



Comparative Study of Anhedonia and Academic Performance of Medical and Non-Medical Students

Experiencing Pms

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ABSTRACT

The severity and persistence of PMS can disrupt studies and negatively affect grades and overall academic performance. The study aimed to make the comparison between anhedonia and academic performance of medical and non-medical students who experience PMS (Premenstrual Symptoms). This study includes 302 students whose age were in between 18 to 26 years. 156 medical students and 146 non-medical students take part in the self-administered questionnaire. Results shows that anhedonia negatively impact the academic performance of students who experience PMS. PMS has a notable impact on grades and low academic performance. Additionally, Anhedonia negatively impact the academic performance of medical and non-medical students and both medical and non-medical students equally experiences the anhedonia with PMS.

Keywords: PMS (Premenstrual Symptoms), Anhedonia, Academic Performance, Medical Students, Non-medical

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Introduction

Females due to their gender, experience physical and psychological symptoms throughout their life and one of the processes they have to bear is PMS (AI-Shammari et al., 2017). Premenstrual Syndrome (PMS) is a tough condition characterized by physical, emotional and cognitive symptoms that occur in cycles preceding menstruation. Hormonal ups and downs, neurotransmitter imbalances, and psychosocial factors contribute to its development (Valencia et al., 2023). Levels of estrogen and progesterone affect endorphins, causing depression, anxiety, mood swings and anhedonia (corenne et al., 2023 & yonkers et al., 2008). Stress and lack of support also worsen PMS (Evelyn et al., 2024).

Anhedonia

Anhedonia is the failure to experience enjoyment from activities once rewarding. It is a core symptom of depression and can manifest as diminished interest, reduced capacity for pleasure, social withdrawal, and functional impairment (Pine et al., 1999; Ekiemo et al., 2020). Neurobiological, genetic, environmental and psychological factors contribute to anhedonia (Luigi Grillo, 2016; Beblo et al., 2012). Increased anhedonia may lead to poor academic consequences, including lower grades (Huguet et al., 2015).

Academic Performance

Academic Performance refers to an individual's achievement in educational settings including grades, attendance and learning outcomes. Anhedonia can impair academic performance, especially in students experiencing PMS due to mood disturbances and fatigue (Trigwell et al., 1995; Jumana Hussein et al., 2017). Studies found that higher levels of anhedonia are linked with lower academic outcomes (Wang & Shi, 2014; Eisenberg et al., 2007).

This study therefore compares anhedonia and academic performance of medical and non-medical students experiencing PMS, and examines the relationship between the two variables.

Difference of Academic Performance & Anhedonia in Medical & Non-Medical students

In the contemporary academic landscape, students face considerable pressure, with competition being intense and life moving at a rapid pace. The neuroendocrine system plays a pivotal role not only in maintaining normal physiological functions but also in responding to stress. Stress can impact the endocrine and reproductive systems, affecting adaptation and homeostasis (Alloy et al., 2016).

This study involved 100 female college students, with 50 from medical and 50 from non-medical backgrounds. Participants completed questionnaires assessing their stress levels and detailing variations in menstrual patterns such as length, duration, dysmenorrhea, and premenstrual tension.

The study highlights a strong link between stress and premenstrual symptoms. While no significant difference was found in stress levels between medical and non-medical students, a higher prevalence of premenstrual tension was observed among medical students. This underscores the importance of addressing stress-related issues in both academic and non-academic settings to promote overall well-being among students.

Hypothesis

- Negative relationship exists between anhedonia and academic performance of medical and non-medical students experiencing PMS.
- Medical students experiencing anhedonia more than non-medical students experiencing PMS.
- Academic performance of medical students is lower than non-medical students.
- Anhedonia negatively impacts the academic performance of medical and non-medical students.

Method

Research Design

A comparative study with a quantitative approach in which Snaith Hamilton Pleasure Scale (SHAPS) & Academic performance questionnaire is used to collect data.

Sampling

Data is being collected from females who experience PMS. Females whose age were range from 18-26 years took part in this research. Study was conducted on different university students who belongs from medical and non-medical fields. 302 sample had been selected on the basis of purposive and convenient sampling. Sample was calculated using Rao soft sample calculator. Females who do not experience PMS or who do not fall in the age of 18-26 did not take part in this research.

Instruments

Snaith Hamilton Pleasure Scale (SHAPS)

A scale for the assessment of hedonic pitch the Snaith-Hamilton Pleasure Scale was developed by (author). SHAPS is a 14-item inquiry that measures someone's capacity to experience happiness. Each question is scored accompanying 1 point if the respondent dissents with a charge (e.g., "In the last few days, I hopeful able to enjoy a cute landscape or view.") or 0 points if they concur. Final scores range from 0-14. Previous studies have shown that SHAPS is a trustworthy and valid inquiry to assess epicurean tone in nonclinical populations, and allure briefness create it fit for use in research scenes (Franken et al., 2007). A former study found extreme internal constancy with α above .90 in both dispassionate and nonclinical samples.

