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Influence of Health Communication on Knowledge of the Management of Premenstrual Dysphoric Disorder for Improved Academic Performance among Students of Select Institutions in Enugu State, Nigeria

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ABSTRACT

Background: Premenstrual Dysphoric Disorder (PMDD) is a severe form of premenstrual syndrome that can significantly impair emotional stability, cognitive functioning, and overall wellbeing among women. Despite its impact, awareness and open communication about PMDD remain limited, particularly among female students, thereby affecting their academic performance.
Objective: This study examined the influence of health communication in reducing the effects of Premenstrual Dysphoric Disorder on the academic performance of female students aged 15 to 39 years in Enugu State, Nigeria.
Methodology: The study adopted a descriptive survey research design. The population comprised female students of Institute of Management and Technology (IMT), Success Base Secondary School, and Divine Apple Seed Secondary school Enugu. A sample size of 384 was determined using the Cochran's formula. A multistage sampling technique was employed to ensure proportional representation across the selected institutions. Data were collected using a structured questionnaire. The instrument was validated by experts, and its reliability was established through a pilot study. Data were analyzed using descriptive statistics such as frequencies and percentages, and results were presented in tables.
Results: Findings revealed a low level of awareness of PMDD and its management among female students in selected Institutions. The study also found that students exhibit poor attitudes and perceptions towards the disorder and they have to a large extent not discussed PMDD-related issues with their teachers. Furthermore, PMDD symptoms were found to negatively affect students' academic performance, particularly their ability to concentrate during lessons. The school environment emerged as the most preferred medium through which students' access PMDD-related information.
Conclusion: The study concludes that inadequate health communication contributes significantly to poor awareness and open communication around PMDD among female students, thereby adversely affecting their academic performance.
Unique Contribution: This study provides empirical insight into the critical role of targeted health communication in addressing reproductive health challenges among female students, highlighting the gap between information access and behavioral outcomes.
Key Recommendation: It is recommended that educational stakeholders collaborate with media institutions to enhance accurate and consistent portrayal of PMDD in media content, while also integrating school-based health communication programmes to improve awareness, reduce stigma, and promote open discussions about the disorder.

Keywords: Premenstrual Dysphoric Disorder, Health Communication, Academic Performance, Female Students, Awareness, Enugu State

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INTRODUCTION

Drawing on our observations as university lecturers in Nigeria, many female students report difficulties with concentration during lectures due to moderate to severe premenstrual pain and related discomfort. This underscores the urgent need for increased awareness of Premenstrual Dysphoric Disorder (PMDD), a condition that significantly affects individuals and, by extension, those around them. Although over one hundred psychological, physical, emotional, and behavioral symptoms associated with PMDD have been documented (Daneshvar et al., 2023), awareness remains limited among families, educational institutions, and even some professionals. Consequently, insufficient attention has been devoted to awareness creation, particularly within student populations (Eshetu et al., 2022).

PMDD is a severe form of Premenstrual Syndrome (PMS), and it usually happens before the commencement and suddenly disappears at the onset of menses (Yesildere & Orsal, 2020). According to WHO, PMDD is a legal health condition, and in the International Classification of Disease (ICD-11), PMDD is included under 'Mental, Behavioral, or Neurodevelopment Disorder.' In the same way, American Psychiatric Association (APA), put in PMDD in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5). In DSM-5, PMDD is listed under 'Depression Disorders,' showing its significant psychological symptoms (American Psychological Association, 2022). Both organizations' recognition of PMDD as a mental health issue offer a structured approach to identifying and addressing the condition, admitting the disorder's impact on mental health and well-being and therefore, should be approached through an appropriate medical and psychological interventions.

It is a natural aspect of women's life, hence, symptoms that follows it will often be seen among females of reproductive age (Elif et al., 2023), but irrespective of its legitimate and natural tendencies, it disrupts women's eagerness and readiness to participate in daily activities, most especially in their ability to concentrate in school programmes (Bakare et al., 2017). Sireesha et al., (2023) pointed out: lack of exercise, obesity stress, and a lack of balanced diet as factors with direct link to PMDD. Drinking coffee according to them is not connected to PMDD, but is recognized to be correlated to the changing levels of hormones during a woman's menstrual cycle.

