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THE RELATIONSHIP BETWEEN PREMENSTRUAL SYNDROME WITH INSOMNIA IN MEDICAL STUDENTS AT UNIVERSITAS NUSA CENDANA

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ABSTRAK

Abstract:
Menstrual disorders, one of which is Premenstrual Syndrome (PMS), are still Indonesia's most common health problem. PMS symptoms appear during the luteal phase that occurs 7-14 days before menstruation. During premenstrual syndrome, there will be a hormonal imbalance that can cause insomnia. Insomnia is difficulty sleeping, difficulty maintaining sleep (frequent awakenings at night), or waking up too early accompanied by drowsiness during the day, as well as poor sleep quality that occurs at least three times a week for a month. Insomnia can interfere academic performance of students. This study aims to analyze the relationship between PMS and insomnia in Medical students of Universitas Nusa Cendana. The research design used cross-sectional, and it was attended by 137 medical students of Universitas Nusa Cendana who were selected with total sampling. Data collection online used The Shortened Premenstrual Assessment Form (SPAF) and the Pittsburgh Sleep Symptom Questionnaire-Insomnia (PSSQ_I). The data analysis used is the Chi-Square test. There was a significant relationship between PMS and insomnia in medical students of Universitas Nusa Cendana, with a p-value of 0.000.

***Abstrak*:**
Gangguan menstruasi, salah satunya Premenstrual Syndrome (PMS) masih menjadi masalah kesehatan terbanyak di Indonesia. Gejala PMS muncul selama fase luteal yang terjadi 7-14 hari sebelum menstruasi. Selama PMS berlangsung akan terjadi ketidakseimbangan hormonal yang dapat menyebabkan insomnia. Insomnia merupakan kesulitan tidur, kesulitan mempertahankan tidur (sering terbangun di malam hari), atau bangun terlalu pagi yang disertai mengantuk pada siang hari serta kualitas tidur buruk yang terjadi minimal tiga kali dalam seminggu selama sebulan. Gangguan tidur insomnia yang berlangsung tersebut dapat mengganggu prestasi akademik dari mahasiswi. Penelitian ini bertujuan untuk menganalisis hubungan PMS dengan insomnia pada mahasiswi Program Studi Pendidikan Dokter Universitas Nusa Cendana. Desain penelitian ini cross sectional dan diikuti oleh 137 orang mahasiswi program studi Pendidikan Dokter Universitas Nusa Cendana yang dipilih dengan total sampling. Pengumpulan data menggunakan kuesioner online The Shortened Premenstrual Assessment Form (SPAF) dan Pittsburgh Sleep Symptom Questionnaire-Insomnia (PSSQ_I). Analisis data yang digunakan ialah uji Chi-Square. Hasil penelitian didapatkan terdapat hubungan yang signifikan antara sindrom premenstruasi dengan insomnia pada mahasiswi Program Studi Pendidikan Dokter Universitas Nusa Cendana dengan nilai p=0,000.

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INTRODUCTION

Premenstrual syndrome (PMS) was defined as symptoms occurring during luteal phase in reproductive female which may happened between 7 – 14 days [1], [2]. Premenstrual syndrome (PMS) may be present as emotional, physical, and psychological symptoms. PMS symptoms may affect daily activities [3].

Definite cause of PMS is still unknown; however, hormones estrogen, progesterone, aldosterone, and prolactin may play important roles. A balance disorder between estrogen and progesterone may cause fluid and natrium retention and potentially cause PMS [2].

A study from Moghadam et al. in 2014 reported that the prevalence of PMS was as high as 47.8%. The lowest prevalence was France (12%) while the highest prevalence was Iran (98%) [4]. According to World Health Organization (WHO) in 2016, the prevalence of PMS was found higher in Asian countries compared to western countries. The PMS prevalence was high, which was 70 – 90% in women of childbearing age. A study from Karki and Kharel in 2017 in Nepal showed that the prevalence of PMS between medical students was 94% [6].