Academic Performance Questionnaire

APS Scale accompanying an internal consistency of 0.89 was used to monitor how juniors perceived their own academic depiction and a test-retest reliability of .85. The APS consisted of (8) 5-point scale articles. This 5-point scale assessment was completed activity by Carson Birchmeier, Emily Grattan, Sarah Hornbacher, and Christopher Gregory of Saginaw Valley State University. For researchers the one have a particular interest in academic accomplishment among graduates, the APS promises to be a beneficial tool. Scale scores accompanied adequate internal regularity, 2-week test-retest dependability, and satisfactory agreeing validity.

Procedure

After getting the ethical approval by the university, participants were approached to have their data collected by the survey method, using structured questionnaires. Informed consent had been taken from the participants before data collection and they were given information about the study and questionnaire used. After completion of data collection, data was evaluated using SPSS.

Results

The data was coded, entered, and evaluated using SPSS spreadsheet for Windows (version 25). Descriptive statistics in the way that frequency distribution, mean, median, and

standard deviation had been working to characterize the data. The normality of data allocation was assessed using the Kolmogorov-Smirnov test. Correlation t-test and regression had been used to check study hypothesis.

Results obtained from the various analysis has been presented in the given table.

Table 1

Demographic Characteristics of the Participants

<i>Variables</i>	<i>F</i>	<i>%</i>	<i>M</i>	<i>SD</i>
Age				
18	26	8.6		
19	27	8.9		
20	33	10.9		
21	50	16.6		
22	66	21.9	21.61	2.02
23	47	15.6		
24	30	9.9		
25	15	5.0		
26	08	2.6		
Academic Field				
Medical	156	51.7		
Non-Medical	146	48.3	1.48	.5

Note; N=302, F=Frequency, %=Percentage, M=Mean, SD=Standard Deviation.

Table 1 showed demographic characteristics of the participants. The data obtained from demographics showed that average age of the sample population was 21 with a mean 21.61 and standard deviation of 2.018. With respect to the academic field 156(51.7%) are from medical field while 146(48.3%) students are from non-medical field.

Table 2

Psychometric Properties of Scale

<i>Scales</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>A</i>
TSHAPS	27.14	7.08	0-42	.81
TAPS	12.7	6.34	0-32	.82

Note, M=Mean, SD=Standard Deviation, α =Cronbach Alpha, TSHAPS=Total of Snaith Hamilton Pleasure Scale, TAPS=Total of Academic Performance Scale

Table 2 presented the mean, standard deviation and score ranges from Snaith Hamilton Pleasure Scale (SHAPS), Academic Performance Scale (APS). It also showed the Cronbach Alpha values calculated by reliability testing to check scale's reliability. The Alpha coefficient value of SHAPS is .81 and of APS is .82 which is significantly good value.

Table 3

Correlation of Study Variables

<i>Variables</i>	<i>1</i>	<i>2</i>
1. TSHAPS	-	-

2. TAPS	-0.13*	-
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Note, TSHAPS=Total of Snaith Hamilton Pleasure Scale, TAPS=Total of Academic Performance Scale. $p < .05$.

Table 3 showed the Pearson Correlation Analysis which was used to check association of the study variables. It was found that anhedonia has inverse relationship with academic performance ($r = -.13$, $p < .05$).

Table 4

Simple Linear Regression Results for Study Variables

Variable	B	SEB	β	t	p	95% CI
Constant	16.8	1.85	-	9.06	.000	[13.14, 20.43]
SHAPS	-.17	.08	-.12	-2.25	.02	[-.32, -.02]

Note, B=Unstandardized Beta, CI=Confidence Interval, β =Standardized Beta Coefficient, t =t-test Statistics, R^2 =Coefficient of Determination. SHAPS= Snaith Hamilton Pleasure Scale, $p < .05$.

Table 4 presented the simple linear regression analysis for predicting the impact of anhedonia on academic performance with PMS. The R^2 value of .17 showed the predictor explained 17% variance in the outcome variable with $F(1, 300) = 5.08$, $p < .05$, the results revealed anhedonia negatively predicted academic performance ($\beta = .12$, $p < .05$).

