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Menstrual Characteristics among Female Students in University of Port Harcourt and It's Risk Factors

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Background: For women of reproductive age, menstruation is a common and natural occurrence. This is characterised by bleeding from the endometrium brought on by the removal of the functional layer of the endometrium of the uterus. Women from all over the world are affected by menstrual-related disorders, which are increasingly one of the main triggers for gynaecological appointments.
Aim: The purpose of the current study is to identify the menstrual characteristics, menstrual difficulties, and risk factors among female students at the University of Port Harcourt.
Materials and Methods: A questionnaire were distributed to one hundred and forty (140) female undergraduate students each at the University of Port Harcourt for this study, which was done as a cross-sectional research study in 2022.
Results: Due to a variety of factors that contribute to the irregularity of menstruation patterns, the investigation revealed that menstrual problems are common among female students. Dysmenorrhea is reported to be the most frequent (47.1%) and common menstrual characteristics or symptom among female students. Other common menstrual symptom found in this study were acne, body pains, tender/swollen breasts, fatigue, fever, bloating, nausea, diarrhoea and frequent urination which is similar to other studies.

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Conclusion: The result of this study would help enlighten females and physicians on the menstrual characteristics, some common disorders among female students, and the risk factors associated to the menstrual characteristics.

Keywords: Menstrual characteristics; age of menarche; dysmenorrhea.

1. INTRODUCTION

The female reproductive system serves a number of purposes. The egg cells, also known as ova or oocytes, are made in the ovaries. The oocytes are subsequently moved to the fallopian tube, where a spermatozoa may fertilise them. The uterus, where the uterine lining has grown in response to the regular hormones of the reproductive cycle, receives the fertilised oocyte next. The fertilised egg can implant into the thicker uterine lining once inside the uterus and continue to grow there. In the absence of implantation, menstrual flow sheds the uterine lining. The female reproductive system also creates female sex hormones, which keep the reproductive cycle in check [1]. The monthly bleeding known as "menstruation" in women is also known as "period." Females' bodies eliminate the monthly accumulation of the endometrium's functional lining during menstruation. Through the little opening in your cervix, menstrual blood and tissue are expelled from your body through the vagina. The uterus lining thickens during the monthly menstrual cycle to get ready for pregnancy. Oestrogen and progesterone hormone levels start to decline if pregnancy does not occur. Oestrogen and progesterone at extremely low levels signal the body to start menstruating. [2,3,4,5].

Women from all over the world are affected by menstrual-related disorders, which are increasingly one of the main triggers for gynaecological appointments. Numerous individual, family, economical, and environmental factors contribute to them [4,5,6].

The female reproductive system gradually ceases producing the female hormones required for the reproductive cycle to function throughout menopause. Menstrual cycles may now start to fluctuate and eventually end. A female is regarded as menopausal one year after her periods stop [7]. Hormonal cycles of the hypothalamic-pituitary-gonadal axis occur in females who are of reproductive age (between the ages of 11 and 16), and they recur roughly every month. Up to menopause, the female reproductive system undergoes cyclical alterations during the menstrual cycle. 400 menstruation cycles are typical for premenopausal women during the course of their lifespan [1,2]. Menstruation is the defining feature of the menstrual cycle [8]. The average menstrual cycle lasts 28 days, measured from the first day of one period to the first day of the next. Cycle lengths can range from 21 to 35 days. The amount of blood lost typically ranges from 30 ml to 80 ml, and the bleeding lasts for 2 to 8 days. The typical monthly period of menstruation lasts average five days, which translates into 67 months of menstrual bleeding during a lifetime [8]. The physical characteristics of menstruation, such as flow duration, cycle length, flow volume, and symptoms including headaches, diarrhoea, exhaustion, menstrual pains, and loss of appetite, are known as menstrual characteristics. Menstrual disorders, which can be characterised as an abnormal condition with reference to a person's menstrual cycle, are frequent among females of reproductive age and are a primary cause of gynaecological referrals. Depending on the frequency or volume of the menses, these illnesses change [5].

