

PREVALENCE AND SEVERITY OF DYSMENORRHOEA AMONG SOME ADOLESCENT GIRLS IN A SECONDARY SCHOOL IN ACCRA, GHANA

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Abstract

Background

Dysmenorrhoea is a common problem among the adolescent but it is unclear the extent to which adolescent girls in Ghana are incapacitated each month due to the severity of dysmenorrhoea.

Objective

The objective of this study was to determine the prevalence and severity of dysmenorrhoea in adolescent girls and its effect on class attendance.

Setting: St Mary's Senior Secondary School, Accra

Methodology: Cross-sectional descriptive study using self-administered questionnaire

Results: The prevalence of dysmenorrhoea in 453 adolescent girls in this study was 74.4% (CI 95%, 72.5%-76.3%). Primary dysmenorrhoea is usually the type of dysmenorrhoea suffered by adolescent girls, a characteris-

tic age group 14-19 years of respondents in the study. The percentage distribution for the various degrees of severity of dysmenorrhoea in 453 adolescent girls was 18.1%, 37.5%, and 18.8% for mild, moderate and severe dysmenorrhoea respectively. About 9.5% of respondents with dysmenorrhoea had absented themselves from class at some time. Among those who had severe dysmenorrhoea, 35.3% had absented themselves from class at some time ($p < 0.0001$).

Conclusions: This study shows that dysmenorrhoea is common among girls of this Senior Secondary School in Accra, Ghana. The correct approach to management of adolescent girls with dysmenorrhoea can reduce the adverse impact of severe dysmenorrhoea on academic activities in the form of class absenteeism.

Keywords: Adolescent girls, Primary dysmenorrhoea, School absenteeism.

Introduction

Dysmenorrhoea is a painful or cramping sensation in the lower abdomen often accompanied by other biologic symptoms, including fatigue, dizziness, sweating, headaches, backache, nausea, vomiting, diarrhoea, all occurring just before or during the menses^{1,2}. Dysmenorrhoea could be primary or secondary on the basis of absence or presence of pathology. Primary dysmenorrhoea is seen only in ovulatory cycles usually developing within 6 to 12 months of menarche with no pathology or organic basis^{1,2,3}. The pain of primary dysmenorrhoea and the systemic symptoms that may be associated with it are due to high prostaglandin levels^{1,2,3}.

The levels of prostaglandin F_{2α} are especially high during the first two days of menstruation in women with severe primary dysmenorrhoea. Vasopressin and leukotriene concentrations have also been found to be higher in women with severe menstrual pains than in women who experience mild or no menstrual pain^{1,2,4,5}.

Secondary dysmenorrhoea is usually due to pelvic pathology and it is not common in adolescent girls, however some adolescent girls may suffer secondary dysmen-

orrhoea following pelvic inflammatory disease or an abortion^{3,4}. The mechanism responsible for the pain in secondary dysmenorrhoea varies and may not involve high levels of prostaglandins^{1,2,5}. The diagnosis of dysmenorrhoea is generally clinical. A focused history and physical examination are usually sufficient to make the diagnosis of primary dysmenorrhoea.

Some of the symptoms associated with severe forms of dysmenorrhoea are common symptoms of premenstrual syndrome (PMS) with both conditions having no organic basis. Premenstrual syndrome (PMS) is recurrent variable somatic, psychological and emotional symptoms that develop during the 7-14 days before the onset of menses and are ameliorated by the onset of menstruation in women who are mainly aged 20-40 years⁶. Over 150 different symptoms have been linked to premenstrual syndrome (PMS) but the most common are bloating, breast pain, cyclical weight gain, fatigue, headaches, aggressiveness, depression, irritability and inability to concentrate⁶. The symptoms in premenstrual syndrome (PMS) are thought to be due to variations in ovarian sex steroids and low circulating serotonin levels⁶ which differs from the high levels of prostaglandins seen in primary dysmenorrhoea.