Table 5

Academic differences among study variables

Variables	Medical		Non-Medical		t	p	Cohen's d
	M	SD	M	SD			
SHAPS	23.10	4.79	24.08	4.6	-1.8	.07	.20
APS	12.04	6.29	13.37	6.33	-1.8	.06	.21

Note, Medical $n = 156$, Non-medical $n = 146$, $N = 302$, M=Mean, SD=Standard Deviation, t =t statistics, Cohen's d =Effect Size, SHAPS=Sanith Hamilton Pleasure Scale, APS= Academic Performance Scale.

Table 5 showed the t-test analysis which was used to assess differences in anhedonia and academic performance of medical and non-medical female students. It was found that insignificant differences were present in both groups in terms of experiencing anhedonia ($t = -1.8$, $p > .05$). But mean-wise differences were seen as non-medical students experience more anhedonia as compared to medical students ($M = 23.10$, $SD = 4.79$) and medical students experience anhedonia less than non-medical students ($M = 24.08$, $SD = 4.6$). Cohen's d value of .209 suggested weak effect size which means little difference exist in both groups.

It was also noticed that insignificant differences were present in both groups in terms of experiencing anhedonia which negatively impact the academic performance ($t = -1.8$, $p > .05$). But mean wise differences were seen as anhedonia more negatively impact the academic performance of non-medical students ($M = 13.37$, $SD = 6.33$) as compared to medical students ($M = 12.04$, $SD = 6.29$). Cohen's d value of .21 suggested weak effect size which mean little difference exist in both groups.

Discussion

Reviewing literature, it was hypothesized that negative relationship exists between anhedonia and academic performance of medical and non-medical students experiencing PMS. The result (see Table 3) of this study showed that Anhedonia has inverse relationship with Academic Performance. These results were supported by the study conducted by Aluja et al., (2004) found that anhedonia symptoms led to decreased motivation, reduced engagement and poorer academic outcomes in students. Another study conducted by Begdache et al., (2019) showed that increased anhedonia severity was associated with decreased academic performance in students. The study found a significant negative correlation between anhedonia and academic achievement. Anhedonia is guide with low self-idea and self-esteem and lack of confidence in academic achievement. The study found a negative correlation between anhedonia and academic performance, suggesting that as anhedonia increases, academic performance decreases (Bauer et al., 2015).

Another study conducted by Najati et al., (2024) showed that anhedonia can lead to significant declines in academic performance and targeted interventions can improve both symptoms and academic performance. However, Mahdi (2022) found a weak positive correlation between anhedonia and academic achievement which contradicts the hypothesis that anhedonia is inversely related to academic performance. Another research suggests that students experiencing PMS may experience decreased academic performance due various symptoms such as fatigue, irritability and mood swings (Kumar et al., 2018) however, anhedonia is not necessarily a predictor of poor academic performance in students.

Another hypothesis of the study stated that medical students experience more anhedonia than non-medical students experiencing PMS. According to the result of current study (see Table 5) there is insignificant difference present in both groups in terms of experiencing anhedonia. These results were supported by the findings of a study conducted by Singh et al., (2015) that the types of PMS complaints such as painful periods, passage of clots, anxiety or depressive symptoms like anhedonia are not exclusive to medical students. Non-medical students also experience these symptoms, indicating that PMS symptoms are broadly experienced across different student groups. Another study conducted by Acikgoz et al., (2017) showed that high prevalence rate across a broad student population indicates that depression or anxiety in PMS is a common issue affecting students in general, not just those in specific fields like medicine and the statistically significant relationship between PMS and the risk of depression further supports the idea that PMS has a broad impact on students, not limited to any specific group.

Saidan et al., (2020) conducted a study that showed that medical students are frequently subjected to severe academic pressure and a demanding curriculum. This profound stress can trigger the syndromes of PMS and lead to more pronounced depressing symptoms, containing anhedonia as compared to non-medical students that contradicts the results of current study and the findings of Singh et al., (2015). Another study by Asha et al., (2009) contradicts the results of current study by saying that PMS affects medical students' mental well-being and academic concentration. This impact is consistent with symptoms of anhedonia, which can affect motivation and enjoyment in daily activities and academic tasks. Therefore, the significant psychological impact of PMS on medical students may contribute to more anhedonia than non-medical students.

It was also hypothesized the Academic performance of medical students are lower than non-medical students. According to the result of current study (see Table 5) there is insignificant difference present in both groups in terms of experiencing anhedonia which

negatively impact the academic performance. The results were supported by the study conducted by AliHabi et al., (2019) provides evidence that PMS affects academic performance in both medical and literature students. Although literature students experience more severe symptoms, the potential for PMS to influence academic performance in medical students exists. Therefore, the hypothesis is being rejected.