There exist evidences from some research linking menstrual features to menarche age [9,10,11,12]. According to a cross-sectional study by Dambhare et al. [9] to assess the age at menarche and menstrual patterns among school-age girls in the district of Wardha, Central India, the majority (56.15%) had dysmenorrhoea and (56.16%) had premenstrual syndrome. Premenstrual symptoms and dysmenorrhea were seen as the most upsetting symptoms that affected attendance at school. Headache was the most typical premenstrual symptom (26.74%). 13.9% of students missed school as a result of menstrual-related issues affecting their daily schedule [9]. Adienbo and Erigbali [11] found that participants with a high age at menarche and a long cycle length are more likely to develop dysmenorrhoea during menstruation. Their study involved adolescent females from an indigenous population in the Niger Delta Region of Nigeria. According to a Nigerian study by Tanko et al. [12] a high percentage of the study population had an average menarche age of 15.58 years, experienced regular menstruation with a duration of 4-5 days, and had a low

prevalence of dysmenorrhea. The study was conducted in Kumana Chiefdom, Kauru Local Government Area, and Kaduna State, Nigeria. This suggests a high rate of reproductive success [12].

Additionally, earlier studies have linked menstrual features and their connected risk factors. [13,14]. According to Nwankwo et al.,[13], the average age at which teenage schoolgirls in Enugu, Nigeria, reached menarche was 12.7±1.3 years. Dysmenorrhea, premenstrual dysphoric disorder, and brief menstrual cycles were the most prevalent menstrual disorders, with a frequency of 69.4%. Menstrual abnormalities were strongly linked with age, a later age of menarche, and boarding house residence (P 0.05). The most frequent cause of absences from school was dysmenorrhea [13]. Menstrual cycle irregularity and premature menopause were explored by Bae et al. [14] along with their individual and combined impacts on adult women in Korea. Their research showed that menstrual cycle irregularity substantially correlated with modifiable risk factors like smoking, obesity, and stress. Early menopause has also been linked to lifetime smoking. This revealed that healthy lifestyle habits, such as quitting smoking, managing weight, and reducing stress, were crucial in enhancing the reproductive health of women over the course of their lives [14].

Menstrual Characteristics and Symptoms in Nursing Students in Southern Spain by Abreu-Sánchez et al. [15] revealed that the prevalence of dysmenorrhea was 73.8% (of which 63.3% had primary dysmenorrhea and 10.5% had secondary dysmenorrhea), and that it was more common in women with longer menstrual cycles, heavier bleeding, and those who did not use oral hormonal contraception (OCP). In their qualitative study of female nursing students, Fernández-Martneze et al. [16] (2022) found four pain management and coping techniques for primary dysmenorrhea: pain management strategies; utilising painkillers; selecting the best treatment; and non-pharmacological therapies. They came to the conclusion that nursing students had trouble treating primary dysmenorrhea, self-medicated, were reluctant to consult a doctor, tried non-pharmacological methods, and sought counsel from other women in their family or social group. In their correlational study to evaluate the knowledge and practise of diet on dysmenorrhea and the occurrence of dysmenorrhea among adolescent girls in a chosen nursing college at Kollam, Pankaj et al. [17] found that the relationship between the practise of diet on dysmenorrhea and the occurrence of dysmenorrhea among adolescent girls was inverse.

The University of Port Harcourt's female students' menstrual cycles have never been the subject of a prior study, as of date. Therefore, the purpose of the current study is to identify the menstrual characteristics, menstrual difficulties, and risk factors among female students at the University of Port Harcourt.

2. MATERIALS AND METHODS

One hundred forty (140) female undergraduate students from the University of Port Harcourt participated in the cross-sectional survey, which was carried out in 2022. Age, education level, weight, and height of the respondents as well as their menstrual pattern (age of menarche, menstrual cycle, volume of blood flow, and regularity) were all asked about in the questionnaire, along with their lifestyle habits, history of dysmenorrhea, other menstrual symptoms, and associated risk factors.

