Original Research Article

Prevalence of Dysmenorrhea and Related Co-morbidities among Adolescent Female Students in a Tertiary Institution in South South Nigeria

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Abstract

Dysmenorrhoea with its co-morbidities are about the common gynaecological disorders among adolescent girls. The prevalence of dysmenorrhoea and its co-morbidities are largely unreported and as a result, no national or international attention has been paid to it. This type of study has not been done in this part of the country. It therefore became necessary to evaluate the occurrence of dysmenorrhoea and its co-morbidities among adolescent girls in a tertiary institution in South South Nigeria and compare it with similar ones elsewhere. The cross-sectional study was carried out using a structured questionnaire that captured dysmenorrhoea and its co-morbidities. A total of one thousand students were used for the study. Our results show that 78.5% of respondents had dysmenorrhoea. 34.6% had irregular menstrual cycles, 33.3% had dysmenorrhoea from onset of menarche. Dysmenorrhoea interferes with daily routines in 60.3% of dysmenmorhoeics. Academic work and social live was affected in 72.5% and 66.2% of respondents respectively. There was a positive correlation between irregular menstruation and dysmenorrhoea. There was also a negative correlation between dysmenorrhoea and academic, social and other daily routines. We conclude that the prevalence of dysmenorrhoea is high in the tertiary Institution and is negatively correlated with academic, routine and social activities.
Keywords: Dysmenorrhoea, Co-Morbidities, Adolescent, Female, Undergraduates.

INTRODUCTION

Dysmenorrhoea coined from the Greek word for "painful monthly bleeding" (Vlachou *et al.*, 2019) is about the most common gynaecological problem among adolescent menstruating girls (Dawood, 1982, Emans *et al.*, 2005). This condition may be mild, moderate or severe depending on the subject's description, level of limitation of activities and requirement for medication (Dawood, 1985).

Dysmenorrhoea could be primary or secondary. In the primary, there is no identifiable pelvic pathology and typically occurs in the first few years after menarche. Secondary dysmenorrhoea is associated with a pelvic pathology including endometriosis, adenomyosis, pelvic congestion syndrome, pelvic inflammatory disease etc (Twigg, 2002).

Many theories, psychological, biochemical and anatomical, have been used to explain the etiology of dysmenorroea (Khou & Shields. 2020). The pathophysiology of dysmenorrhoea is not completely understood but several propositions have been made. Some of the factors include an increase in the synthesis of prostaglandins, uterine contraction, anatomical abnormalities of the reproductive structure, increased oxidative stress, and lipid peroxidation, (Yebs *et al.*, 2004; De Sanctis *et al.*, 2016; Mrugacz *et al.*, 2013). Apart from the abdominal pain, other symptoms that may be associated with dysmenorrhoea include vomiting, headache, dizziness, fatique and mood changes (Ferries-Rowes *et al.*, 2020). Several factors are known to promote the development of dysmenorrhoea. These factors include early menarche and irregular menstruation (Al-Matouq *et al.*, 2019), smoking, high basal metabolic rate nulliparity, long and heavy menses (El-Gilany *et al.*, 2005) as well as family trends (Juang *et al.*, 2006; Gordley *et al.*, 2000; Parveen *et al.*, 2009).

Dysmenorrhoea is one of the most common gynaecological concerns among all menstruating patients regardless of age and race (Emans *et al.*, 2005). The prevalence of dysmenorrhoea varies widely among females of reproductive age. De-Sanctis *et al.*, (2016) reported a95% prevalence on Oman. In Nigeria,

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Damilola *et al*., (2017) reported a prevalence of 73% and Fawole *et al*., (2021), 72%.

The effects of dysmenorrhoea on affected females are also reported. Agarwal and Agarwal (2020) reported that 2–29% of affected females have severe dysmenorrhoea which could affect their health or activities. Absentism was reported in 13.1% (Damilola *et al*., 2017), 69.78% (Gagua *et al*., 2012). There is also effect on the social, economic, emotional and psychological life of affected females (Ferries-Rowes *et al*., 2020; Emans *et al*., 2005, Twigg, 2002, De Sanctis *et al*., 2016).

The above literature review indicates that dysmenorrohoea is a common occurrence in females of reproductive age especially in adolescence with economic, physical and emotional effects on females so affected. Despite findings from all these studies, not much attention has been given to it as to make programs aimed at creating awareness as well as preventing or reducing its effect on sufferers. Moreso, this study has not been conducted in this part of the country. It therefore became necessary to assess the prevalence of dysmenorrhoea and it related co-morbidities in this part of the country and compare our results with those of other studies.