Non-steroidal anti-inflammatory drugs, which inhibit the synthesis of prostaglandins, are highly effective in treating primary dysmenorrhoea, especially when they are started before the onset of menses and continued through day 2^{1,3,4,7}. The fenamates have been found, from a review of 51 large clinical trials, to be the most effective therapy with over 72% of women suffering from dysmenorrhoea reporting significant pain relief with non-steroidal anti-inflammatory drugs, 18% reporting

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minimal or no pain relief and 15% showing a placebo response^{1,7}. In a review analysing the adverse risk/benefit ratio, ibuprofen and mefenamic acid were the most successful treatments, whereas Paracetamol was no more effective than placebo^{7,8}.

Severe dysmenorrhoea is a cause of recurrent short term school absenteeism in adolescent girls in the United States^{2,9,10}. Dysmenorrhoea and how it effects adolescent girls has not been studied previously in Ghana however records at the gynaecology emergency room at the Korle-Bu Teaching Hospital, Accra, Ghana shows that dysmenorrhoea is among the recurring reasons for gynaecological consultations in adolescent girls. These girls are often accompanied to the hospital by a parent, teacher or peers who absent themselves also from work or class. This study was done to determine the prevalence and severity of dysmenorrhoea in this Senior Secondary School with predominantly female adolescent population and its effect on class attendance.

Materials and Methods

This is a cross sectional descriptive study of dysmenorrhoea in 453 Ghanaian girls at St Mary's Senior Secondary School in Accra. The school is a girls' senior secondary located at Korle-Gonno, about one kilometre from the Korle-Bu Teaching Hospital. This school was chosen for the study because the students comprised of girls in their early, middle and late adolescence from diverse ethnic and socio-economic class families living in main city of Accra and its suburbs.

After choosing this school as the site for the study, meetings were held with some authorities of the school at which all concerns about the study were addressed; the study questionnaire were also discussed after which approval for the study was granted by authorities of the school. The questionnaire used had been pre-tested in a similar adolescent population at a different site to ensure that it was possible to self-administer it in the target population. On the day of the study in April 2007, the study was explained to the students and they were given 30 minutes to voluntarily complete the questionnaire. With the help of some teachers, the research team distributed five hundred questionnaires at the same time using simple random sample of students. The students who were sampled completed the questionnaires with relevant data in their classrooms and returned them to the research team.

Using sample size formula $Z^2 \cdot (P) \cdot (1-P) / C^2$ and making correction for the finite population of 723 students enrolled in the secondary school at the time of the study, the sample size was estimated to be 424 students at 95% confidence level. The estimated prevalence of dysmenorrhoea used was 70%, this value was guided by the prevalence in studies of similar adolescent populations, an allowable error of 4%, assuming a non-participation rate of 15% and non-response rate of 15% in the study. Four hundred and fifty six (91.2%) of the 500 students sampled had their questionnaires completed and returned.

Forty four of the questionnaires were either not returned or returned blank. The students who had not yet had their menarche and those aged 20 years or more were excluded from this survey of dysmenorrhoea.

The questionnaire had questions on age and date of birth. The first section of the questionnaire also enquired about the characteristics of the menstruation. The second section of the questionnaire was on dysmenorrhoea and its effect and how it was treated; those who had no dysmenorrhoea were not required to answer questions in this section. Dysmenorrhoea was determined by presence of one or more episodes of menstrual cramps or pain in the last 12 months. The severity of dysmenorrhoea was determined by presence or absence of associated symptoms which included: fatigue, dizziness, sweating, headaches, palpitations, nausea, vomiting and diarrhoea; the type of treatment used and its effectiveness. Those with no associated symptoms or single symptom except vomiting and diarrhoea, and did not use any treatment or had effective pain relieve with paracetamol alone were classified as having mild dysmenorrhoea. Those who had multiple symptoms, vomiting and diarrhoea, ineffective use of "over the counter drugs" and hospital treatments were classified as having severe dysmenorrhoea. Those who did not meet the criteria to be classified as mild or severe dysmenorrhoea were regarded as having moderate dysmenorrhoea.