It is worth noting that American College of Obstetricians and Gynecologists (ACOG) provided specific criteria for diagnosing PMDD. For this institution, the symptoms must occur during the luteal phase of the menstrual cycle and ends when you get your period. These symptoms must be accompanied with emotional symptoms like mood swing, sudden sadness or crying, increased sensitivity to rejection, depression, hopelessness and so on; decrease interest in physical activities like work, school, friends and hobbies and or change in appetite, overeating, or specific food craving, breast tenderness, abdominal bloating, lack of energy or out of control. Even without exhausting the list, if at least five of these criteria are met, with at least one being a core emotional symptom, ACOG emphasized that a diagnosis of PMDD can be considered (Sireesha et al., 2023).

Data suggest that up to 90% of women experience premenstrual symptoms during their reproductive years, while a smaller proportion meet the clinical criteria for Premenstrual

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Dysphoric Disorder (PMDD) (Muddsar & Mishal, 2022; Sireesha et al., 2023; Sara et al., 2022). The proportion of severity of PMDD in females ranges from 42% to 44% mild, 18.2% moderate and 31.7% severe yet it is considered and perceived very normal, no one bother about this condition and doesn't recognize it as a disorder especially in the developing countries (Muddsar et al., 2022). Furthermore, despite having higher percentage of male gynecologist specialists, gender differences were observed as Patients with PMS/PMDD were more comfortable and as well frequently treated by female gynecologists than males (Takashi et al., 2023).

The constantly reported symptoms of PMDD among nursing students in Nigerian Teaching Hospital are: reduced interest in school activities (54.9%), and difficulty in paying attention during lessons (57.0%), with many inexperienced about coping mechanism strategy (Bakare et al., 2019). According to Aisha et al., (2023), PMS is a significant factor connected to school absenteeism among female students in Northern Nigeria with psychological symptoms leading to more significant reason than physical and emotional symptoms. Also, Junior Secondary School students in Edo state Nigeria also admitted that menstrual migraine have effects on class participation as it leads to fever and hotness of the body which makes it difficult to concentrate in school activities (Onobumeh et al., 2016). This situation is related to the experience of female students in India as 32% of women avoided participating in school activities due to body pains resulting from PMDD (Geeta et al., 2018). In Ethiopia, it is recognized that PMDD is high among female medical and health sciences students and it requires intervention and strategy especially among females who experience severe menstrual pain as it is perceived to have an impact on their academic performance and high perceived stress (Minichil et al., 2020).

Overall, Premenstrual Dysphoric Disorder (PMDD) remains a common health challenge among female students, with significant implications for their educational and social functioning. Existing studies have largely focused on the prevalence, symptoms, and general impacts of PMDD among specific populations such as medical and nursing students, as well as its association with absenteeism and reduced academic performance (Maity et al., 2022; Aisha et al., 2023). These studies have also identified poor awareness, negative perceptions, and inadequate coping strategies among affected individuals.

However, despite the growing body of literature on PMDD, there is a paucity of empirical research that examines the role of health communication as a strategic tool for managing the condition and mitigating its academic consequences, particularly among students in non-medical disciplines and across mixed educational levels.

RESEARCH QUESTIONS

This research study was guided by the following research questions:

1. To what extent are female students in Enugu state aware of PMDD and how it can be managed?
2. What are the attitudes and perceptions of female students in Enugu towards PMDD?
3. Does discrimination and stigma affect conversations around PMDD among female students in Enugu state?

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4. To what level does PMDD symptoms affect the students' concentration and performance in academics?
5. What are the preferred channels of communication about PMDD among female students in Enugu state?

CONCEPTUAL REVIEW

Health Communication

Health Communication according to Goh et al., (2024) is the act of maintaining trust, countering misinformation and improving understanding of health information through strategic and culturally responsive sharing of health-related information between professionals and communities. For Allison et al., (2025), it is the gradual process of disseminating personalized messages that encourages fertility autonomy while Griffith et al. (2024) see Health Communication as a health information designed to adapt to audience's cultural identities so as to facilitates behavioral changes

Academic Performance

Heller et. al., (2024) captured it as academic success measured primarily by grade or GPA; Academic Performance as conceptualized by Starr et al. (2025) is the performance at school which is disrupted by painful menstruation including attendance and self-reported menstrual academic disruption and for Tarzia et al. (2024), it is the ability to sustain once educational pathway after violence-related health harm.