Pelayanan Kesehatan Ramah Remaja (PKRR) under the WHO performed a study in 2005 and revealed that the highest concern in Indonesian female was menstrual problems (38.45%) [7]. A study performed by Ova Emelia in 2008 displayed that 95% of 260 women of childbearing age had one symptom of Premenstrual Syndrome [1]. Suparman, 2017, stated that the prevalence rate of PMS in Indonesia was 85% among all women of reproductive age population [8]. Based on data from Department of Health in 2014, 40% of Indonesian female had PMS and 10% among them had severe symptom [9]. Another research conducted by Yolanda et al in 2019 performed on female students from Medical Faculty, Nusa Cendana University revealed that of the 100 respondents whose data was taken, all experienced PMS. Respondents were divided into mild PMS (54%) and moderate PMS (46%) [10].

Premenstrual syndrome (PMS) may cause insomnia. This was due to the change of estrogen and progesterone levels which may affect serotonin and causes mood change and difficulty sleeping [11]. Insomnia was defined as difficulty to get to sleep, difficulty in maintain sleep (often gets up at night) or awake too early accompanied by feeling sleepy during daytime and poor sleep quality and occurring a minimum of 3 times a week in a month [12], [13]. In chronic cases insomnia may last longer and need consistent treatment [12], [14].

Research in Europe by Chiara Baglioni et al. in 2020 performed in 25 countries found that the mean prevalence of insomnia in Europe continent with symptoms at night, symptoms at day and night, and diagnosed as insomnia was 24.8%, 12.5%, and 10.1%, respectively. Based on insomnia prevalence, Germany and UK had the lowest prevalence which was 5.7% and 5.8%, respectively. Meanwhile, the highest prevalence was in Rusia (23.1%), Norway (20%), and France (19%) [15]. Moreover, a study by Micheline Maire et al. in Swiss in 2018 showed that a third among the 2.432 patients had a subjective sleep complaint. Approximately 11% patients fulfil the DSM-5 criteria (The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition) for chronic insomnia where 61% of patients were female [16].

Based on National Sleep Foundation in 2018, the incidence of insomnia in Southeast Asia was as high as 67% among 1,508 samples and 7.3% were students. The incidence of insomnia in Indonesia in 2018 was 67% where 55.8% had mild insomnia and 23.3% had moderate insomnia [17]. Research by Dasheni Sathivel and Lely Setyawati in medical students in 2017 found that all 50 respondents had insomnia symptoms with 40% being at the sub-threshold of insomnia, 56% respondents

had moderate clinical insomnia, and 4% had severe clinical insomnia [18].

Insomnia had a severe impact. The high incidence of insomnia may result in lack of concentration, productivity, and decreased performance and impacted on life quality [14], [19], [20]. This result was similar to Alqudah et al. in 2019 which stated that insomnia in medical and pharmacy students may affect academic achievement [21].

Ahmed Arafa et al. (2020) concluded that there was a correlation between PMS and insomnia [22]. This result was reciprocal to Kusumawarddhani et al (2016) where there was no data showing a relation between PMS and insomnia [23]. Due to these contradictive results, this research aims to analyze the correlation between PMS and insomnia in female student in Faculty Medicine, Nusa Cendana University

RESEARCH METHOD

This is a quantitative analytical cross-sectional observation. Research was performed in 137 female students of Medical Faculty, Nusa Cendana University class 2019, 2020, and 2021 whom had menarche. The sampling technique used was total sampling.

Students were given informed consent and were asked to fill in biodata through zoom meeting. Students willing to join the study and fulfill inclusion criteria were privately being sent links containing questionnaire via Whatsapp.

Data used in this study was primary data. PMS evaluation was performed using The Shortened Premenstrual Assessment Form (SPAF) questionnaire, while insomnia evaluation was performed through Pittsburgh Sleep Symptom Questionnaire-Insomnia (PSSQ_I) questionnaire.

