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The Correlation Between Stress And Sleep Quality On The Menstrual Cycle Of Female Students At The Faculty Of Health Sciences, Universitas Muhammadiyah Purwokerto

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ABSTRACT

The menstrual cycle plays an important role in women's reproductive health, yet many experience irregularities influenced by stress and poor sleep quality. Students, particularly female university students, often face high levels of stress due to academic pressures, which, along with inadequate sleep, contribute to menstrual cycle disturbances.
A quantitative cross-sectional study was conducted with 347 female students. Data was collected through purposive sampling and analyzed using the Kruskal-Wallis test to assess the differences in stress and sleep quality levels with respect to menstrual cycle regularity.
The study found that 61% of respondents with oligomenorrhea (irregular cycles) had moderate stress levels. A significant difference was observed between stress levels and menstrual cycle regularity (p = 0.000). Similarly, 33.4% of respondents with oligomenorrhea had poor sleep quality, and a statistically significant difference was found between sleep quality and menstrual cycle regularity (p = 0.000).
Both stress and sleep quality are significantly associated with menstrual cycle irregularities in female students. Interventions aimed at reducing stress and improving sleep quality may help regulate menstrual cycles.

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1. INTRODUCTION

Menstruation is a critical physiological process, marking the monthly shedding of the uterine lining when no pregnancy occurs[1]. The menstrual cycle can be disrupted by various factors, including hormonal imbalances, stress, and poor sleep quality, which are common in young women, especially university students[2]. Stress is often caused by academic pressures, and poor sleep quality is linked to high workloads and irregular sleep patterns[3]. In Indonesia, many women, particularly in the 17-29 age group, experience menstrual irregularities, including oligomenorrhea (long cycles) and amenorrhea (absence of periods)[4].

In addition to stress, sleep plays a vital role in maintaining hormonal balance and regular menstrual cycles[5]. Sleep disturbances, such as insufficient sleep, increase cortisol levels, which in turn affect estrogen and progesterone secretion, ultimately influencing the menstrual cycle.

Despite growing evidence that stress and sleep disturbances can affect menstrual cycles, there is a lack of research exploring the relationship between these factors among university students, particularly in Indonesia. This study aims to fill this gap by investigating the influence of stress and sleep quality on

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menstrual cycle regularity among female students at the Faculty of Health Sciences, Universitas Muhammadiyah Purwokerto.

The objective of this study is to explore the relationship between stress, sleep quality, and menstrual cycle irregularities among female students. This research seeks to provide a deeper understanding of how these factors contribute to the health of young women.

2. RESEARCH METHOD

This research employed a quantitative cross-sectional study design. Data were collected from 347 female students at the Faculty of Health Sciences, Universitas Muhammadiyah Purwokerto, using purposive sampling. This design allowed for the assessment of the relationship between stress, sleep quality, and menstrual cycle irregularities at a single point in time. The data were gathered using a set of self-administered questionnaires, which included: The DASS-42 (Depression, Anxiety, Stress Scale) to measure stress levels[1], the PSQI (Pittsburgh Sleep Quality Index) to assess sleep quality[2], a menstrual cycle questionnaire to categorize the menstrual cycle of the respondents. Data analysis was performed using the Kruskal-Wallis test to determine the significant differences in stress levels, sleep quality, and menstrual cycle regularity. Statistical significance was set at $p < 0.05$.