Empirical Review of Related Literature

A study by Sara et al. (2022), which adopted a scoping review approach, revealed that the prevalence of Premenstrual Dysphoric Disorder (PMDD) varies considerably across countries. In Europe, PMDD prevalence was reported to be 1.1% among women in Spain, 2.1% among women in Poland, and 3.1% among a cohort of Swiss women. In India, the prevalence was estimated at 8% for PMDD and 43% for Premenstrual Syndrome (PMS). The study further reported that the prevalence of PMDD in East Asian countries—including Japan, South Korea, China, Taiwan, Hong Kong, and Macau—was generally below 3%. In contrast, higher prevalence rates were observed in Latin America, with one cohort of Brazilian women reporting a PMDD prevalence of nearly 18%. Additionally, an international study reviewed by the authors found that women experiencing severe PMS reported higher rates of work absenteeism and reduced work productivity than those with milder symptoms.

Similarly, Kelechi et al. (2018) assessed Premenstrual Syndrome among female pharmacy students aged 15–45 years at the University of Nigeria, Nsukka, Enugu State, using a descriptive cross-sectional design. The study found that the most prevalent symptoms were difficulty concentrating (85.0%), irritability (79.2%), abdominal bloating (75.3%), body pains (70.0%), mood swings (69.2%), breast tenderness (69.2%), and cravings for specific foods (68.0%). Crying spells were the least frequently reported symptom. The researchers concluded that both PMS and PMDD are highly prevalent among female students in Nigeria.

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Supporting these findings, Maity et al. (2022) conducted a systematic review and meta-analysis of studies on menstrual discomfort among female medical, health science, and nursing students worldwide. Based on sixteen eligible studies, the review revealed that premenstrual disorders significantly affect female students' academic performance across different countries. The authors emphasized the need for educational stakeholders to implement supportive interventions that foster an inclusive learning environment capable of reducing the academic disadvantages associated with premenstrual disorders and narrowing gender disparities in educational outcomes.

Likewise, Gunasekare et al. (2018) employed a cross-sectional survey involving 409 female undergraduate students drawn from six faculties and found that PMDD was significantly associated with academic impairment. The study emphasized the importance of early recognition of PMDD symptoms and increased awareness, particularly among individuals with a family history of menstrual disorders, to facilitate timely intervention and effective symptom management. In agreement with these findings, Anisah et al. (2023) reported that PMDD adversely affected reading habits and the completion of homework among the majority of female students who participated in their study.

An investigation conducted by Idris et al. (2020) at Orotta National Referral Hospital in Asmara, Eritrea, examined sources of menstrual health information and communication patterns among adolescent females. The study found that mothers were the primary source of information on menstruation before menarche for 68% of the participants. However, approximately 45% of the respondents reported feeling embarrassed or uncomfortable whenever menstruation was discussed, while 8% regarded menstruation as a taboo and 9% perceived it as a curse from God. Regarding communication at home, only 28% reported having open discussions about menstruation, 48% reported partial discussions, and 24.3% indicated that menstruation was never discussed. The study further revealed that attitudes toward discussing menstruation and menstrual hygiene management were generally negative among students in both public and private schools, with negative attitudes recorded among 92.7% and 82.8% of respondents, respectively.

Similarly, Aleena et al. (2018) reported that a substantial proportion of women in Pakistan are affected by PMDD. The study observed that prevailing cultural beliefs discourage discussions about menstruation and related reproductive health issues, leading many women to avoid seeking medical assistance even when PMDD significantly disrupts their daily activities. Surprisingly, despite surveying students with medical backgrounds, only 19% were aware of PMDD, while an even smaller proportion had adequate knowledge of its risk factors.