3. RESULTS

3.1 Demographic and Menstrual characteristics of female students

In the study population from Table 1, 12.9% of the population are underweight, 20% are Overweight, 12% are obese, and 39.3% of the population have the normal BMI. Within the population, the frequency of females between the age of 23-24 years is the highest and about 74.3% of the population experienced the onset of the menstruation at age of 9-14 years. The average age of menarche from this study is 13years.

Among the population, 47.1% of the females experienced heavy flow of blood during menstruation, 28.6% of the females have menstrual cycle interval of less than 28 days, 60.7% have menstrual cycle interval between 28-32 days, and 5.7% have menstrual cycle interval of more than 32 days. 26.4% have irregular menstrual cycle, 32.1% have regular blood flow, and 41.4% experience both regular and irregular menstrual cycle. It also shows the menstrual symptoms of the participants in the study are Acne/Pimples, Painful period (dysmenorrhea), Body pains, Tender and swollen breasts, Fatigue, Fever, Bloating, Nausea.

Table 1. Descriptive Statistics of Demographic and Menstrual characteristics of female students

Variable	Category	F	(%)
BMI	Normal	55	39.3
	Underweight	18	12.9
	Overweight	28	20.0
	Obesity	17	12.1
	Nil	22	15.7
	Total	140	100.0
Age Range (years)	<21	22	15.7
	21-22	34	24.3
	23-24	49	35.0
	25-26	25	17.9
	27-28	9	6.4
	29-30	1	0.7
	Total	140	100.0
Age of Menarche (years)	9-10	9	6.4
	11-12	39	27.9
	13-14	56	40.0
	15-16	22	15.7
	17-18	12	8.6
	Nil	2	1.4
	Total	140	100.0
Volume of Flow	Heavy	66	47.1
	Light	74	52.9
	Total	140	100.0
Menstrual Cycle Interval	< 28 days	40	28.6
	28-32 days	85	60.7
	>32 days	8	5.7
	Nil	7	5.0
	Total	140	100.0
Regularity of menstrual cycle	Irregular	37	26.4
	Regular	45	32.1
	Sometimes	58	41.4
	Total	140	100.0

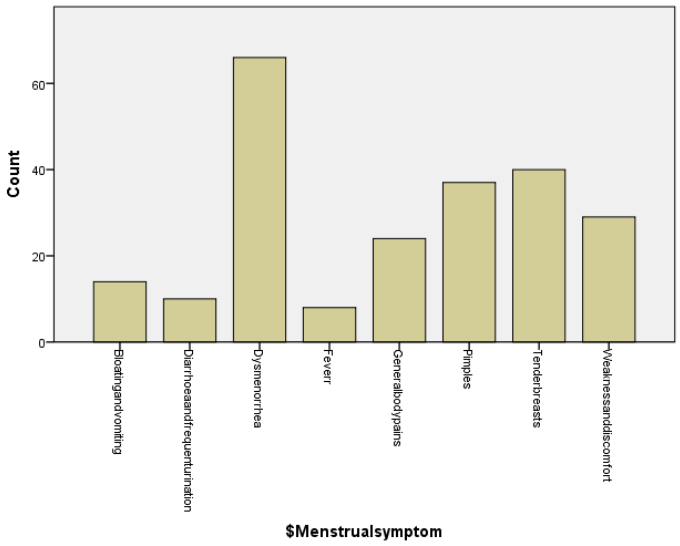

Fig. 1. Menstrual symptom experienced by study population

This figure showed that the most frequent menstrual symptom is Dysmenorrhea (Painful period).

3.2 Relationship between Age, Age of menarche, and BMI with the Menstrual Interval

In our efforts to determine how different factors influenced the length of the menstrual cycle, we discovered that the age of menarche was significantly (p = 0.011) related to the length of the period. Other variables, such as age and BMI, did not, however, demonstrate any appreciable relationships. In Table 2, this relationship is displayed.

