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Determinant Factors Related To The Incidence Of Dysmenorrhea In Students Of Smk Al-Bana, Bogor Regency

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ABSTRACT

Dysmenorrhea is pain in the lower abdomen, which can radiate to the lower back and legs. This study aims to analyze the picture and relationship between stress levels, physical activity, sleep quality, and menstrual cycles with the incidence of dysmenorrhea in Al Bana Vocational School students. The type of research method used is quantitative research with a Cross-sectional approach. The total population in this study was 108 respondents and an active sample of 69 respondents was obtained with a random sampling technique. The instrument in the study used was a questionnaire with direct distribution. The data analysis used was univariate analysis and bivariate analysis (chi-square). The results showed that there was a relationship between stress level (p-value = 0.006), sleep quality (p-value = 0.000), menstrual cycle (p-value = 0.000) and the incidence of dysmenorrhea, while there was no relationship between physical activity (p-value = 0.791) and the incidence of dysmenorrhea. The conclusion showed that there was a relationship between stress levels, sleep quality, menstrual cycles and the incidence of dysmenorrhea in Al Bana Vocational School students. For future researchers, it is recommended to conduct further research to analyze the incidence of dysmenorrhea by paying attention to other variables related to the incidence of dysmenorrhea.

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Introduction

Menstruation is a regular cycle of decay of the uterine lining, in response to hormonal interactions produced by the hypothalamus, pituitary, and ovaries. The duration of menstruation sometimes fluctuates every month so that the disorders that arise are various and can occur during, before or after menstruation, including premenstrual syndrome, *Dysmenorrhea*, *hypermenorrhea*. Research states that *Dysmenorrhea* is the most common disorder (Ratnasari, et al. 2022).

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Dysmenorrhea is menstrual pain before or during menstruation, dysmenorrhea is one of the most common menstrual disorders in adolescent girls. When viewed from the anatomical aspect, which is one of the causes of the disorder *Dysmenorrhea* The presence of excessive hormone secretion or the secretion of a substance called prostaglandins that causes an increase in the frequency of contractions of the uterine muscles so that it causes menstrual pain (Ratnasari et al., 2022).

More than 50% of young women have an inability to do study activities for 1 to 3 days each month and about 10% of young women need time off to relieve *Dysmenorrhea* (Widyanthi et al., 2021). Pain *Dysmenorrhea* What adolescent girls feel can have an impact on adolescents' daily activities, including disturbed sense of comfort, decreased activity, disturbed sleep patterns, disturbed appetite, disturbed interpersonal relationships, difficulty concentrating on work and study. Pain is also able to affect emotional status to the nature of feelings, irritability, depression and anxiety (Triana et al. 2021).

According to *World Health Organization* (WHO) in 2020, incidence prevalence *Dysmenorrhea* were 1,769,425 or (90%) of young women suffering from *Dysmenorrhea*, with 10-16% suffering from *Dysmenorrhea* heavy. On average, more than 50% of young women suffer from *Dysmenorrhea* (Indah and Susilowati 2022).

Incidence figures *Dysmenorrhea* in Indonesia in 2018, as many as 107,673 women, consisting of 54.89%, experienced *Dysmenorrhea* and 9.36% experienced *Dysmenorrhea* secondary (Martinus et al. 2022). Triana's research states that it is estimated that 30%-70% of women in West Java experience menstrual problems, including abdominal pain or *Dysmenorrhea* and about 10%-15% of them are forced to lose opportunities for activities, school and family life. (Triana et al., 2021). Based on previous research conducted on female students, there are 43.3% of vocational school students *Dismenore* primer ringan dan 56.7% mengalami *dismenore* berat (Yani, et al. 2022). Incidence figures *Dysmenorrhea* In the Bogor area, 74.1% of the presentations occurred, which was 23.8% who experienced *Dysmenorrhea* while women who experience *Dysmenorrhea* 60.3%, and women who experience *Dysmenorrhea* weight as much as 15.9% (Deswita, 2023). Careful checks for spelling and grammatical errors should be carried out.

Psychological factors are one of the causes *Dysmenorrhea*, the psychological factor is stress. Stress can interfere with the work of the endocrine system so that it can cause irregular periods and pain during menstruation or *Dysmenorrhea* (Sandayanti et al. 2019). Based on a previous research study conducted by Prahardian, Devi and Dinda in 2021, it was shown that the most stress levels among adolescent girls were in the medium category (45.5%). Some young women experience *Dysmenorrhea* moderate (65.9%). There is a relationship that is one of the causative factors *Dysmenorrhea*, with a P-value = 0.000 and a correlation coefficient value of 0.650, meaning that there is a strong relationship between the level of stress and the incidence *Dysmenorrhea* in young women (Prahardian et al. 2021).

Other problems that can cause *Dysmenorrhea* is the quality of sleep. Poor sleep quality due to a reduction in sleep of up to 4 hours can increase prostaglandins as pain mediators. Based on previous research studies conducted by Rozaky and Habibur, it was found that sleep quality mostly showed poor sleep quality of 61.3%. Mostly, respondents experienced *Dysmenorrhea* weight borne

(53.2%). The Spearman Rank statistical test obtained a p value = 0.000 which means that there is a relationship between sleep quality and *Dysmenorrhea* to young women at SMAN Sunan Ampel Langkap Timur (Habibur, 2021).