Furthermore, Nicole et al. (2022) employed a content analysis of women's posts and comments on Reddit to explore the unmet needs of individuals living with PMDD. The study found that PMDD affects approximately 1.8% to 5.8% of menstruating women, with symptoms recurring for one to two weeks each menstrual cycle. The analysis also revealed that many women relied on social media platforms to obtain information, emotional support, and practical advice because

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they were unable to access sufficient assistance from healthcare providers, family members, or other conventional support systems.

THEORETICAL FRAMEWORK

Social Support Theory (SST)

Social Support Theory was developed by Francis Cullen in 1994 and it explains how social connections, bonding and community ties can help an individual to cope with stress, illness, and other life challenges. It posits that the presence and or support from other family members, peers and mentors help people with stress to manage their psychological distress, improve emotional well-being, and also yield a positive result in different ways, like, academic achievement and improved health (Cutrona et al.,1994).

This study is anchored on this theory because female students especially those with PMDD symptoms have basic psychological needs and when these needs are fulfilled through supportive communication from school administrators, family members, friends, peers and or health professional, they experience greater motivation to participate in school activities.

To mitigate the effects of PMDD on the academic performance of female students; there is need for emotional and informational supports which formed part of the core components of social support theory from the communities to the students. Emotional support on the one hand will enable female students with PMDD symptoms to express themselves and receive love, care and attention, Informational support on the other hand will provide female students with advice, suggestions and information that will help them cope with the psychological, emotional and physical stress and discomfort posed by PMDD symptoms.

Gap in Empirical Literature

To our knowledge, this is the first study to explore the influence of health communication in management of the effects of PMDD for improved academic performance of female students aged 15-39 years in the study area. Past research focused on the impacts of PMDD on nursing students, medical students, and/or health science students, ignoring other female students in different academic disciplines and levels. To fill this population gap, this study has paid holistic attention to female students in a non-health-related field and/or in different academic level. Additionally, previous studies focused attention to exercise and/or diet as a coping mechanism, neglecting the role effective communication can play in minimizing the effects of PMDD among female students. To fill this content gap in literature, we investigated how effective health communication can help in management of the effects of PMDD on female students in Enugu. Finally, certain studies conducted previously adopted content analysis and/or systematic review, and in a bid to solve this problem of the methodology gap, this study employed the survey research method to generate primary data from the participants.

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METHODOLOGY

A descriptive survey design was adopted for this study, and the sample size for female students aged 15–39 in the selected institutions in Enugu East and Enugu North was determined using the Cochran formula. The age bracket was selected to capture females within the reproductive age group, as PMDD primarily occurs among menstruating individuals (APA, 2022). A multistage sampling method was used and data were gathered from respondents at Institute of Management and Technology (IMT) Enugu, Success Base and Divine Apple Seed Secondary schools using a questionnaire comprising six sections. The questionnaire was designed to generate data that would be able to measure the various variables in the study, like the respondents' demographic status, awareness and management of PMDD, stigma and willingness to seek help, effects of PMDD on students' concentration and performance in academics and their preferred channels to accessing PMDD-related information.

To avoid duplication of existing research, the study purposefully excluded medical, health science, and nursing students in Enugu because their experiences with PMDD have been documented in previous studies (Maity et al., 2022; Bakare et al., 2019; & Kelechi et al., 2018).

Data collection were carried out from June to July 2025, a period characterized by intense academic activities, making it suitable for examine the effects of PMDD on students' concentration and academic performance (Maity et al., 2022).

Population of the study

As the exact population of eligible respondents in the selected learning institutions was not known, the sample size was determined using Cochran's formula. At a 95% confidence level, 5% margin of error, and 0.5 estimated population proportion, the computed sample size was 384 respondents.

$$n = (Z^2 \times p \times q) / e^2$$

Therefore:

$n = (1.96^2 \times 0.5 \times 0.5) / 0.05^2$

$n = (3.8416 \times 0.25) / 0.0025$

$n = 0.9604 / 0.0025$

$n = 384$

Sampling Technique Adopted

This study employed a multistage sampling technique, combining purposive sampling and proportionate stratified sampling**.**

At the first stage, three institutions were purposively selected to represent the different levels of education relevant to the study. These included Institute of Management and Technology (IMT),

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Success Base Secondary School and Divine Apple Seed Secondary School. The selection was based on their suitability in reflecting the study population.

