

# Effect of Premenstrual syndrome on School Absenteeism and academic performance amongst Female Secondary School students in Sabon Gari Local Government Area, Kaduna State, Nigeria

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## Abstract

*The commencement of menstruation is the hallmark of female pubertal development and active reproductive life. It may be associated with somatic and psychological symptoms of premenstrual syndrome which may affect school attendance and performance. This study was conducted to determine the effect of premenstrual syndrome (PMS) on school absenteeism and academic performance among female secondary school students in Kaduna State, Nigeria. It was a nested case-controlled study conducted on 300 female students enrolled in secondary schools in Sabon Gari Local Government Area of Kaduna State, Nigeria in March 2021. Data collected were analyzed using Statistical Package for Social Sciences version 20 with  $p < 0.05$  considered as significant. Results generated indicate that the mean age of participants was  $16.2 \pm 1.6$  years. The prevalence of premenstrual syndrome was 226 (75.3%). One hundred respondents (44.2%) were absent from school at any point of time as a result of the PMS. Generally, there was a significant association between the presence of PMS and school absenteeism ( $p = 0.001$ , OR = 3.346). Among the symptoms of PMS, there was a significant relationship between the presence of tension ( $p = 0.043$ ) and mood swings ( $p = 0.048$ ) and the occurrence of school absenteeism. Furthermore, PMS was perceived to affect reading, homework and test grades of respondents. The self-reported prevalence rate of PMS among respondents was 76.1%. This disorder was significantly associated with school absenteeism and low performance grades among affected respondents. There is need to make policies that will encourage school girls to attend schools during their menses.*

**Keywords:** Premenstrual Syndrome, secondary schools, girls, school absenteeism, Kaduna State

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## **INTRODUCTION**

The occurrence of menses is a hallmark in any female child's reproductive journey as it signifies the beginning of reproductive capacity (Widholm & Kantero, 1971). Unfortunately, it is often associated with some physical and emotional symptoms that can affect all aspect of life (Gudipally & Sharma, 2022). These symptoms are referred to as PMS (Gudipally & Sharma, 2022).

They often occur before the commencement and disappear within a few days of commencement of menses (Yesildere & Orsal, 2020). The symptoms include changes in appetite, weight gain, abdominal pain, back pain, low back pain, headache, swelling and tenderness of the breasts, nausea, constipation, anxiety, irritability, anger, fatigue, restlessness, mood swings and crying (Yesildere & Orsal, 2020). These symptoms have the potential to affect the overall activities of any girl child including school attendance and academic performance due to their nature and also the duration of the symptoms.

The effect that PMS has on school attendance and academic performance among the girl child is very important especially in our environment where girl child education is a major challenge. According to the Nigeria Demographic and Health Survey, more boys than girls attend primary and secondary school (Nigeria Demographic and Health Survey, 2019). In Nigeria, the total number of children attending secondary school divided by the official secondary school-age population which is referred to as Gross Attendance ratio (GAR) at the secondary level is 67% for females and 74% for males (Nigeria Demographic and Health Survey, 2019). Occurrence of PMS in the girl child that affects school attendance has the potential to further worsen this inequality and possibly worsen academic performance even in instances where school attendance is not significantly affected.

The association between school absenteeism and PMS has been documented by some researchers (Arafa et al., 2022; Tadakawa et al., 2016). It was reported that about 1 in 9 Japanese students were absent from school due to the occurrence of PMS. Academic performance has also been said to be affected by the occurrence of PMS. This is probably so due to the nature of PMS symptoms that range from physical to psychological manifestations. Depression has been reported one of the commonest symptoms associated with poor academic performance among students with PMS in Turkey (Adresi et al., 2020)

This study explored the effect of PMSs on school absenteeism and academic performance among female secondary school students in Kaduna State, Nigeria.

## **MATERIALS AND METHODS**

### **Study Area**

It was a nested case-controlled study conducted on 300 female students enrolled in secondary schools in Sabon Gari Local Government area of Kaduna State, Nigeria.

It was conducted in March 2021. Registered female students enrolled in public secondary schools in the study area who meet the inclusion criterion were recruited for the study.