Lack of physical activity will decrease the distribution of oxygen in the systemic circulation, thereby increasing a person's perception of pain, including *Dysmenorrhea*. Previous research conducted by Sugyanto and Nur showed the results of physical activity with *Dysmenorrhea* A p value of 0.000 (<5%) can be obtained, then it can be concluded that there is a significant relationship between physical activity and the level of *Dysmenorrhea* in grade XII students of SMK Negeri 2 Godean (Sugiyanto and Luli, 2020).

The menstrual cycle is the time from the first day of menstruation until the arrival of the next period (Juliana et al. 2019). Based on previous research conducted by Hikma, Yunus, and Hapsari, it shows the relationship between the menstrual cycle and the menstrual cycle. *Dysmenorrhea* Primary in adolescent girls were obtained from 75 respondents, as many as 14 female students (18.7%) were classified as not experiencing regular menstrual cycles, and there were 61 female students (81.3%) classified as having regular menstrual cycles which showed that there was a relationship between the menstrual cycle and *Dysmenorrhea* primary and obtained a value of 0.000 (p-value<0.05) (Hikma et al. 2021).

Based on a preliminary study conducted at SMK Al Bana, Bogor Regency, on February 16, 2023, by distributing questionnaires to 20 female students, the results were obtained that 18 out of 20 (90%) female students experienced *dysmenorrhea* every menstrual period. Therefore, the researcher is interested in conducting a study with the title "Determinant Factors Related to the Incidence of *Dysmenorrhea* in Al Bana Vocational School Students, Bogor Regency"

Method

This type of research uses quantitative research, as described (Siyoto, 2015 in Hardian et al., 2020). Quantitative is defined as research that uses a lot of numbers, starting from the data collection process, data analysis and data appearance. Quantitative research is commonly used in inferential research to test a hypothesis that is significant or independent of the statistical test used, and is not scientific logic. With an observational analytical approach with the aim of examining the relationship between each independent variable and independent variables. The type of research design used is cross-sectional or *cross-sectional.* The population in this study is 108 students of SMK Al Bana.

In this study, the sample criteria used are inclusion and exclusion criteria, which determine whether or not the sample can be used in the research. The sampling technique used in this study uses *random sampling*.

This study used the determination of sample size based on a two-proportion hypothesis test formula from S.K. Lwanga and S. Lemeshow in 1991.

$$n = \frac{\left\{ z_{1-\alpha/2}\sqrt{2\bar{P}(1-\bar{P})} + z_{1-\beta}\sqrt{P_1(1-P_1)+P_2(1-P_2)} \right\}^2}{(P_1-P_2)^2}$$

Figure 1. Two-Proportion Hypothesis Test Formula

Based on the calculation of the formula below, the maximum sample was in the sleep quality variable, which was 69 between stress levels, physical activity, and menstrual cycles. The size of the sample is the number of respondents that will be taken in the study.

Table 1. Large Sample Calculation

Variable	P1	P2	Large Sample
Stress Levels	0,0	0,2	56
Sleep Quality	0,3	0,6	69
Physical Activity	0,2	0,5	63
Menstrual cycle	0,3	0,7	38

In this study, the material used was used to determine the determinant factors related to *Dysmenorrhea,* by collecting the results of primary and secondary data. This research instrument uses a questionnaire that is carried out directly by distributing questionnaires to students at SMK Al Bana. The questionnaire in this study consisted of several variables, namely respondent identity including age and class, *Dysmenorrhea questionnaire*, stress questionnaire, sleep quality questionnaire, physical activity questionnaire, menstrual cycle questionnaire, validity test, and reliability test.

Data analysis in a study based on Khoiriati, (2016) is through the Univariate Analysis procedure, Bivariate Analysis.

Result

Overview of the Incidence of *Dysmenorrhea* in Al Bana Vocational School Students

Table 2. Distribution of *Dysmenorrhea* Frequency in Al Bana Vocational School Students

Dysmenorrhea	Frequency	Present (%)
Dysmenorrhea	54	78,3
No *dysmenorrhea*	15	21,7
Total	**69**	**100,0**

Based on Table 2, it is explained that Al Bana Vocational School students experience more *Dysmenorrhea* namely 54 female students (78.3%) compared to those who did not experience *Dysmenorrhea* namely 15 female students (21.7%).

Description of Characteristics of Al Bana Vocational School Students

Table 3 Frequency Distribution of Characteristics in Al Bana Vocational School Students

Variable	Frequency	Percentage
Class		
10	43	62,3
11	26	37,7
Age		
15	8	11,6
16	33	47,8
17	28	40,6
Total	**69**	**100,0**

Based on Table 3, it is explained that the characteristics of the respondents are 16 years old, namely 33 female students (47.8%), and 17 years old, which is 28 female students (40.6%), while the age of 15 years is 8 female students (11.6%). More respondents were in grade 10, which was 43 students (62.3%), compared to grade 11, which was 26 students (37.7%).