The completed questionnaires were coded and entered into Statistical Package for Social Sciences (SPSS) version 10.0 for windows (SPSS Inc., Chicago; II). After the determination of the degrees of severity of dysmenorrhoea a cross tabulation was done with the limitations on activities. Chi-square test (χ^2) and p-values were calculated to determine if significant differences existed between the grades of severity of dysmenorrhoea and school absenteeism.

Results

Four hundred and fifty six (91.2%) of the 500 students sampled had their questionnaires completed and returned. All the students who returned their completed questionnaires had stated their ages and dates of birth in response to the first question on the questionnaire. Three girls who have not had their menarche were excluded from the study. The ages of the girls ranged from 14-19 years with a mean of 16 ± 0.93 years and median age of 16 years. The mean age at menarche was determined to be 12.5 ± 1.28 years. The prevalence of dysmenorrhoea was 74.4% (CI 95%, 72.5-76.3%) among the girls in this survey; and 25.6% had no dysmenorrhoea. Table 1 shows the distribution of the ages of 453 adolescent girls and the breakdown of the various grades of severity of dysmenorrhoea. In this study 82.9% (n=333) of those with dysmenorrhoea who stated the duration of dysmenorrhoea had pains that lasted beyond the first day of the cycle. About 59.8% of the respondents with various degrees of dysmenorrhoea have their symptoms recurring in most or all cycles.

Table 1: Age distribution and severity of dysmenorrhoea in 453 adolescent girls of a Senior Secondary School in Accra

Age	Dysmenorrhoea				Total (%)	χ^2	p-value
	None	Mild	Moderate	Severe			
14	6	1	2	1	10 (2.2%)	4.16	0.245
15	30	12	26	20	88 (19.4%)	5.68	0.128
16	51	36	75	32	194 (42.8%)	0.79	0.851
17	25	22	59	24	130 (28.7%)	4.99	0.172
18	3	9	7	8	27 (6.0%)	8.32	0.040
19	1	2	1	0	4 (0.9%)	3.09	0.378
Total	116 (25.6%)	82 (18.1%)	170 (37.5%)	85 (18.8%)	453 (100%)	X	X

Table 2: The effect of Dysmenorrhoea on activities of 331 girls of a Senior Secondary School in Accra

Effects of Dysmenorrhoea	Severity of Dysmenorrhoea		
	Mild n= 81	Moderate n=166	Severe n=84
No activity is limited	50 (61.7%)	32 (19.3%)	9 (10.7%)
Limitation of sleep	5 (6.2%)	31 (18.7%)	17 (20.2%)
Adversely affects mood	26 (32.1%)	99 (59.6%)	28 (33.3%)
Miss some or whole of days classes	0.0%	1 (0.6%)	27 (32.2%)
Miss two days of classes	0.0%	0.0%	3 (3.6%)
Affects other activities	0.0%	3 (1.8%)	0.0%
Total	81 (100%)	166 (100%)	84 (100%)

The distribution for various degrees of severity is also shown in Table 1. The total number of respondents with various degrees of severity of dysmenorrhoea was 337 representing 74.4% of the respondents.

There was a significant association between severity of dysmenorrhoea and absenteeism from classes ($p < 0.0001$). Thirty one or 9.5% of respondents with dysmenorrhoea had absented themselves from class at some time. Those with severe dysmenorrhoea accounted for 96.7% of the class absenteeism ($p < 0.0001$). The ages of the adolescent girls had no significant effect on severity of dysmenorrhoea as shown in Chi-square test (χ^2) and p-values calculated in table 1. The age at menarche had no significant relationship with the prevalence ($\chi^2 = 0.392$, $p = 0.531$) and severity ($\chi^2 = 1.003$, $p = 0.317$) of dysmenorrhoea. Table 2 shows the effect of dysmenorrhoea on various activities in 325 of 337 adolescent secondary school girls with dysmenorrhoea. All those girls who had no dysmenorrhoea were not required to answer this question.