MATERIALS AND METHODS

Study Population and Setting

The study group comprised 1000 adolescent female undergraduate students of the University of Calabar, Calabar, Nigeria. The University was chosen due to its large population of students drawn from different parts of the country. The University which was established in 1975 currently has over 40000 thousand students many of whom are females (https:/www.unical.edu.ng). Calabar is a cosmopolitan city and serves as the capital of Cross River State in South South Nigeria. It is also a multi-cutural and social town. Most of the residents of Calabar are civil servants and traders. It is home to two tertiary Institutions.

Research Design

The study was a descriptive cross-sectional quantitative study conducted on 1000 female adolescent undergraduate students of the University using a structured questionnaire.

Research Questions

1. What is the prevalence of dysmenorrhoea among female undergraduate students in the University of Calabar?
2. What is the effect of dysmenorrhoea on quality of life and study of female undergraduate students at the University of Calabar?

Sampling Technique

The study employed a school-based cross-sectional survey design on adolescent female students of the University. Sample selection was by multi-staged sampling technique using a questionnaire. The criteria used included age ranges of the students, menstruation and being undergraduate student of the school.

Sample Size Determination

The sample size for this study was obtained using Yamane formula (Yamane, 1970) thus: n = N/1+N(e)²

Where n= minimum sample size, N= population of female students in University of Calabar, e=sampling error (0.05).

Study Instrument

The instrument used was a semi-structrued questionnaire prepared with reference to previous studies (Ogunyemi *et al*., 2022). The questionnaire had 16 items which included the students' biodata, history of dysmenorrhoea, age at menarche and onset of dysmenorrhoea and regularity of menses as well as co-morbidities and the effect on academic and other activities. The questionnaire was divided into 4 sections namely: Section A (Sociodemographic data), section B (Exploring the prevalence of dysmenorrhoea and related factors), section C (Exploring the effect of dysmenorrhoea on quality of life) and section D (contraceptive– use among dysmenorrhoeics). Questionnaires were administered after lectures. The students were assured of confidentiality and anonymity and were encouraged to give honest responses to questions asked. Questionnaires were distributed after being validated.

Data Collection

The students were first enlightened on the aim of the study. It was distributed during class sections and members of the research team waited to collect the responses to reduce the loss of questionnaires. Informed voluntary consent was obtained from all participants.

Ethical Approval

Ethical approval for this study was obtained from the Research Ethics Committee of the University of Calabar Teaching Hospital, Calabar. Permission was also obtained from the Registrar of the University of Calabar. Informed consent was obtained from each of the participants.

Statistical Analysis

Data were presented using descriptive statistics like frequency comparative percentages, charts. Pearson's Correlation and Chi Square test were used for data analysis for relationships between variables.

RESULTS

Sample Characteristics

Table 1 shows that out of a total of 1000 female undergraduates or respondents, 78.5% of them have experience with dysmenorrhoea, 56.4% of them

developing the condition at the ages of 15 to 20 years. The results also show that 66.8% of dysmenmorhoeic students develops the condition after an initial pain-free periods. About a third of respondents (35.4%) have their menarche at the ages of 9 – 12 years while 39.4% of them have theirs at the ages of 13 – 16 years. The result shows that 34.6% of respondents have irregular menstruation while 44.7% have regular menstruation. Concerning contraceptive use among dysmenorrhoeic participants, only 25% of them uses contraceptives, out of which 78.1% uses oral pills and 22%, condoms.

As seen in Table 2, 20.4% of the dysmenmorhoeic students have severe pains while 45.4% have moderate pains (65.8% moderate - severe pains). In 60.3% of the dysmenmorhoeic students, the condition negativity imparts on their daily routines and in 72.5%, their academic life is affected. Social life is affected in 66.2% of the cases.

Table 3 shows that age at menarche (r=0.035, P<0.05) and irregularity (r=0.091, P<0.05) of menstruation are significantly correlated with dysmenorrhea while use of contraceptives is not (r=0.007, P>0.05).

Table 4 shows a significant relationship between dysmenorrhoea and disruption of daily routines (chi = 14.192, df = 1). Dysmenorrhoea was negatively related with academic activities (chi = 11.105, df = 3, P<0.05). There is no significant relationship between dysmenorrhoea and social life.

