorrhea.<sup>[5,6]</sup> Another study observed a distortion in activities of daily living in about half of the respondents.<sup>[2]</sup> Significant economic loss to households and nations is another consequence of dysmenorrhea. The United States, for instance, loses about two billion dollars a year due to the inability of women in pain to go to work.<sup>[5,7]</sup>

Dysmenorrhea is one of the leading causes of school absenteeism.<sup>[2]</sup> In a Ghanaian study, school absenteeism was reported in about 35.5% of the secondary school girls with severe dysmenorrhea.<sup>[5]</sup> Absenteeism was about 56.9%, 45.1%, 38%, 28%–48%, 28%, and 25.6% in Georgian,<sup>[5]</sup> Singaporean,<sup>[6]</sup> Hispanic,<sup>[5]</sup> the United States,<sup>[6]</sup> Nigerian,<sup>[6]</sup> and Turkish<sup>[8]</sup> studies, respectively. A lower percentage (10.8%) was, however, observed in an Iranian study.<sup>[8]</sup> Report from some of these studies revealed that periodic school absenteeism resulted in poor concentration and poor academic performance.<sup>[1,5,6,9]</sup> In another study, periodic absenteeism from school or work was about 1–3 days every month.<sup>[10]</sup> Sleep disturbances were observed in 15.9% and 26% of respondents in Ghanaian<sup>[5]</sup> and Hong Kong<sup>[11]</sup> studies, respectively. Thirty-six percent of respondents had psychosocial impairment in the Hong Kong study,<sup>[11]</sup> while 92% of respondents with premenstrual syndrome had dysmenorrhea in another study.<sup>[12]</sup> Depression and mood changes were the commonly associated psychological changes associated with dysmenorrhea in a Nigerian study.<sup>[1]</sup> These further interfere with social interaction and academic performance.<sup>[5]</sup>

In Ghana, there is limited research on dysmenorrhea in general; those available focus on the adolescent age group. Our study intends to add to the body of knowledge on the effects of dysmenorrhea among Ghanaian females with specific emphasis on describing the negative effect of dysmenorrhea on academic and nonacademic activities of undergraduate university students.

## Methodology

The study was descriptive, cross-sectional study (from June to August 2014) involving 100 female undergraduate medical students and another group of 100 females drawn from other colleges of the University of Cape Coast (UCC), Ghana. These were selected by convenience random sampling method. Undergraduate students were chosen in this study because as at when it was conducted, the school of medical sciences of the UCC was only running undergraduate program in medicine and surgery. Data were collected using a pretested questionnaire to elicit

variables of interest, and menstrual pain was assessed using a standardized pain scale (verbal multidimensional scoring system for assessment of dysmenorrhea severity) gotten from research done by other workers. Furthermore, ethical waiver was granted by the UCC Ethical Review Board before the study. The questionnaire, however, included a consent section in which the respondent appended her signature after the aims and objectives of the study were explained. Assurance of participants' confidentiality was considered and the report included exactly what the respondent gave. No words or images that could depict or reveal the identity of the respondents were included in the study report.

Data gathered were carefully coded and entered into Statistical Package for Social Sciences version 20 (IBM, Armonk, NY, United States of America). Chi-square analysis was used to test the association between the variables of interest. Inference was made using 95% confidence interval with 5% error margin, and  $P < 0.05$  was considered statistically significant.

There are online calculators of sample size. We got ours from [www.calculator.net/sample-size-calculator.html](http://www.calculator.net/sample-size-calculator.html); using a confidence level 95% and confidence interval of 5% and population proportion of 74% (from a previous study in Ghana), giving a sample size of one hundred ( $n=100$ ).

One-sample *t*-test was also used to compare the significance difference within some variables of interest in the study.

### Inclusion criteria

- Undergraduate female students > 18 years
- Ghanaian by birth
- Females belonging to any one of the colleges of the UCC.

### Exclusion criteria

- Undergraduate females < 18 years
- Non-Ghanaians or Ghanaians whose citizenship is by marriage or naturalization
- Nonstudents of the UCC.

## Results

Most of the respondents (92.5%) were unmarried and within ages 20–24 years' category [Table 1].