Inclusion criteria in this study was female who had menarche. Exclusion criteria include:

a. Respondents diagnosed as having mental disorders (depression, bipolar, anxiety disorder, Alzheimer, schizophrenia, substance use disorders, and adjustment disorders);
b. Respondents had medical issues that may cause respondents to had insomnia (angina, congestive heart failure, menopause, thyroid imbalance, dysfunctional uterine bleeding, fibromyalgia, arthritis, ankylosing spondylitis, Sjogren syndrome, COPD, asthma, pneumonia, CLBP, Parkinson, Alzheimer, multiple sclerosis, uncontrolled migraines, brain tumor, traumatic brain injury, benign prostatic hyperplasia, overactive bladder, GERD, peptic ulcer disease, irritable bowel syndrome, AIDS, chronic fatigue syndrome, Lyme disease, nocturnal pruritus, and systemic cancer); and
c. Respondents consumed several drugs that may cause them to have insomnia (antidepressants, asthma drugs, hypertension drugs, decongestant, and drugs containing caffeine).

Data was analyzed using Chi-Square through SPSS version 26.

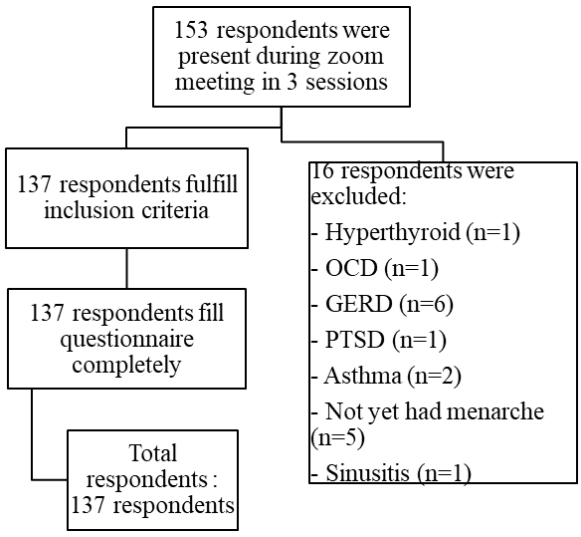

Figure 1. Respondents analyzed in the study

RESULTS AND ANALYSIS

RESULTS

1. Respondents' Characteristic Distribution

The characteristics of respondents were listed in Table 1.

Table 1.
Respondents' Characteristic

Characteristics	Frequency (n = 137)	Percentage (%)
Age		
18-year-old	25	18.2
19-year-old	55	40.1
20-year-old	37	27
21-year-old	20	14.6
Class		
2019	36	26.3
2020	53	38.7
2021	48	35

Based on table 1, it is known that the highest age distribution is at 19-year-old (40.1%) and the least is at the age 21-year-old (14.6%). Most subjects were from class 2020 and the least were from 2019.

Premenstrual Syndrome Frequency Distribution

PMS	Frequency	Persentage (%)
No	14	10,2
Mild	87	63,5
Moderate	27	19,7
Severe	9	6,6
Total	**137**	**100**

According to table 2, 123 out of 137 respondents (89.8%) in this research had PMS and 14 respondents (10.2%) had not experienced PMS. The highest number of PMS reported was with mild symptoms (87 respondents, 63.5%) while the least was severe symptoms (9 respondents, 6.6%).

Figure 2 describes symptoms that were reported by respondents with PMS. The most often were irritable (86.1%), abdominal pain (81.8%), and easily sad (80.3%). Meanwhile, the least reported were feet or ankle edema (17.5%).

Tabel 2.