Table 1: Prevalence, age at menarche, onset of dysmenorrhoea, use of contraceptives and regularity of menstruation

Variable	Sub-Variable	n (%)
Dysmenorrhoea experience	Yes	785 (78.5%)
	No	174 (17.4%)
	Not sure	41 (4.1%)
Age of dysmenorrhoeic respondents	9-14	313 (39.9%)
	15-20	443 (56.4%)
	21-30	29 (3.7%)
Commencement of dysmenorrhoea	At menarche	261 (33.3%)
	After a period of painless menstruation	524 (66.8%)
Age at menarche	9-12	354 (35.4%)
	13-16	394 (39.4%)
	17-20	249 (24.9%)
Regularity of menstrual flow	Regular	447 (44.7%)
	Irregular	346 (34.6%)
	Not sure	277 (27.7%)
Uses pregnancy preventive methods	Yes	196 (25.0%)
	No	589 (75.0%)
Methods of contraception	Pills	153 (78.1%)
	Injectable	9 (4.6%)
	IUCD	0 (0.0%)
	Withdrawal	12 (6.1%)
	Condom	22 (11.2%)

Table 2: Contraceptive use, severity and effects of dysmenorrhea

Variable	Sub-Variable	n (%)
Severity of menstrual pain	Mild	197 (25.1%)
	Moderate	356 (45.4%)
	Severe	160 (20.4%)
	Very severe	72 (9.2%)
Painful menstruation interferes with daily routine	Yes	473 (60.3%)
	No	312 (39.7%)
Painful menstruation effects academic work	Yes	569 (72.5%)
	No	216 (27.5%)
Painful menstruation effects social life	Yes	520 (66.2%)
	No	265 (33.8%)

Table 3: Correlation between dysmenorrhea and the different variables

Variable	Correlation (r)	P-value
Age at menarche	0.035	P<0.05
Irregular menses	0.091	P<0.05
Contraceptive use	0.007	P>0.05

Table 4: Relationship between dysmenorrhea and different variables by Chi Square test

Variable	Chi square	Df	P-value
Daily activities	14.192	1	P<0.05
Academic Life	11.105	3	P<0.05
Social Life	Not significant		

DISCUSSION

The study was aimed at determining the prevalence of dysmenorrhoea and its co-morbidities and associated factors among female adolescent undergraduates in a public University in South South Nigeria.

This study showed a high prevalence of dysmenorrhoea (78.5%) among these University students. This figure is comparable to those recorded in previous studies in Zambia, 75.9% (Nyirenda *et al*., 2023), Uganda, 75.8% (Nakam *et al*., 2019), Ghana 74% (Osonugar and Ekor, 2019), India 79.6% (Agarwal and Agarwal, 2010). It is however lower than in Egypt which had 92.9% (Shehata *et al*., 2018), Ireland, 91.5% (Durand *et al*., 2021), Iran 89.1% (Habibi *et al*., 2015) and Greece, 89.2% (Vlachou *et al*., 2019). Lower prevalence than than what we obtained from this study was seen in Japan, 15.8% (Ohde *et al*., 2015), China 41.7% (Hu *et al*., 2020) and Lebanon 26.8% (Kabbara *et al*., 2014). In Nigeria, Fawole *et al*., (2011) found a 72% while Damilola *et al*., (2017) got 83.1% prevalences. The disparities in prevalence reported in the various studies could be attributed to the many factors that affect the entity, dysmenorrhoea. These factors include drugs, variations in study settings, methods of assessments, racial and ages of participants among others (Osonuga and Ekor, 2019; Ju *et al*., 2014). Nonetheless, despite such differences, the prevalence of dysmenorrheoa can still be said to be high and what should be described as a public a public health issue and which requires a global concern.

Most dysmenorrhoeic (56.4%) students were between the age of 15 – 20 years. The age at menarche of most of the respondents in this study is 13 – 16 years which is similar to the average range of menarcheal ages observed by Aribo, *et al*., (2015), Esan et al (2024) and Al Motouq *et al*., (2019). The prevalence of irregular menstruation among the dysmenorrhoeics was 34.6% indicating that the larger population of girls have regular menstruation. Some studies associate irregular periods with dysmenorrhoea (Vilsinkaite *et al*., 2019; Al Matouq *et al*., 2019).

Concerning the onset of dysmenorrhoea, only 33.3% of dysmenorrhoeics had the condition from menarche while 66.8% of them developed dysmenorrhoea after a period of painless menses. Bakhsh *et al*., (2022) discovered that 92.3% of dysmenorrhoea cases are primary, meaning there are no associated with any pelvic pathology. Our findings therefore suggests that there could be other factors that play a role in the etiology of dysmenorrhoea other than the primary menstrual process (Khou and Shields, 2020).