Dysmenorrhea significantly affected the mood (44.7% of nonmedical and 43.8% of medical students) and the social interaction (19.7% of nonmedical and 18.5% of medical students) of the respondents. It, however, did not cause significant hospital admission except in severe dysmenorrhea ( $P = 0.004$ ). Dysmenorrhea

**Table 1: Demographic characteristics of respondents**

	Frequency (n=200), n (%)
Age	
15-19	38 (19.0)
20-24	126 (63.0)
25-29	29 (14.5)
>29	7 (3.5)
Marital status	
Single	185 (92.5)
Married	15 (7.5)

Age of Menarche 12 + 0.12 years

caused significant ( $P = 0.00$ ) disruption in academic activities of nonmedical students (57.9%) compared to the medical students (29.3%). There was no significant difference ( $P > 0.05$ ) in the other parameters assessed. Dysmenorrhea is associated significantly with inability to study and lack of concentration but not with school absenteeism. School absenteeism is, however, associated with increasing severity of dysmenorrhea. It was also statistically significant ( $P = 0.018$ ) in nonmedical students who had dysmenorrhea.

## Discussion

The aim of this study was to determine the impact of dysmenorrhea among undergraduate students and to see if the impact varies on the patient being a medical student or not.

Most of the respondents were in their early twenties, and the average age of menarche was 12 + 0.12 years [Table 1]. This is consistent with report by other workers.<sup>[5,6]</sup>

Evidence in literature suggests that dysmenorrhea has biopsychosocial implications which impact on personal life and productivity.<sup>[5,13-15]</sup> Indeed, one study described menstrual symptoms (including dysmenorrhea) as a constellation of negative psychological experiences.<sup>[16]</sup>

The relationship between pain (including dysmenorrhea) and mood is complex. The extent to which pain causes low mood and vice versa is difficult to establish, but it is generally accepted that their relationship is reciprocal.<sup>[17]</sup> As high as 80% of females with mood changes during menses have dysmenorrhea. Table 2 also shows a reciprocal relationship – almost 40% of the respondents have adverse mood changes resulting from dysmenorrhea.

Other statistically significant consequences of dysmenorrhea were disruption in social interaction and various academic activities [Table 2]. This again was the trend in the other Ghanaian study.<sup>[9]</sup> A depressed mood (resulting from

dysmenorrhea in this case) independently caused significant disruption in academic and social interaction. This further strengthens the reciprocal association between the two variables as suggested by Tang *et al.*<sup>[17]</sup>

Mood changes result in despondency and psychomotor retardation, which can worsen the disruption in academic activities caused by dysmenorrhea and loss of incentive to engage in social activities.<sup>[5,17]</sup> Indeed, this was an important finding in our study also.

About 29.2% alteration in sleep pattern observed among those with dysmenorrhea in this study [Table 2] is similar to a study by Chia *et al.*<sup>[11]</sup> One study showed that dysmenorrhea significantly decreased subjective sleep quality, sleep efficiency, and rapid eye movement sleep. The researchers went on to conclude that the abnormal sleep pattern persisted in these subjects even when they were not menstruating.<sup>[18]</sup> Sleep disturbances may also be the cause of fatigue which was common in the present study (not shown). This again has been reported in literature.<sup>[18]</sup>

Interestingly, sleep disturbance was significantly worse ( $P < 0.05$ ) among the medical students [Table 2]. Again, this can further impair daytime performance and the students' concentration as they would be obviously tired from sleep deprivation.

Hospital admission rate sequel to dysmenorrhea was low (5.4%) in this study just like the Hong Kong study<sup>[11]</sup> (3%), and the prevalence of this was higher among those with severe dysmenorrhea (23.8%). This suggests that females tend not to seek hospital care unless menstrual pain is severe. Cultural expectations of a menstruating woman and perhaps the social stigma attached to not being able to bear menstrual pain are responsible for this.

Furthermore, hospital admission was statistically significantly less among the medical students [Table 2,  $P < 0.05$ ]. The reason for this may be because their exposure to pharmacology affords them the opportunity to self-medicate, thereby reducing their hospital visits.

The most common academic setback caused by dysmenorrhea in this study was inability to concentrate (41.7%) [Table 2]. This is similar to the 46.5% reported by Okoro *et al.*<sup>[2]</sup> Again, inability to concentrate was highest among those with severe dysmenorrhea. The reason for this has already been discussed above.