### **Inclusion and Exclusion criteria**

Only female secondary school students who have attained menarche for at least one year with regular menstrual flow for at least the last three (3) consecutive menstrual periods were included in the study. Students with new-onset or irregular menstrual flow, those on contraceptives, those with history of miscarriage within the last six (6) months, those with known medical conditions including psychiatric disorders and those that were pregnant were excluded from the study.

### **Sampling technique**

A multi-stage cluster sampling method was used in enrolling participants for this study. Sabon Gari Local Government Area was selected from the twenty-three (23) local government areas in Kaduna State due to proximity to the researchers. The list of all public secondary schools in Sabon Gari Local Government Area was then obtained from the State Ministry of Health and three (3) schools were randomly selected using paper ballot. The third stage of cluster involved the selection of hundred (100) girls using equal allocation who met the inclusion criteria from each of the three secondary schools.

Initially, a cross sectional approach was used to obtain the prevalence of PMS among the respondents. The sample size was calculated using the Fisher's formula with prevalence of PMS of 77.8% obtained from a study in Nigeria (Amu & Bamidele, 2014). A sample size of 294 was obtained which was rounded up to the nearest 10th (300). The respondents that had a history of PMS were then grouped as the cases while those without history of PMS were grouped as control.

Awareness about the study was then created among students at the respective schools prior to the day of data collection and the students were requested to obtain permission from their parents. A questionnaire pre-test was done during awareness creation. The female students were separated from their male counterparts during the period of data collection to prevent interference.

Consenting participants that fulfilled the inclusion criteria had an interviewer administered questionnaire. The American College of Obstetricians and Gynecologists (ACOG) guideline for the diagnosis of PMS (American College of Obstetricians and Gynecologists, 2020) was used to assess the presence and pattern of PMS. The impact of PMS on school attendance was assessed using the number of days a student was absent from school as a result of PMS.

Academic performance metrics was assessed in terms of reading, homework and test grades. A 3-point Likert scale was used to assess the extent to which the students feel that these parameters were negatively affected by the occurrence of perimenstrual syndrome. The 3 points were 1: Low effect, 2: Moderate effect, 3: High effect.

**Data Analysis**

Their responses were analysed using Statistical Package for Social Sciences version 20 with  $p < 0.05$  considered as significant. Categorical variables were presented as frequency and percentages while continuous variables were expressed as mean and standard deviation. Student’s t test and Chi square test were used for inferential statistics for continuous and categorical variables respectively.

**Informed Consent**

Permission to conduct the study was obtained from Ministry of Health, Kaduna State on 24<sup>th</sup> February 2021. The ethical approval number is MOH/ADM/744/VOL.1/969. NHREC/17/03/2018.

**RESULTS**

**Table 1: Baseline characteristics and pattern of menstruation**

Variables	Values
Age, years	16.2 ± 1.6
Age of menarche, years	13.4 ± 1.8
Duration of menstrual cycle, days	23.1 ± 6.4
Duration of menstruation, days	4.8 ± 1.5
Frequency, per year	8.0 (5.0 – 12.0)
Highest Duration, days	2.0 (1.0 – 3.0)
Severity (n=183)	
Mild	85 (46.4 %)
Moderate	75 (41.0%)
Severe	23 (12.6%)

Frequency and Duration are presented as Median (Interquartile Range) while severity is presented as Number (%)

Table 1 shows the baseline characteristics of the respondents and the menstrual pattern.

**Table 2: Perimenstrual syndrome and school absenteeism**

Variables	Frequency (Percentage)		P value
	Yes	No	
PMS	226(75.3%)	74(24.7%)	-
School Absenteeism			
PMS(n=226)	100(44.2%)	126(55.8%)	
No PMS(n=74)	10(13.5%)	64(86.5%)	0.001*

\*Statistically significant

The prevalence of PMS was 226 (75.3%). Out of the 226 students that had a history of PMS, 100 (44.2%) had ever been absent from school at any point of time as a result of PMS.