In the second stage, the population was stratified according to level of education: higher institution, senior secondary school, and junior secondary school. This ensured proper representation of all educational categories.

At the third stage, proportionate allocation was applied using Bowley's formula to distribute the total sample size of 384 across the strata. This ensured that each group was represented according to its relative size. Consequently, 181 respondents were allocated to (IMT), 76 respondents to Success Base secondary school, and 63 respondents to Divine Apple Seed secondary school.

In the final stage, respondents within each selected institution were chosen using purposive sampling**,** ensuring that only participants who met the study criteria were included.

RESULT

Table 1: Distribution and Retrieval of Questionnaire (N = 384)

Copies of the Questionnaire	Frequency	Percentage (%)
Returned	320	83.33%
Not returned	50	13.02%
Not properly filled	14	3.65%
Total	384	100

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Table 2: Demographic Characteristics of Respondents (N = 320)

Variables	Frequency	Percentage (%)
Gender		
Female	320	100
Male	0	0
Level of Education		
Higher Institution	181	56.56
Senior Secondary School	116	36.25
Junior Secondary School	23	7.19
Age		
15 – 19	169	52.81
20 – 24	123	38.44
25 – 29	17	5.31
30 – 34	10	3.13
35 – 39	1	0.31
Institutional Distribution		
IMT	181	56.57
Success Base.	76	23.75
Divine Apple Seed	63	19.68
Marital Status		
Single	275	85.9
Married	40	12.5
Separated/Divorced	2	0.6
Widow	3	1
Total	**320**	**100**

Table 2 shows that majority of our respondents are in higher institution (56.56%), and having 100% for female gender justifies the study population. Most of our respondents (52.81%) are within the age of 15-19 years which shows that they are in their reproductive age and majority reside in Enugu North (37%) and significant majority of them (85.9%) are single.

Table 3: Awareness and Management of PMDD among Respondents by educational levels

SN	Student level	Number of 'Yes'	Number of 'No'	Total	Percentage of 'Yes'	Percentage of 'No'
1.	Higher Institution	81	100	181	62%	54%
2.	Senior sec. sch.	42	74	116	32.56%	38.74%
3.	Junior sec. sch.	6	17	23	4.65%	5.76%
	Total	129	191	320	100%	100%

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The results presented here reveal that most respondents, 191 out of 320, have never heard of PMDD, and the majority of them are in higher institution (54%), 38.74% are senior secondary school students while 5.76% of respondents who are in junior secondary school reported that they have not heard of PMDD in their lifetime. This observation aligns with the findings of Eshetu et al. (2022) that there is a low level of PMDD awareness, particularly among university students. These results indicate that educational stakeholders in Enugu North and East, especially at the higher institution, do not provide female students with adequate knowledge related to PMDD, and by implication, the students will not seek help or ask for an inclusive environment when experiencing symptoms of PMDD in school as a result of unawareness, and this will affect their concentration in school activities. Similarly, there is lack of media coverage or insufficient media awareness of PMDD-related information by media institutions in Enugu, leading to a high level of PMDD unawareness among female students in the state. This low awareness of PMDD among female students can lead to stigma or a lack of confidence to openly discuss PMDD issues by female students who experience the symptoms.

The study further probed the respondents who said 'yes' that they are aware of PMDD, what is their primary source of information? Of the total 129 respondents, 53 reported school as their primary source of information on subject related to PMDD, 26 respondents reported family, only 6 respondents mentioned radio and television as their primary source of PMDD-related information, and 30 respondents reported social media as their main source of information pertaining to PMDD issues. Surprisingly, none of the respondents mentioned mobile/digital apps or community/local media as a primary means of getting first-hand information concerning premenstrual disorder, while 14 respondents said that healthcare providers remain their major source of information on topics related to PMDD. This study outcome contradicts the investigation carried out by Idris et al. (2020), that mothers are the main source of information on issues related to menarche for adolescents who participated in their study. Here in Enugu North and East, school is the most significant or main source of information on discussion related to PMDD issues, as large parts of the respondents (53 out of 129 respondents) reported school as their primary source of information on issues connected to PMDD. In our quest for more knowledge and better understanding of PMDD, we further asked the respondents their rate of understanding of PMDD, and the finding shows that of the 320 respondents, 202 female students in the study have no understanding of PMDD at all; 62 respondents have basic understanding; 25 respondents have moderate understanding; 26 respondents have good understanding; and only (5 out of 320) respondents have an excellent understanding of PMDD. This fact-finding is in consistent with Aleena et al.; (2018) discovery that only a small proportion of female students in their study understand the risk factors associated with PMDD. What this means is that there is low knowledge and management of the impacts of PMDD among female students in Enugu due to poor education from school teachers and media underrepresentation of PMDD-related information.