About 83% of those who had dysmenorrhoea experienced their symptoms a few hours before the onset or within the first 2 days of their menses. Nine out of ten girls with dysmenorrhoea reported one or another systemic symptom with the menstrual pain. Fatigue was the commonest associated symptom; reported by 49.4% respondents with dysmenorrhoea. Headache was the second commonest associated symptom reported by 19.2% re-

spondents. The third place was jointly occupied by dizziness and backache reported by 7.8% of respondents. Other associated symptoms were nausea, vomiting and diarrhoea reported by 15.8% of respondents.

Table 3 shows a significantly large number of the girls with mild dysmenorrhoea had no limitation on their activities ($p = 0.002$), another significant finding was that few girls with severe dysmenorrhoea who did not have limitation of any activity. There were significant similarities in the effects of various levels of severity of dysmenorrhoea on sleep limitation and mood disturbances all of which could adversely affect concentration in class. Severe form of dysmenorrhoea was significantly associated with class absenteeism ($p < 0.0001$).

Non-prescription analgesics or over the counter drugs were used for self-medication. Table 4 shows treatments used by 307 respondents in this survey.

The total of 307 is more than the actual number of 265 of respondents with dysmenorrhoea using these medications because about 15.8% have indicated the use of more than one drug.

Paracetamol was used by 51.5% of respondents with various degrees of severity of dysmenorrhoea. Only 8% of those with severe dysmenorrhoea reported significant reduction in their pains compared with 25% for those with mild dysmenorrhoea. Other drugs that were used in the treatment of dysmenorrhoea included buscopan, buscomed, buscolex, efpac, tylenol, menstropain, fenpar,

Table 3: Chi-square (χ^2) test for Severity of Dysmenorrhoea and its effect on some activities of 328 girls of a Senior Secondary School in Accra

Grade of dysmenorrhoea	No activity is limited			Limitation of sleep			Adversely affects mood			Miss some classes		
	freq	(χ^2)	p-value	freq	(χ^2)	p-value	freq	(χ^2)	p-value	freq	(χ^2)	p-value
Mild	50	12.8	0.002	5	9.10	0.011	26	12.3	0.002	0	1.0	0.606
Moderate	32	0.10	0.954	31	10.05	0.007	99	45.2	0.0001	1	8.4	0.015
Severe	9	14.9	0.001	17	0.02	0.025	28	10.4	0.0006	30	37.7	0.0001

ACP and drastin. These drugs listed above contain paracetamol, Ibuprofen, aspirin or a spasmolytic or a combination of the above. One per cent of the respondents with dysmenorrhoea indicated the use of herbal drugs but no particular herbal preparation was mentioned by the few girls who tried that option. Some of the respondents with dysmenorrhoea (3.3%) had treatment in hospital with drugs they could not name. These drugs may be prescription drugs for management of dysmenorrhoea following failure of self-medication with "over the counter" medications.

Table 4: Medications used in the treatment of dysmenorrhoea by 265 girls of a Senior Secondary School in Accra

Drug	Frequency	Percent (%)
Paracetamol	158	51.5
Ibuprofen	52	16.9
Aspirin	13	4.2
A drug from hospital	10	3.3
Oral contraceptive pill	3	1.0
Herbal medicine	3	1.0
A drug from pharmacy	35	11.4
Other drugs	33	10.7
Total	307	100.0

Discussion

The prevalence of dysmenorrhoea is highest in adolescent women which is a significant proportion of the physically active female population. A number of studies have tried to determine the prevalence of dysmenorrhoea with estimates ranging from 20-90%, depending on the measurement method used^{1,9}. In this study the prevalence of dysmenorrhoea was 74.4% vs. 72.4% by survey of all the 19year old women in the city of Gothenburg Sweden^{1,11}, and 72% from Nigeria^{12,13}. Dysmenorrhoea has its onset 6-12 months after menarche, peaking during the last teen years and early twenties, its prevalence and severity then declines gradually with age influenced partly by increasing parity in later years of a woman's life^{14,15,16}. This effect of age and parity on dysmenorrhoea

has not been shown in this study because respondents in this study are adolescent girls who are nulliparous.