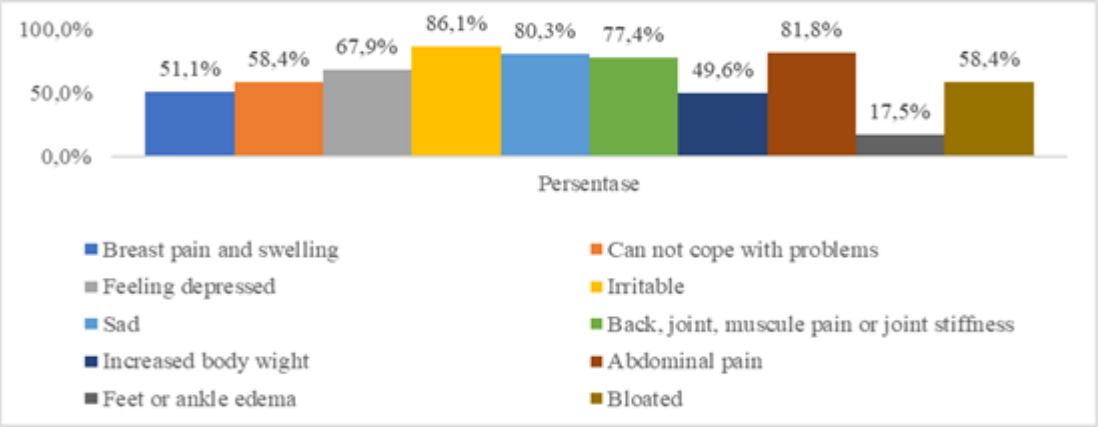

Figure 2. Frequency Distribution of PMS Symptoms

Tabel 3.
Frequency distribution of PMS symptoms

Insomnia	Frequency	Persentage (%)
No	88	64,2
Yes	49	35,8
Total	**137**	**100**

Table 3 showed that among all respondents most did not report insomnia (88 respondents, 64.2%).

Figure 3 displayed the distribution of insomnia symptoms reported by the subjects. Most respondents reported difficulty falling asleep (78.8%) and got up too early (75.9%) which caused feeling sleepy at daytime (87.6%) and difficult to concentrate (85.4%). The rarest symptom reported was snoring (40.9%).

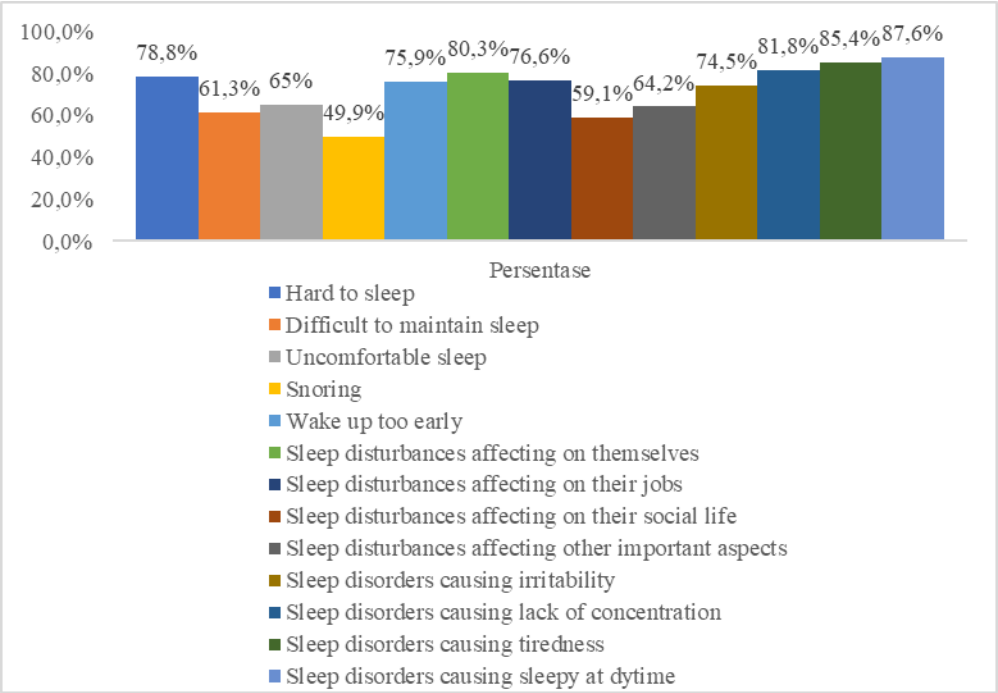

Figure 3. Insomnia Symptoms Distribution

2. Bivariate Analysis Result

Tabel 4.
The correlation between Premenstrual Syndrome and Insomnia

PMS	Insomnia				Total	*P*
	No		Yes			
	N	%	N	%		
No	5	3,6	9	6,6	14 (10,2%)	0,000*#
Mild	66	48,2	21	15,3	87 (63,5%)	
Moderate	17	12,4	10	7,3	27 (19,7%)	
Severe	0	0,0	9	6,6	9 (6,6%)	
Total	88	64,2	49	35,8	137 (100%)	