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Table 4: Attitude and Perception (Is PMDD a mental health issue?)

SN	Student level	Number of 'Yes'	Number of 'No'	Total	Percentage of 'Yes'	Percentage of 'No'
1.	Higher Institution	80	102	181	47.90%	66.67%
2.	Senior sec. sch.	72	44	116	43.10%	28.76%
3.	Junior sec. sch.	15	7	23	9%	4.57%
	Total	167	153	320	100%	100%

The findings here show the attitude and perception of female students towards PMDD. More than half of female students of IMT (66.67%) in this study believe that PMDD is not a mental health problem; 28.76% of senior secondary school believe that PMDD is not a mental health issue, 2.61% of female students in junior secondary school believe that PMDD is not a mental health matter. In keeping with the above, Elif et al., (2023) support that PMDD is a natural aspect of women's life and should not be treated as a health matter. Furthermore, Muddsar et al., (2022) asserted that in developing countries, PMDD is not recognized as a mental health problem despite its impacts on women's' life. Less than half of the respondents from all educational levels in this study (47.9%) of IMT students; (43.10%) of senior secondary school students; (7.20%) of junior secondary school students believe that PMDD is a mental health issue.

Of the 167 respondents who believe that PMDD is a mental health issue, only 75 respondents believe that females who experience PMDD symptoms need to consult a medical doctor or health practitioner. The rest feel they are strong and resilient (28 out of 167), (27 out of 167), feel women who experience PMDD symptoms are overly sensitive while (37 out of 167) of the respondents feel nothing at all about women who experience PMDD symptoms despite accepting that it is a mental health disorder. It is important to note here that this result is in opposition with WHO, who mentioned PMDD as a legitimate health condition and the International Classification of Disease (ICD-11), which also included PMDD under mental and behavioral health disorder (American Psychological Association, 2022). We therefore argue that female students in this study are living in self-denial for failing to recognize PMDD as a mental health problem. This poor perception and attitude of female students in Enugu towards PMDD is attributed to low level of awareness and understanding of PMDD due to media underrepresentation of the issue related to PMDD and inadequate education from school stakeholders in the state.

Table 5: Stigma and willingness to seek help from educational support services. (Have you ever discussed PMDD related issue with your teacher?)

SN	Student level	Number of 'Yes'	Number of 'No'	Total	Percentage of 'Yes'	Percentage of 'No'
1.	Higher Institution	37	143	180	46.80%	59.3%
2.	Senior sec. sch.	32	85	117	40.50%	35.3%
3.	Junior sec. sch.	10	13	23	12.7%	5.7%
	Total	79	241	320	100%	100%

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The outcome of our research here proves that majority of female students in this study particularly IMT students (59.3%) have never discussed PMDD related issue with a lecturer, (35.3%) of students from senior secondary school in this study have not; 12.7% of students in junior secondary school have not discussed PMDD symptoms in school with a teacher. When asked if they are likely to seek help from a teacher or school administrators; a large proportion of them (72 out of 241) said they are not likely at all to do that; (68 out of 241) respondents are very likely to seek help from their teachers or school administrators with the condition that if she is a female teacher/lecturer; (42 out of 241) respondents are somewhat likely to seek help from school stakeholders when feeling PMDD symptoms while (59 out of 241) are not very likely to seek help from their teachers when having PMDD symptoms in school. While our finding above disagrees with Idris et al., the result here supports their study that majority of females do not just feel uncomfortable whenever the issue of PMMD is raised but they have also not discussed it at home. Our data here also amplifies the finding by Takashi et al., (2023) that women who experience PMDD symptoms feel more comfortable consulting a female gynecologist than their male counterparts. Also, the study did not dispute the conclusion by Aleena et al., (2018) that there is still a lack of willingness and the need to consult a professional for support among women who experience symptoms of PMDD. Although the female students in this study experience considerable deficiency to seek help from their teachers when experiencing PMDD symptoms, a significant fraction of them (168 out of 320) strongly agree that discussing PMDD related issues with their teachers will not lead to stigma or discrimination of any kind and almost all the respondents (316 out of 320) said yes, that it is important for school to educate female students about PMDD.