**Table 3: Analysis of the association between somatic manifestations of perimenstrual disorder and school absenteeism**

Somatic Manifestation		School Absenteeism*		Statistical Analysis	
		Yes	No	OR (95% CI)	P-value <sup>#</sup>
Headaches	Yes	40 (44.9)	49 (55.1)	1.833 (1.081 - 3.109)	0.024
	No	53 (30.8)	119 (69.2)		
Acne or facial skin change	Yes	43 (42.2)	59 (57.8)	1.545 (0.921 - 2.592)	0.098
	No	50 (32.1)	106 (67.9)		
Breast tenderness	Yes	20 (37.7)	33 (62.3)	1.143 (0.611 - 2.138)	0.676
	No	70 (34.7)	132 (65.3)		
Bloating	Yes	46 (41.1)	66 (58.9)	1.659 (0.985 - 2.794)	0.056
	No	42 (29.6)	100 (70.4)		
Easy fatiguability	Yes	57 (40.1)	85 (59.9)	1.400 (0.825 - 2.376)	0.211
	No	34 (32.4)	71 (67.6)		

\*Values are expressed as frequency (percentage) within each row of specific symptom

<sup>#</sup> P-value (Chi Square Test) < 0.05 is significant

OR: Crude Odds Ratio, CI: Confidence Interval, P: p-value

Table 3 shows the association between somatic manifestations of PMS and school absenteeism.

**Table 4: Analysis of the association between psychological manifestations of perimenstrual disorder and school absenteeism**

Psychological Manifestation		School Absenteeism*		Statistical Analysis	
		Yes	No	OR (95% CI)	P-value <sup>#</sup>
Pressure or tension	Yes	44 (43.1)	58 (56.9)	1.703 (1.016 - 2.855)	0.043
	No	49 (30.8)	110 (69.2)		
Mood swings	Yes	62 (40.3)	92 (59.7)	1.696 (1.002 - 2.870)	0.048
	No	31 (28.4)	78 (71.6)		
Appetite change	Yes	38 (38.8)	60 (61.2)	1.303 (0.773 - 2.196)	0.321
	No	53 (32.7)	109 (67.3)		
Sleep pattern change	Yes	58 (38.7)	92 (61.3)	1.607 (0.946 - 2.729)	0.078
	No	31 (28.2)	79 (71.8)		

\*Values are expressed as frequency (percentage) within each row of specific symptom

<sup>#</sup> P-value (Chi Square Test) < 0.05 is significant

OR: Crude Odds Ratio, CI: Confidence Interval, P: p-value

Table 4 shows association between psychological manifestations of PMS and school absenteeism. Pressure symptoms, mood swings and headache were the symptoms that were significantly associated with school absenteeism (p<0.05).