Another study by Kusurkar et al., (2017) on motivation and performance across ethnic groups showed that different types of motivation affect academic performance differently. Similarly, PMS affecting academic performance can be expected in various student groups depending on their unique stressors and challenges, including both medical and non-medical students. However, study conducted by João et al., (2018) found that medical students had a higher prevalence of anxiety symptoms compared to non-medical students. Although depressive symptoms were less prevalent overall the fact that a higher percentage of medical students reported anxiety and depression could indirectly affect their academic performance more than non-medical students which contradicts the results of current study. Another study by Al-Dabal et al., (2010) contradicts the results that academic performance of medical students is lower than non-medical students by saying that medical students experience higher levels of academic stress, worse physical and mental health, and more issues with their study environment compared to non-medical students. These factors are likely to negatively impact their academic performance.

Another hypothesis of the study stated that Anhedonia negatively impacts the academic performance of medical and non-medical students. According to the result of current study (see Table 4) revealed that anhedonia negatively predicted academic performance of medical and non-medical students. Results are supported by the study conducted by Frey et al., (2022) showed that anhedonia negatively impacts academic performance across both medical and non-medical students. By reducing motivation, impairing cognitive functioning, decreasing engagement, increasing stress, and disrupting social support systems, anhedonia creates multiple barriers to academic success.

Another study supports the hypothesis that anhedonia negatively impacts academic performance, especially in high-stakes assessments and among students experiencing depressive symptoms. While the direct impact may not always be apparent, the indirect effects and observed relationships suggest that anhedonia can compromise academic outcomes (Clark et al., 2004). However, study conducted by Winer et al., (2016) contradicts the results and its findings revealed that anhedonia may not directly impact academic performance but could have indirect effects mediated by other factors such as depressive symptoms and overall mental health. Another study suggests that students experiencing PMS may experience decreased academic performance due various symptoms such as fatigue, irritability and mood swings (Kumar et al., 2018) however, anhedonia is not necessarily a predictor of poor academic performance in students.

Limitations

Although this study has contributed a lot in existing literature by exploring impact of anhedonia on academic performance with PMS but there are few limitations of this study. Firstly, the use of self-report measures may lead to some people not providing accurate information or hiding some details. Secondly, the topic was sensitive because students from different cultures participated and due to their different perceptions about PMS their responses might vary. Extraneous variables were not controlled due to which results could be impacted,

for example, anhedonia can be experienced by other factors as well like, Exposure to trauma and chronic stress can bring about changes in brain function, specifically in areas related to reward processing and motivation. These changes may manifest as anhedonia, where individuals have difficulty experiencing pleasure even from previously enjoyable activities (Hodes et al., 2016). Another disadvantage of our study is the presence of a considerable level of variety. This could be on account of the diverse geographical state with various cultures and differences.

Future Recommendations

By preventing purposive sampling and ensuring that sample includes a roomy range of participants from miscellaneous backgrounds, the results will be more thoughtful of the general population. Use ratified self-report measures and contain methods to cross really the data provided for one participant. This would lower the likelihood of shareholders providing inaccurate news or hiding details. Incorporate objective measures alongside self-report estimates to enhance the lawfulness of findings. Previous studies have explained the benefits of combining subjective and objective data in psychological research (Smith & Davis, 2019).

Objective measures in the way that academic records or performance estimates can provide a more comprehensive understanding of academic consequences (Jones et al., 2020). Using triangulation (that is combining self-report measures accompanying other data beginnings) can also reinforce data accuracy. Use a mixed methods approach, joining quantitative and concerning qualities not quantities data. This admits for a more nuanced understanding of the topic and can uncover judgments that might not clear through self-report measures alone. Employ with regard to the welfare of mankind sensitive approaches and provide able context and clarification to participants about the study's purpose. This can help in lowering the discomfort or hesitation between participants from different educational backgrounds.

Conduct subjective research to explore enlightening variations in the experience and idea of anhedonia with individuals accompanying PMS. Research indicates that cultural determinants influence the expression and understanding of psychological syndromes (Kirmayer & Ryder 2016). Qualitative methods such as interviews or focus groups can clear up cultural shadings that impact responses to depression (Kagawa-Singer & Blackhall 2001). Qualitative data can provide circumstances and depth to the all-inclusive findings, trying any gaps or disadvantages in the self-report data. By executing these recommendations can help future investigators to overcome the identified limitations.

Conclusion

PMS was proved to significantly affect study accompanying anhedonia and academic depiction. In addition almost 95% of the female students knowing anhedonia which belongings their academic performance and their grades. Anhedonia unfavorably impacts the academic performance of medical and non-medical students and both medical and non-medical graduates equally experiences the depression with PMS.

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