Table 6: Self-Reported PMDD Symptoms among Female Students of different academic level

SN	Indicator/Signal	Higher Institution	Senior Sec. sch.	Junior Sec. Sch.	Total	Percentage for various indicators
1.	Severe mood swing	100	53	5	158	49.38%
2.	Depression	18	15	0	33	10.31%
3.	Intense anger	7	12	1	20	6.25%
4.	Anxiety and tension	3	7	1	11	3.44%
5.	Decreased interest in activities	12	8	5	25	7.80%
6.	Fatigue or low energy	15	8	3	26	8.13%
7.	Change in appetite and sleep pattern	11	6	4	21	6.56%
8.	Abdominal pains/swelling	17	8	1	26	8.13%
	Total	183	117	20	320	

Our findings here are an indication based on self-perceived symptoms and not PMDD actual experience or criteria and the results show that almost half of the respondents reported severe mood swing (49.38%) as the most common complaints among female students in Enugu; depression or feeling of hopelessness (10.31%); intense anger (6.25%); anxiety and tension

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(3.44%); decreased interest in activities (7.80%); fatigue or low energy (8.13%); change in appetite and sleep pattern (6.56%) and abdominal swelling and pains (8.13%) were other reported complains from the respondents. In harmony with the above statement, Aleena et al., (2018) re-echoed that respondent in their study who self -reported experiencing Premenstrual Syndrome (PMS) complained a lot about emotional instability as one of their major symptoms

Table 7: Effects of PMDD on the Academic Performance of Students in academic levels

SN	Performance	Higher Institution students	Senior sec. sch.	Junior sec. sch.	Total	Percentage for various performance
1.	Missed classes	34	11	6	51	15.94%
2.	Difficulty concentrating during lessons	104	48	9	161	50.31%
3.	Low grades	0	1	1	2	0.63%
4.	Difficulty completing assignment on time	14	1	0	15	4.69%
5.	Increased stress about school work	14	1	0	15	4.69%
6.	Avoidance of school related social activities	3	8	1	12	3.74%
7.	No effects	12	46	4	64	20.00%
	Total	181	116	23	320	100%

There is no doubt that PMDD affects female students differently but the most pronounced effect among students of all levels of education in this study is having difficulty concentrate during lessons (50.31%), missed classes or lectures (15.94%), lower grades (0.63%), difficulty completing assignments on time (4.69%), increased stress about school work (4.69%), avoidance of school related social activities (3.74%), no effects at all on school related issues (20%). This is in connection with Bakare et al., (2019), that difficulty paying attention during lessons is one of the most common impacts of PMDD on female students. The finding also corroborates the discovery by Maity et al., (2022) that most female students that are still in their reproductive age group have deficiency in academic and social quality of life as a result of menstrual discomfort. While more than half of the respondents (50.31%) expresses concerns in their difficulty to concentrate during lessons due to PMDD symptoms, (20%) of them indicated no effects at all in their academic performance. This proves that: way of life, socio-demographic, family history, and psychological factors contribute to the differences in how PMDD impacts female students. Additionally, this study supports data from past studies that emphasized a greater level of PMDD impacts among medical students than students from other academic discipline due to curriculum over load and exam stress (Maity et al., 2022). Previous studies also reported mild to moderate impacts of PMDD among students who engaged in exercise than those that did not engage in exercise.