Our study showed that 45.4% and 20.4% of the subjects have moderate and severe pain respectively. This was lower than the report by Okoro *et al*., (2013) who noticed 54% and 29.8% for moderate and severe pains respectively. On the other hand, Loukid and Hilali (2020) reported 58% while Abu Helwa *et al*., (2018) and Garland *et al*., (2016) reported 80.34% and 50% respectively of the occurrence of moderate to severe pains among dysmenorrhoeics. These large variations in the degree of pain could be attributed to the many factors that affect dysmenorrhoea like heavy menses, pelvic inflammatory disease, endometriosis, age, nulliparity, age at menarche, age of subjects well as genetic life style, emotional status and social factors (Okoro *et al*., 2013; Juang *et al*., 2016; Gordley *et al*., 2000; Parveen *et al*., 2009).

We observed that only 25% of dysmenorrhoeic respondents are on contraceptives, 78.1% who are on oral contraceptive pills combined contraceptive pills are used to treat dysmenorrhoea and reduce the pains significantly (Algemo-Anciro and Valeria, 2024; Walling, 2006; Wong *et al*., 2009). This results shows the low patronage of the respondents to contraceptives usage.

In 60.3% of the dysmenorrhoeics, their performance of daily routines was negatively affected. This however is higher than the report presented by Esan *et al*., (2024) who reported a 37.8% and Garland *et al*., (2016) who reported a 50% affectation of daily routines but lower than 88.5% affectation of daily routines reported by Tas and Zincir (2021). Multiple factors like severity of pains, social factors, lifestyle (Gordley *et al*., 2000).

Academic work was negatively affected in 72.5% of the students, a finding similar to those made by Gagua *et al*., (2012) and Fawole *et al*., (2009) were

academic activity was affected in 69.7% and 72% of the students respectively. This was higher than the 59.4%, 53.3% and 57.6% obtained by Abd El-Mawgod *et al*., (2016), Loto *et al*., (2008), and De Sanctis *et al*., (2016) respectively. The differences in the level of affectation of academic work may be attributed to the differences in cultural, social and academic settings as well as access to medical treatment between the different centres studied.

Social life is also negatively affected in this study. Dysmenorrhoea affects the social life of 66.2% of the dysmenorrhoeic students which is higher than the 33.8% reported by Esan *et al*., (2024) but lower than the 78.8% documented by Tas and Zincir (2021). Differences in social, economic, cultural and academic settings might have been responsible for the variations on the social life of respondents.

There was no correlation (-0.035) at P<0.05 between age at menarche and dysmenorrhoea. This agrees with previous studies that the prevalence of dysmenorrhoea is higher with early menarche (Wronka *et al*., 2013; Hatmanti *et al*., 2022). However, our findings were different from those of Akbarzadeh *et al*., (2017) who found no significant between the age at menarche and dysmenorrhoea.

We report here a significant relationship (P<0.05) between menstrual irregularity and dysmenorrhoea (r = 0.091). This positive relation is similar to the findings by previous authors (Zairina and Utomo, 2023). We also report that there is no significant relationship between use of contraceptives and dysmenorrhoea (r = 0.007, P>0.05). This suggests that use of contraceptives may not affect the prevalence of dysmenorrhoea.

Dysmenorrhoea has a negative effect on daily activities. Our findings of a significant relationship (P< 0.05) between dysmenorrhoea and daily routines (chi = 14.192, df = 1) is similar to the reports from previous studies (Esan *et al*., 2024; Tas and Zinicir, 2021). This strengthen the fact that dysmenorrhoea has negative effect on daily activities.

The academic life of dysmenorrhoeic student was significantly affected by the (P<0.05, chi = 11.105, df = 3) by the condition. This observation is similar to those made by previous authors (Damilola *et al*., 2017; Loukid and Hilali, 2022; Apbd El-Mawgod *et al*., 2016). This shows that dysmenorrhoea is a serious threat to academic life.

Our study did not find any significant effect of dysmenorrhoea on social life. This may be attributed to several factors like severity of pain, expected gain and lifestyle.

CONCLUSION

We conclude that the prevalence of dysmenorrhoea and related co-morbidities is high among female undergraduate students. There is therefore, a need for more awareness and programs from government and cooperate bodies to assist in the management of this common condition among females.

Conflict of Interest: The authors declare there are no conflict of interests in this study.

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