Figure 1: Type of perimenstrual disorder experienced by the study population

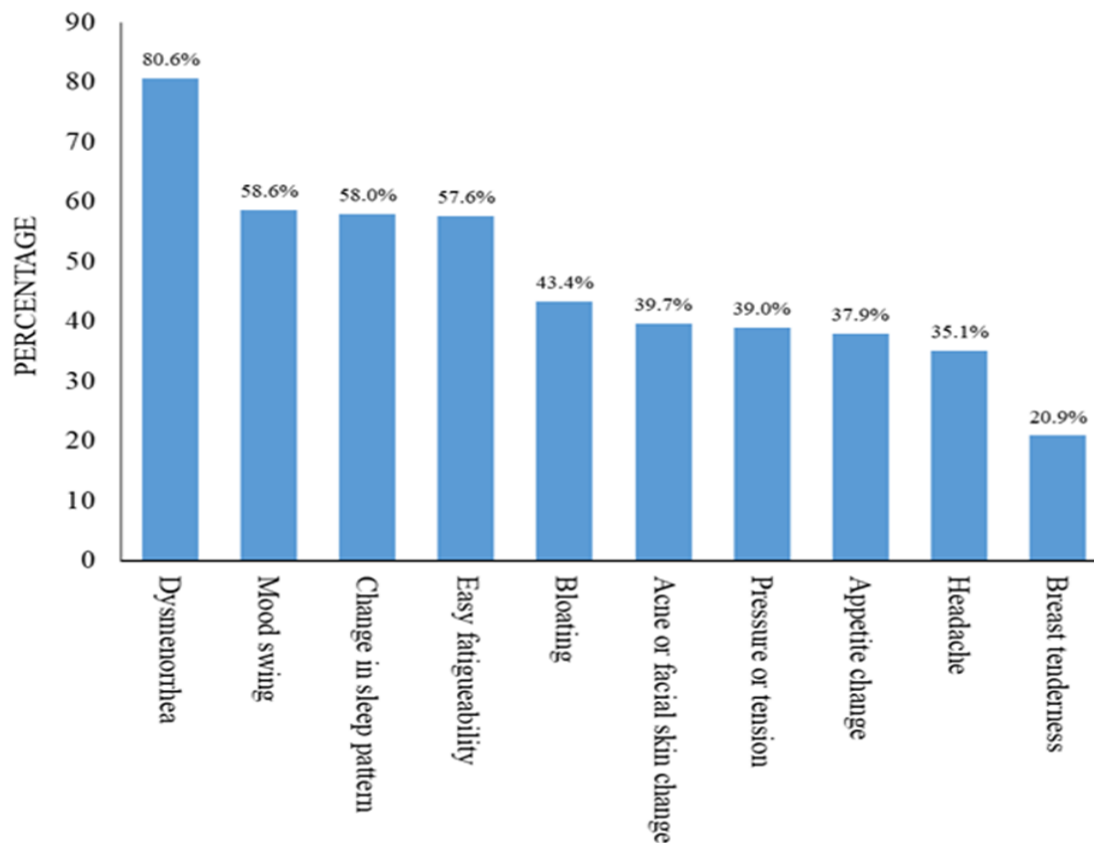


Figure 1 describes the symptoms of PMSs experienced by the students.

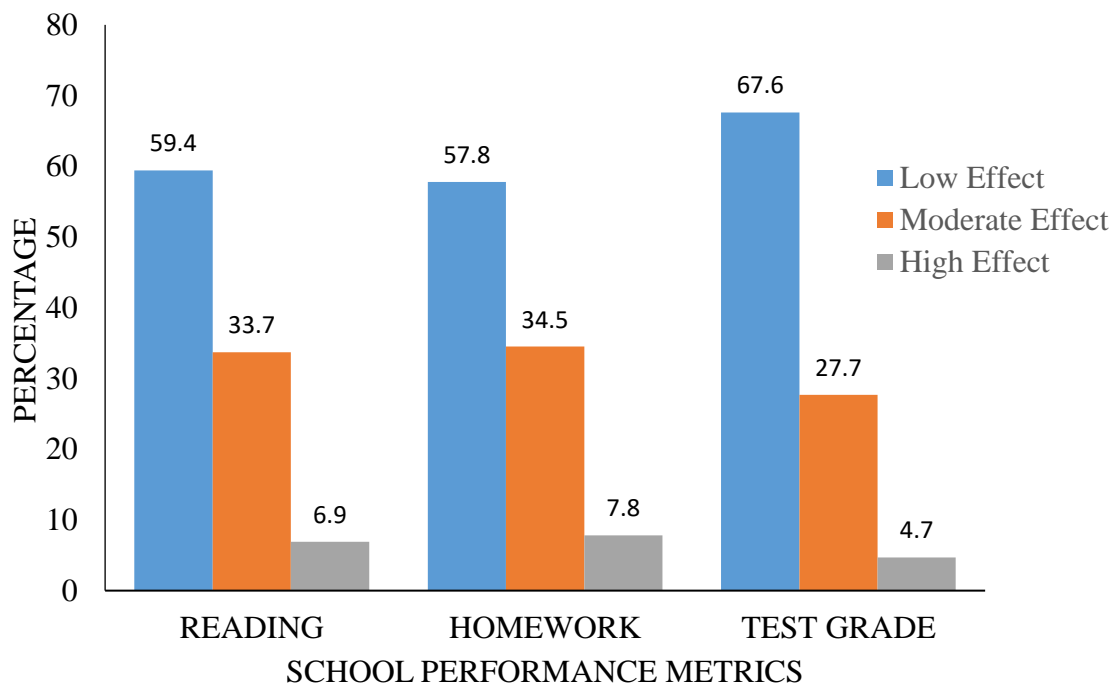


Figure 2: Effect of PMS on school performance

The effect of PMS on various metrics of school performance is shown on Figure 2.