3.3 Relationship between Age, Age of menarche, and BMI with Volume of Blood Flow

This study tried to determine how various factors related to blood flow volume. It was discovered that the volume of blood flow is not significantly influenced by age, menarche age, or BMI. In Table 3, this relationship is illustrated.

3.4 Relationship between Age, Age of Menarche, and BMI with Regularity of the Menstrual Cycle

We made an effort to determine the association between numerous parameters and the regularity of the menstrual cycle, and we discovered that BMI was strongly associated with it (p = 0.005). Although other characteristics, such as age and menarche age, did not demonstrate meaningful relationships. Table 4 displays this association.

Table 5 shows the menstrual symptoms of the participants in the study, which includes acne/pimples, painful period (dysmenorrhea), body pains, tender and swollen breasts, fatigue, fever, floating, nausea, diarrhoea and frequent urination. 47.1%, 26.5%, 16.4%, 27.9%, 19.3%, 5.7%, 10%, and 7.1% experienced Dysmenorrhea or painful period, acne, body pains, tender or swollen breasts, fatigue, fever, bloating and nausea, diarrhoea, and frequent urination during their menstrual period respectively.

Table 2. The associations between age, menarche age, and BMI with the length of the menstrual cycle

		Length of Menstrual Cycle			P Value	X^2
		<28 days	28-32days	>32 days		
Age groups	Below 20-20	7	12	1	0.655	7.735
	21-22	11	18	3		
	23-24	15	29	2		
	25-26	5	18	2		
	27-28	1	8	0		
	29-30	1	0	0		
Age of menarche groups	9-10	7	2	0	0.011	19.918
	11-12	10	21	5		
	17-18	1	11	0		
BMI	Underweight	2	13	2	0.461	7.727
	Healthy	17	35	3		
	Overweight	8	15	3		
	Obesity	7	10	0		
	NIL	6	12	0		

Table 3. Relationship between Volume of Blood flow and Age, Age of menarche and BMI

Variables	Category	Volume of Blood flow		P-value	X2
		Heavy	Light		
Age (years)	<21	11	11	0.886	1.727
	21-22	16	18		
	23-24	24	25		
	25-26	12	13		
	27-28	3	6		
	>28	0	1		
Age of menarche (years)	9-10	5	4	0.253	5.352
	11-12	13	26		
	13-14	31	25		
	15-16	10	12		
	17-18	7	5		
BMI	Underweight	6	12	0.64	2.527
	Healthy	26	29		
	Overweight	16	12		
	Obesity	8	9		

Table 4. Relationship between Regularity of Menstrual Cycle and Age, Age of menarche and BMI

Variables	Category	Regularity of Menstrual Cycle			P Value	X2
		Regular	Sometimes	Irregular		
Age (years)	< 21	8	6	8	0.447	9.93
	21-22	7	17	10		
	23-24	17	21	11		
	25-26	11	10	4		
	27-28	2	4	3		
	29-30	0	0	1		
Age of menarche (years)	9-10	1	6	0	0.151	12
	11-12	9	14	16		
	13-14	23	22	11		
	15-16	6	11	5		
	17-18	6	4	2		
BMI	Underweight	2	7	9	0.005	20.115
	Healthy	21	27	7		
	Overweight	5	12	11		
	Obesity	6	8	3		

Table 5. Descriptive statistics of the menstrual symptoms of participants

Variable		Frequency	Percentage (%)
Acne/Pimples	Yes	37	26.5
	No	103	73.6
	Total	140	100.0
Painful Period (dysmenorrhea)	Yes	66	47.1
	No	74	52.9
	Total	140	100.0
Body Pains	Yes	23	16.4
	No	117	83.6
	Total	140	100.0
Tender and Swollen Breast	Yes	39	27.9
	No	101	72.1
	Total	140	100.0