3. RESULT AND DISCUSSIONS

1. Univariat Analysis

Table 1. characteristics of the respondents

	Total (N=347)	Normal (N=110)	Polimenore (N=102)	Oligomenore (N=128)	Amenore (N=7)	p-value
	n (%)	n (%)	n (%)	n (%)	n (%)	
Usia (mean±SD)	20.92±1.36	20.90±1.25	20.82±1.39	20.98±1.42	21.43±1.51	0.634
Semester						0.842
II	109	37 (10.70)	31 (8.90)	38 (11.00)	3 (0.90)	
IV	(31.40)	21 (6.10)	33 (9.50)	36 (10.40)	1 (0.30)	
VI	91 (26.20)	33 (7.50)	26 (7.50)	29 (8.40)	1 (0.30)	
VIII	89 (25.60)	19 (5.50)	12 (3.50)	25 (7.20)	2 (0.60)	
	58 (16.70)					
Jurusan						0.652
Kebidanan	40 (11.50)	9 (2.60)	15 (4.30)	16 (4.60)	0 (0)	
D3	40 (11.50)	13 (3.70)	10 (2.90)	16 (4.60)	1 (0.30)	
Kebidanan	40 (11.50)	16 (4.60)	10 (2.90)	13 (3.70)	1 (0.30)	
S1	40 (11.50)	8 (2.30)	14 (4.00)	17 (4.90)	1 (0.30)	
Anestesiologi	40 (11.50)	13 (3.70)	11 (3.20)	15 (4.30)	1 (0.30)	
D4	37 (10.70)	10 (2.90)	11 (3.20)	15 (4.30)	1 (0.30)	
Keperawatan	10 (2.90)	1 (0.30)	5 (1.40)	3 (0.90)	1 (0.30)	
D3	10 (2.90)	2 (0.60)	1 (0.30)	6 (1.70)	1 (0.30)	
Keperawatan	37 (10.70)	21 (6.10)	10 (2.90)	6 (1.70)	0 (0)	
S1	16 (4.60)	5 (1.40)	6 (1.70)	5 (1.40)	0 (0)	
MIK D4	37 (10.70)	12 (3.50)	9 (2.60)	16 (4.60)	0 (0)	
Profesi bidan						
Profesi ners						
TLM D4						
TRE D4						
TRP D4						
IMT						0.000
Kurang	49 (14.10)	9 (2.60)	19 (5.50)	19 (5.50)	2 (4.10)	
(<18.5)	261	95 (27.40)	72 (20.70)	94 (27.10)	0 (0)	
Normal	(75.20)	6 (1.70)	11 (3.20)	15 (4.30)	5 (1.40)	
(≥18.5-22.9)	37 (10.70)					

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Lebih (>23-29.9)	

Table 1 presents the characteristics of the respondents in terms of age, education, and occupation. The majority of the participants were in the 20-25 years age group, with a significant proportion having completed high school.

2. Bivariat Analysis

Table 2 Distribution of Stress Levels and Menstrual Cycle Regularity

	Total (N=347)	Normal (N=110)	Polimenore (N=102)	Oligomenore (N=128)	Amenore (N=7)	p-value
	n (%)	n (%)	n (%)	n (%)	n (%)	
Stress Level (mean±SD)	18.81±7.87	11.06±4.65	21.80±6.29	22.36±5.94	32.14±6.06	0.000
Stress Level						0.000
Normal	103	86 (24.80)	8 (2.30)	9 (2.60)	0 (0)	
Mild	(29.70)	19 (5.50)	21 (6.10)	20 (5.80)	0 (0)	
Moderate	60 (17.30)	5 (1.40)	46 (13.30)	61 (17.60)	1 (0.30)	
Savere	113	0 (0)	24 (6.90)	33 (9.50)	2 (0.60)	
Very	(32.60)	0 (0)	3 (0.90)	5 (1.40)	4 (1.20)	
Savere	59 (17.00)					
	12 (3.50)					

This table shows the relationship between stress levels and menstrual cycle regularity. It compares two variables (stress levels and menstrual cycle regularity) and assesses the relationship between them, which is typical of bivariate analysis. The p-value (p = 0.000) indicates a significant difference, confirming a bivariate analysis approach.

Table 3: Relationship between Sleep Quality and Menstrual Cycle Regularity

	Total (N=347)	Normal (N=110)	Polimenore (N=102)	Oligomenore (N=128)	Amenore (N=7)	p-value
	n (%)	n (%)	n (%)	n (%)	n (%)	
Sleep Quality (mean±SD)	8.08±3.29	5.27±1.98	9.22±2.94	9.44±2.96	11.00±2.30	0.000
Sleep Qualty						0.000
Good	105	82 (23.60)	11 (3.20)	12 (3.50)	0 (0)	
Poor	(30.30)	28 (8.10)	91 (26.20)	116 (33.40)	7 (2.00)	
	242 (69.70)					

Similar to Table 2, this table presents the relationship between sleep quality and menstrual cycle regularity, making it another example of bivariate analysis. The statistical significance (p = 0.000) shows that there is a significant difference between the two variables.

Discussion

The results of this study are consistent with previous research, indicating that **stress** and poor sleep quality significantly influence menstrual cycle irregularities. Stress can disrupt the hormonal regulation of the menstrual cycle by increasing cortisol levels, which affect estrogen and progesterone[3]. Similarly, poor sleep quality, often a consequence of academic pressure and lifestyle, negatively impacts hormonal balance, leading to irregularities like oligomenorrhea[5].

This study highlights the need for interventions aimed at reducing stress and improving sleep quality in university students. Educational programs or counseling that help manage stress and encourage better sleep habits could be beneficial in promoting regular menstrual cycles among young women.

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4. CONCLUSION AND RECOMMENDATION

This study demonstrates a significant relationship between stress, sleep quality, and menstrual cycle irregularities in female students. Efforts to address stress management and improve sleep quality could help mitigate menstrual cycle disturbances and improve overall health outcomes for students..

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