## **DISCUSSION**

The rate of school absenteeism from PMS of 44.2% in this study was higher than the rates of 15.9% and 24.2% reported from other regions of Nigeria (Femi-Agboola et al., 2017; Nwankwo et al., 2010). This could be attributed to the differences in the socio-cultural settings of the different study population. Also, the Northern part of Nigeria has a generally low school attendance rate with females being at a disproportionate disadvantage (Kazeem et al., 2010). However, it is quite similar to the prevalence of 43.9% reported from South Egypt (Arafa et al. 2022). Lower prevalence rates of 30.5% (Pitangui et al., 2013) and 11.9% (Tadakawa et al., 2016) have also been reported from other regions of the world. A higher prevalence of school absenteeism of 60.5% as a result of symptoms of PMS has also been reported in Spain by (Fernández-Martínez et al., 2019) This buttresses the fact that prevalence and pattern of PMS varies with geographic location and demography (Direkvand-Moghadam et al., 2014).

Generally, school absenteeism was more common in those with PMS than those who did not experience it and the difference was statistically significant [absenteeism 100 (44.2%) versus 10 (13.5%),  $p = 0.001$ , OR = 3.346]. ( $p = 0.001$ ) This finding, therefore, buttresses the incapacitation that could be encountered as a result of this disorder. However, the presence of headache, pressure or tension and mood swing had significant association with school absenteeism causing a 1.8, 1.7- and 1.7-times increased odds of school absenteeism, respectively.

A study in south Egypt by Arafa et al., (2022) reported that menstrual flow >4 days [odds ratio (OR) 1.37, 1.04–1.80], premenstrual abdominal spasm (OR 1.60, 1.22–2.11), fatigue (OR 1.69, 1.27–2.24), breast tenderness (OR 1.67, 1.17–2.38) were significantly associated with school absenteeism. Insomnia (OR 1.92, 1.31–2.80), abdominal bloating (OR 2.29, 1.34–3.91), and dysmenorrhea (OR 4.44, 2.58–7.62) were also significantly associated with school absenteeism., Occurrence of dysmenorrhea for more than 1 day (OR 1.38, 1.03–1.84), menstrual acne flare (OR 2.23, 1.68–2.97), dysuria (OR 1.96, 1.31–2.93), and facial hair (OR 2.59, 1.26–5.31) were significantly associated with school absenteeism.

PMS was said to negatively affect school performance and homework by some authors (Bayou et al., 2020; Padmavathi et al., 2014; Kareem et al., 2020). It was said to lead to poor academic performance (Bhuvaneshwari et al., 2019). From the findings in this study, perceived effect of PMS on reading, homework and test grades were similar with majority of those affected feeling that it had low to moderate effect on the activities. However, only 4.7% of the respondents with PMS felt that it had a high negative effect on their test grades as opposed to 6.9% and 7.8% in the case of reading and homework respectively. This may be due to the fact that tests usually occur at a specific time during school days and as such may not coincide with the menstrual period unlike reading and homework that occur throughout the duration of school days. Also, PMS occurs during menses which happens once a month which may account for this perception among the respondents. This agrees with a work that reported a moderate effect of these symptoms on their study and learning activity. (Bayou et al., 2020)

## **CONCLUSION**

Premenstrual Syndrome was significantly associated with school absenteeism among the respondents with psychological symptoms leading to more significant absenteeism than other symptoms. PMS also had a low to moderate effect on reading and homework among the majority of respondents with only few respondents reporting high negative effect on reading, homework and test grades as a result of PMS.