Variable		Frequency	Percentage (%)
Fatigue or Discomfort	Yes	27	19.3
	No	113	80.7
	Total	140	100.0
Fever	Yes	8	5.7
	No	132	94.3
	Total	140	100.0
Bloating and Nausea	Yes	14	10.0
	No	126	90.0
	Total	140	100.0
Diarrhea/Frequent Urination	Yes	10	7.1
	No	130	92.9
	Total	140	100.0

4. DISCUSSION

In order to determine menstrual features and risk factors among female students at the University of Port Harcourt, this study was conducted.

Menarche, a crucial marker of female sexual maturation, occurs during the beginning of menstruation. The average age at which menarche began in this study was 13 years, which is comparable to the average age reported by Anikweet al., [11], but lower than the value of 15.58 years reported by Tankoet al., [13]. We also discovered a statistically significant correlation between the age of menarche and the length of the menstrual cycle in this study. Menstrual disorders can result from either a short or long cycle, and our study has demonstrated that an early age at menarche can affect the length of the cycle, which can reduce reproductive success. This is similar to a study by Amelia et al. [18] that found that a short cycle length, an early age at menarche, and heavy menstrual bleeds were associated with decreased fecundability.

The estimated typical blood loss in 80% of females with normal ovulation is between light and heavy flow, with cycles lasting 21 to 33 days. Accordingly, and in line with Tanko et al. [13], the majority of the females in this study population are probably to have high reproductive success. Few females in the population who suffered from polycystic ovarian syndrome had Heavy blood flow (Hypermenorrhea) in this study.

The remaining 25% of the women had irregular periods, and some of them had polycystic ovarian syndrome, which is characterised by irregular periods, lengthier periods (oligomenorrhea), or prolonged blood flow for longer than 7 to 10 days. In this survey, we also discovered a statistically significant relationship (P=0.007) between menstrual cycle irregularity and BMI, which supports a previous study by Jinju et al. [19] that found a connection between menstrual cycle irregularity and modifiable risk factors like smoking, obesity, and stress.

The primary menstrual ailment among the population was identified as premenstrual menstrual symptoms (PMS). Dysmenorrhea accounted for 47.1% of the students and it was reported to be the most frequent symptom in line with the findings of Dambhare et al*.,* [10], Adienbo and Erigbal, [12], and Nwankwo et al*.,* [14]. In line with findings from earlier studies aforementioned, other typical menstruation symptoms identified in this study included acne, body pains, tender/swollen breasts, fatigue, fever, bloating, nausea, and frequent urination.

Menstrual abnormalities, which affect many women and are the leading cause of gynaecological consultations, include oligomenorrhea, hypermenorrhea, metrorrhagia, dysmenorrhea, and premenstrual syndrome (PMS). Menstrual irregularities can be caused by a variety of medical conditions, including hormonal imbalances, pregnancy, cancer, infections, illnesses, trauma, and the use of specific medications. The causes of irregular menstruation also vary depending on the age at which a woman reaches menarche [20].

5. CONCLUSION

Due to a variety of circumstances that contribute to the irregularity of menstruation patterns, menstrual disorders are common among female students. Premenstrual symptoms were shown to be the most prevalent problem among these students in the current study, followed by heavy bleeding, an irregular menstrual cycle, a lengthier

menstrual cycle, extended blood flow, and dysmenorrhea. Headache, acne, bodily pains, tender/swollen breasts, exhaustion, fever, bloating, nausea, diarrhoea, and frequent urination were the other premenstrual symptoms. Menstrual discomfort and menstrual cycle disruption are frequent. To improve the quality of life of the patients, it is crucial to inform female patients who present to their primary care physicians and gynaecologists with these symptoms.

6. RECOMMENDATION

There is a need to enlighten students in University of Port Harcourt on the importance of healthy lifestyles, and encourage the students to visit the physicians for regular physical and reproductive health check-up.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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