The observed mean age at menarche in this study was 12.5 ± 1.28 years which is about a year earlier than the mean age at menarche of 13.4 ± 1.4 years in a study of menstrual patterns of adolescents at the Obafemi Awolowo University Ile-Ife, Nigeria¹². There was no relationship between age at menarche and prevalence or severity of dysmenorrhoea in this study which contrasts findings by Sundell *et al* in which prevalence and severity were significantly associated with age at menarche¹⁷.

Dysmenorrhoea is a cause of recurrent short term school absenteeism in adolescent girls and a cause of work absenteeism in women of reproductive age^{2,4,9}. An estimated 10-15% of women experience monthly menstrual pain severe enough to prevent normal daily function at school, work or home^{2,4,9}. In this study 15.9% of respondents reported limitations of sleep which could affect concentration in class and 9.2% of respondents with dysmenorrhoea reported missing classes which is lower than 38% reported by Banikarim *et al*⁹.

Similar studies in Europe and North America reported that approximately 15% of adolescent girls had severe dysmenorrhoea^{1,2,13,14} vs. 18.8% in this study. Though dysmenorrhoea is not a life threatening condition on its own, monthly recurrence of severe symptoms represent a significant morbidity with profound negative impact on day to day life with compounding emotional distress brought on by the pain. Morbidity in the form of severe dysmenorrhoea leading to school absenteeism in 35.3% of respondents in this study with severe form of dysmenorrhoea can adversely affect school performance and the girls' future.

In this study up to 73.9% reported some reduction in pains on drugs used for self-medication. The practice of self-medication appears to be wide spread in the adolescent population with dysmenorrhoea. Other studies of dysmenorrhoea have also shown that the practice of self-medication and other remedies are common^{9,15,16}. Only 3.3% in this study had ever visited hospital to seek treatment for their menstrual pains; resorting to hospital probably after some self-treatment had proved ineffective.

Non-steroidal anti-inflammatory drugs are highly effective in treating dysmenorrhoea, especially when they are started before the onset of menses and continued through day 2^{1,2,3,4,7,8}. They are readily available, relatively inexpensive, and have a low side effect profile when used cautiously in those who have no contraindications or allergies to these drugs. The prognosis for primary dysmenorrhoea is excellent with the use of non-steroidal anti-inflammatory drugs^{7,8}.

In this study 51.5% of respondents took paracetamol for self-medication but only 8% of those with severe dysmenorrhoea reported reduction in their pains. Brufen and aspirin can be purchased without prescriptions and are more effective than paracetamol but only 21% of respondents used them for self-medication with 20% of users reporting total relief of their symptoms.

One per cent of respondents took oral contraceptive pill with all reporting reduction or total pain relief. Oral contraceptives are effective in about 90 per cent of patients with primary dysmenorrhoea^{1,18,19}. The use of the combined oral contraceptive pill in adolescents for the treatment of dysmenorrhoea has the added advantage of reducing menstrual blood loss and correcting dysfunctional uterine bleeding. The use of oral contraceptive pill by the adolescents would however require education of the adolescent girl, school authorities and parents since this can encourage sexual promiscuity by some girls.

Conclusion

This study shows that dysmenorrhoea is common among girls of this Senior Secondary School in Accra, Ghana. One in three girls with severe form of dysmenorrhoea experiences some adverse effect on their academic activities in the form of class absenteeism.

Recommendations

School absenteeism on the part of those with severe dysmenorrhoea and morbidity associated with dysmenorrhoea can be reduced if a register of affected students is kept at the school dispensary so that the affected students can be supplied with some non-steroidal anti-inflammatory drugs to start taking a day or two prior to commencement of their menses.

Limitations

This study was done in only one senior secondary school in an urban setting; the findings may not be same for girls from other segments of the populations, the study did not look at the effect of dysmenorrhoea on sports and other social activities in school, physical examination was also not done on the students to identify the few student who may have secondary dysmenorrhoea. Some of the limitations associated with this study and cross sectional studies in general could be well addressed by prospective longitudinal studies.

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