## REFERENCES

- Adresi, Y., Ata, B., Bilir, E., Yıldız, Ş., & Yakın, K. (2020). The impact of dysmenorrhea and premenstrual syndrome on academic performance of college students, and their willingness to seek help. *Obstet Gynecol*, 17, 196–201.
- American College of Obstetricians and Gynecologists. Premenstrual Syndrome (PMS) | ACOG. <https://www.acog.org/womens-health/faqs/premenstrual-syndrome>.
- Amu, E.O., & Bamidele, J.O. (2014) Prevalence of menstrual disorders among adolescent girls in Osogbo, South Western Nigeria. *International Journal of Adolescent Medicine and Health*, 26(1), 101–106.
- Arafa, A., Saleh, L., & Shawky, S. (2022). Association between menstrual disorders and school absenteeism among schoolgirls in South Egypt. *International journal of adolescent medicine and health*, 34(1), 20190081. <https://doi.org/10.1515/ijamh-2019-0081>
- Bayou, A. T., Demissew, G. R., & Kumbi, H. S. (2020). The prevalence of premenstrual syndrome and its effect on academic and social performance of female medical students in Addis Ababa University: A cross-sectional study. *Ethiop Med J*, 58(3), 86-93.
- Bhuvanewari, K., Rabindran, P., & Bharadwaj, B. (2019). Prevalence of premenstrual syndrome and its impact on quality of life among selected college students in Puducherry. *The National Medical Journal of India*, 32(1), 17-19.
- Direkvand-Moghadam, A., Sayehmiri, K., Delpisheh, A., & Satar, K. (2014) Epidemiology of Premenstrual Syndrome (PMS)-A Systematic Review and Meta-Analysis Study. *Journal of clinical and diagnostic research*, 8(2), 106–109.
- Femi-Agboola, D., Sekoni, O., & Goodman, O. (2017) Dysmenorrhea and Its Effects on School Absenteeism and School Activities among Adolescents in Selected Secondary Schools in Ibadan, Nigeria. *Nigerian Medical Journal*, 58(4), 143-148.
- Fernández-Martínez, E., Onieva-Zafra, M.D., Abreu-Sánchez, A., Fernández-Muñoz, J.J. & Parra-Fernández, M.L. (2019) Absenteeism during Menstruation among Nursing Students in Spain. *International journal of environmental research and public health*, 17(1), 53-55.
- Gudipally, P., & Sharma, G. (2022) Premenstrual Syndrome. In: StatPearls Treasure Island (FL): StatPearls Publishing, *Pearls*, StatPearls Publishing, PMID: 32809533.
- Kareem, A.O., Adebayo, A.M., Johnson, O.E., & Kareem, A.J. (2020) Prevalence of School Absenteeism due to Menstrual Bleeding and Associated Disorders among Secondary School Students in a Semi-Urban Area of Southwest Nigeria. *International Journal of School Health*, 7(3), 55–64.
- Kazeem, A., Jensen, L., & Stokes, C.S. (2010) School Attendance in Nigeria: Understanding the Impact and Intersection of Gender, Urban-Rural Residence, and Socioeconomic Status. <https://doi.org/10.1086/652139>, 54(2), 295–319.
- Nigeria Demographic and Health Survey. (2019). National Population Commission, The Federal Republic of Nigeria, Abuja, Nigeria.
- Nwankwo, T.O., Aniebue, U.U. & Aniebue, P.N. (2010). Menstrual Disorders in Adolescent School Girls in Enugu, Nigeria. *Journal of Pediatric and Adolescent Gynecology*, 23(6), 358–363.
- Padmavathi, P., Sankar, S.R., & Kokilavani, N. (2014) Premenstrual Symptoms and Academic Performance Among Adolescent Girls. *Asian Journal of Health Sciences*, 2(1). <https://doi.org/https://doi.org/10.15419/ajhs.v2i1.417>
- Pitanguí, A.C.R., Gomes, M.R., Lima, A.S., Schwingel, P.A., Albuquerque, A.P., & Araújo, R.C. (2013) Menstruation disturbances: prevalence, characteristics, and



- effects on the activities of daily living among adolescent girls from Brazil. *Journal of pediatric and adolescent gynecology*, 26(3), 148–152.
- Tadakawa, M., Takeda, T., Monma, Y., Koga, S. & Yaegashi, N. (2016) The prevalence and risk factors of school absenteeism due to premenstrual disorders in Japanese high school students-a school-based cross-sectional study. *BioPsychoSocial medicine*, 10(1). <https://doi.org/10.1186/s13030-016-0067-3>
- Widholm, O., & Kantero, RL. (1971) A statistical analysis of the menstrual patterns of 8,000 Finnish girls and their mothers. *Acta Obstet Gynecol Scand*, 14(14), 1–47.
- Yesildere, S. H., & Orsal, O. (2020) Effect of exercise on premenstrual symptoms: A systematic review. *Complementary Therapies in Medicine*, 48, 102272. <https://doi.org/10.1016/j.ctim.2019.10227>.