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Table 8: Respondents preferred method/channels to accessing PMDD related information

SN	Method/channel	Higher Institution	Senior sec. sch.	Junior sec. sch.	Total	Percentage for various Information
1.	School program	78	48	7	133	41.56%
2.	Social media	32	15	6	53	16.56%
3.	Mobile Apps	6	10	0	16	5.00%
4.	Radio/TV	4	10	3	17	5.31%
5.	Print media	3	1	1	5	1.56%
6.	Healthcare provider	24	17	1	42	13.13%
7.	Family	30	12	3	45	14.06%
8.	Community media	4	3	1	8	2.50%
9.	Friends/peer support	1	0	0	1	0.32%
	Total	181	116	23	320	100%

Data extracted from the table above shows that many respondents prefer school (41.56%), followed by social media (16.56%) as a means to access PMDD related information. Mobile App (5%), radio/television (5.31%), print media (1.56%), healthcare provider (13.13%), family (14.06), community/local media (2.50%) while less than 1% prefer friends and peer support. This revelation while it rebuffs the claim by Idris et al., (2020) that family is the main source of PMDD related information among female students, it supports our finding in research objective no. 1, that respondents who said yes, to PMDD awareness mentioned school as their primary source of information and Nicole et al., (2022) that women turn to social media for their PMDD unmet information.

SUMMARY OF FINDINGS

This study examined female students' awareness and management of PMDD, their attitude and perception towards PMDD, ability or willingness among female students in Enugu to seek help from educational support service when experiencing PMDD in school, the impacts of PMDD in their academic performance and their preferred channel to accessing PMDD related information. The study was anchored on Social Support Theory and employed questionnaire as a data gathering instrument.

Findings from the study are summarised as follows:

- There is poor awareness of PMDD and how it can be managed among the students sampled for this study especially students in higher institution (54%).
- There is a negative perception and poor attitude towards PMDD symptoms among female students sampled in this study as majority of the respondents (66.67%) particularly students in higher Institution believe that PMDD is not a mental health issue.
- Due to the high rate of unawareness of PMDD among female students sampled in this study, there is an evidence of stigma associated with discussing PMDD related information between the female students and their teachers as most of the respondents

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(59.3%) of IMT students confirmed that they have never discussed PMDD related information with their lecturers.

- There are various ways in which PMDD impacts female students' academic performance but the most significant is inability to concentrate during lessons (50.31%) and the most common self- reported PMDD symptom among female students in this study is severe mood swing (49.38%).
- Family is no longer the primary or most preferred medium to accessing PMDD related information among female students in this study as most respondents (41.56%) from all academic levels highlighted school as their primary source of information and also the most preferred channel to accessing PMDD related information.

CONCLUSION

The study concludes that low awareness and poor management of Premenstrual Dysphoric Disorder (PMDD) among female students significantly contribute to negative attitudes and limited or open discussion of PMDD which in turn affect female students' academic performance particularly their ability to concentrate during lessons

RECOMMENDATIONS

Based on the above findings, we are making the following suggestions:

- School administrators should collaborate with media institutions located in Enugu to create sufficient media awareness of PMDD and how it can be controlled.
- School stakeholders should incorporate PMDD into health education curriculum, paying attention on the symptoms, coping mechanism and treatment.
- Media institutions in Enugu should provide journalists with adequate training to help them portray PMDD accurately in media program to help reduce stigma.
- Teachers should be provided with PMDD awareness training to help them recognize female students who are having PMDD symptoms and provide help.
- School administrators should create an inclusive learning environment where female students can openly discuss PMDD symptoms bearing in mind that someone is listening to them.

Ethical Clearance

Ethical consent was sought and obtained from the participants used in this study. They were made to understand that the exercise was purely for academic purposes, and their participation was voluntary.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Authors' Contributions

Dr. Obioma Ozioko in collaboration with Dr. Benjamin Onwukwalonye conceived the study including the design and collated the data. Dr. Obioma Ozioko and Dr. Godswill John handled the analysis and interpretation, while Dr. Obioma Ozioko wrote the initial manuscript. All authors have critically reviewed and approved the final draft, and are responsible for the content and similarity index of the manuscript.

Data availability statement

The datasets on which conclusions were made for this study are available on reasonable request.

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