*p<0,05 #*Chi-Square*

Table 4 showed that most subjects had mild PMS without insomnia (66 respondents) while the fewest had severe PMS and all were accompanied by insomnia (9 respondents). Based on Chi-Square test, which had fulfilled the requirement of expected count < 5 under 20%, significancy level was p = 0.000 (p < 0.05). This result was interpreted as there was a significant relation between PMS and insomnia in female students in Faculty of Medicine, Nusa Cendana University.

DISCUSSION

This research was performed to 137 students and 123 respondents (89.8%) had PMS. The result was similar to Karki and Kharel in 2017 in Nepal who concluded that almost all respondents (94%) had PMS [6]. This result was also similar to a review stated that 70-90% women of childbearing age had premenstrual syndrome [5].

Based on data gathered by the researchers, PMS symptoms most reported were irritable (86.1%), abdominal pain (81.8%), and easily sad (80.3%). This result was similar with Lumingkewas et al (2021) which showed that psychological symptoms such as mood swing was the most symptom experienced by medical student during PMS. This was due to the change of estrogen and progesterone hormones which affected serotonin [24].

According to Fiona C. Baker (2018), female with PMS symptom tend to have difficulty sleeping. The more severe of the PMS symptoms, the easier an individual had insomnia and sleepy during daytime [25]. Premenstrual syndrome causes insomnia because during PMS there was a change of hormone levels. An increase of estrogen and a decrease of progesterone causes a decrease in serotonin level causing mood change and difficulty to sleep [11].

In this research, 49 out of 137 subjects (35.8%) had insomnia. This result was similar with Karki and Kharel in 2017 in Nepal on medical students concluded that insomnia prevalence was 20.1% [6]. Another study by Ahmed Arafa et al. (2020) in Egypt showed that insomnia prevalence was 11.6% [22]. Based on the data, it can be concluded that the insomnia prevalence in this research was higher compared to previous studies.

Insomnia symptoms most reported were difficulty falling asleep (78.8%) and getting up too early (75.9%). Both symptoms caused respondents to be hard to concentrate (85.4%) and feel sleepy during daytime (87.6%). This result was similar to Cardoso et al. in 2022 stated that medical faculty students most had insomnia symptoms such as difficulty to fall asleep, hard to maintain sleep, and waking up too early to the point that it disrupts daily activities [26].

Chi-Square test showed a significant result ($p = 0.000$), therefore it was concluded that there was a correlation between PMS and insomnia in female students in Medical Faculty in Nusa Cendana University. This result was similar with Ahmed Arafa et al. in 2020 displayed that insomnia was significantly related with PMS [22]. This result was also supported with a theory stated that a change of estrogen and progesterone levels during PMS will affect serotonin level which causes sleeping difficulties [11]. The impact of behavior, lifestyle, heavy academic load, and high level of internet use may also cause insomnia in medical students [27]. The result from this research concluded that PMS was related with insomnia; therefore, it is important to manage PMS to prevent insomnia

CONCLUSION

Most (89.8%) medical students had Premenstrual Syndrome and more than a third of respondents had insomnia. Chi-Square showed a significant relation between PMS and insomnia in female students in Faculty of Medicine, Nusa Cendana University.

LIMITATION

Respondents in this study were medical students in one university; therefore, generalization of this study was limited to students with similar characteristics. The result can not be applied in general female students. Moreover, data was collected online, and questionnaire filling was not directly monitored by the researcher. However, the response rate was 100%.

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