School absenteeism rate of 14.3% in this study is close to 19% and 19.8% observed in Hong Kong<sup>[11]</sup> and Mexican<sup>[8]</sup> studies,

**Table 2: Impact of dysmenorrhea on the activities of the respondents**

Effects of dysmenorrhea	Severity of dysmenorrhea			Total (%)
	Mild (n=61), n (%)	Moderate (n=64), n (%)	Severe (n=21), n (%)	
<b>General</b>				
No limitation in activities*	23 (37.7)	8 (12.5)	0 (0)	19.6
Limitation in sleep <sup>b</sup>	5 (8.2)	8 (12.5)	4 (19)	10.1
Adverse mood changes <sup>*,a,b</sup>	17 (27.9)	37 (57.8)	13 (61.9)	39.9
Disruption in school activities <sup>*,b</sup>	19 (31.1)	34 (53.1)	17 (81.0)	42.3
Disruption in social interaction <sup>*,b</sup>	9 (14.8)	12 (18.8)	10 (47.6)	19.1
Hospital admission <sup>*,a</sup>	2 (3.3)	2 (3.1)	5 (23.8)	5.4
<b>Academic</b>				
Lack of concentration <sup>*,b</sup>	18 (29.5)	35 (54.7)	16 (76.2)	41.7
Inability to study <sup>*,a,b</sup>	9 (14.8)	20 (31.3)	10 (47.6)	23.2
School absenteeism <sup>*,a</sup>	3 (4.9)	7 (10.9)	10 (47.6)	12.5
No effect on academics <sup>*,a,b</sup>	34 (55.7)	15 (23.8)	0 (0)	32.1

\*Statistically significant ( $P < 0.05$ ) for severity of dysmenorrhea, a for nonmedical, and b for medical students. Dysmenorrhea significantly affected the mood (44.7% of nonmedical and 43.8% of medical students) and the social interaction (19.7% of nonmedical and 18.5% of medical students) of the respondents. It, however, did not cause significant hospital admission except in severe dysmenorrhea ( $P = 0.004$ ). Dysmenorrhea caused significant ( $P=0.00$ ) disruption in academic activities of nonmedical students (57.9%) compared to the medical students (29.3%). There was no significant difference ( $P > 0.05$ ) in the other parameters assessed. Dysmenorrhea is associated significantly with inability to study and lack of concentration but not with school absenteeism. School absenteeism is, however, associated with increasing severity of dysmenorrhea. It was also statistically significant ( $P = 0.018$ ) in non-medical students who had dysmenorrhea

respectively. Higher prevalence (>30%) has been shown in other reports.<sup>[5,11,14,15,18]</sup>

In contrast, studies conducted in Nigeria,<sup>[2]</sup> Ghana,<sup>[7]</sup> and Iran<sup>[8]</sup> reported lower percentages (6.9%, 9.5%, and 10.8%, respectively) of school absenteeism from dysmenorrhea. School absenteeism observed in this study was higher in those with severe dysmenorrhea (47.6%) [Table 2] just as in the Ghanaian study.<sup>[7]</sup> This is in further agreement with several other studies that indicate severe dysmenorrhea as a major cause of school absenteeism.<sup>[5,7,13,14]</sup> School absenteeism was observed to be less in medical students [Table 2,  $P < 0.05$ ]. The busy schedule of this category of students does not afford them the luxury of time to be absent from school. Again, this was consistent with the observation reported by Chia *et al.*<sup>[11]</sup> The consequence of this is more medical students who come to school in pain and cannot concentrate in class.

With only 19.6% and 32.1% of respondents suggesting no form of significant impairment in their general and academic activities, respectively, from dysmenorrhea [Table 2], this calls for serious attention. It further suggests that despite various mechanisms that females adapt to cope with pain, it is not enough. Pain, no matter the source indeed, needs to be adequately managed.

## Conclusion

Since all of those with severe dysmenorrhoea significantly had some form of functional limitation directly resulting from dysmenorrhoea, it is important therefore, to consider revisiting dysmenorrhoea as academic and public health urgency. We recommend that members of academic and

health staff should not ignore females suffering from dysmenorrhea. They should be given relevant psychological, physical, and appropriate pharmacological support to enable them to function at their optimum and reduce the limitations that suffer during their menses.

## Limitations

The convenience random sampling is the least sensitive of all the sampling techniques. It was used because it was the fastest sampling technique and we could use during the short period. Furthermore, the dispersion of the various colleges across the big university which has a multicampus system made it the sampling technique of choice. Furthermore, the university had just gone collegiate at that time, and some faculties had not been properly placed. We hope that further studies will address this limitation using better sampling techniques.

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## Conflicts of interest

There are no conflicts of interest.

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