Overview of Stress Risk in Al Bana Vocational School Students

Table 4 Distribution of Stress Risk Frequency in Al Bana Vocational School Students

Stress	Frequency	Percentage
Stress is very heavy	13	18,8
Heavy Stress	24	34,8
Moderate Stress	20	29,0
Mild Stress	7	10,1
Stress Normal	5	7,2
Total	**69**	**100,0**

Based on Table 4, it is explained that Al Bana Vocational School students experience more risk of severe stress, namely 24 students (34.8%), compared to students who experience a risk of normal stress, namely 5 students (7.2%).

Overview of Physical Activity in Student of SMK Al Bana

Table 5 Distribution of Frequency of Physical Activity of Al Bana Vocational School Students

Physical Activity	Frequency	Percentage

Low	10	14,5
Keep	49	71,0
Tall	10	14,5
Total	**69**	**100,0**

Based on Table 5, it is explained that the majority of students of SMK Al Bana experience moderate physical activity, namely 49 students (71.0%) while students who experience low physical activity are 10 students (14.5%) and students who experience high physical activity are 10 students (14.5%).

Overview of Sleep Quality in Al Bana Vocational School Students

Table 6 Distribution of Sleep Quality Frequency in Al Bana Vocational School Students

Sleep Quality	Frequency	Percentage
Good	10	14,5
Bad	59	85,5
Total	**69**	**100,0**

Based on Table 6, it is explained that the majority of students of SMK Al Bana have poor sleep quality, namely 59 students (85.5%) while students who experience good sleep quality are only 10 students (14.5%).

Overview of the Menstrual Cycle in Students of SMK Al Bana

Table 7 Distribution of Menstrual Cycle Frequency in Al Bana Vocational School Students

Menstrual Cycle	Frequency	Percentage
Irregular	56	81,2
Orderly	13	18,8
Total	**69**	**100,0**

Based on Table 7, it is explained that the majority of students of SMK Al Bana have irregular menstrual cycles (81.2%) while female students who have good menstrual cycles are (18.8%).

The Relationship between Stress Risk and the Incidence of *Dysmenorrhea* in Al Bana Vocational School Students

Table 8 Relationship between Stress Risk and the Incidence of *Dysmenorrhea* in Al Bana Vocational School Students

Stress Levels	***Dysmenorrhea***		**No *dysmenorrhea***			***P-Value***
	n	%	n	%	**Total %**	
Very Heavy	13	100,0%	0	0,0%	13 (100,0%)	0,006
Heavy	22	91,7%	2	8,3%	24 (100,0%)	
Keep	13	65,0%	7	35,0%	20 (100,0%)	
Light	4	57,1%	3	42,9%	7 (100,0%)	
Usual	2	40,0%	3	60,0%	5 (100,0%)	
Total	54	78,3%	15	21,7%	69 (100,0%)	

Based on Table 8, it shows that respondents with severe stress experience more *Dysmenorrhea* (91.7%), while respondents who did not experience *Dysmenorrhea* It was most common in respondents with moderate stress (35.0%). The results of the statistical test obtained a value *p-value* < 0.05, which is 0.006, which shows that there is a relationship between the risk of stress and the incidence *Dysmenorrhea*.

The Relationship between Physical Activity and the Incidence of *Dysmenorrhea in* Al Bana Vocational School Students

Table 9 Relationship between Physical Activity and the Incidence of *Dysmenorrhea* in Al Bana Vocational School Students

Physical Activity	***Dysmenorrhea***		**No *dysmenorrhea***			***P-Value***
	n	%	n	%	**Total %**	
Low	8	80,0%	2	20,0%	10 (100,0%)	0,791
Keep	39	76,9%	10	20,4%	49 (100,0%)	

Tall	7	70,0%	3	30,0%	10 (100,0%)
Total	54	78,3%	15	21,7%	69 (100,0%)

Based on Table 9, it shows that respondents with moderate activities experience more *Dysmenorrhea* (76.9%), and respondents who did not experience *Dysmenorrhea* most commonly occurred in respondents with moderate physical activity (20.4%). The results of the statistical test obtained a value *p-value* > 0.05, which is 0.791, which shows that there is no relationship between physical activity and the incidence *Dysmenorrhea*.

Table 10 Relationship between Sleep Quality and the Incidence of *Dysmenorrhea* in Al Bana Vocational School Students

Sleep Quality	***Dysmenorrhea***		**No *dysmenorrhea***			***P-Value***	**OR (95% CI)**
	n	%	n	%	**Total %**		
Bad	52	88,1%	7	11,9%	59 (100,0%)	0,000	29,7
Good	2	20,0%	8	80,0%	10 (100,0%)		
Total	54	78,3%	15	85,5%	69 (100,0%)		

Based on Table 10, it shows that respondents with poor sleep quality experience more *Dysmenorrhea* (88.1%), while respondents who did not experience *Dysmenorrhea* Most commonly occurred in respondents with good sleep quality (80.0%). The results of the statistical test obtained a value *p-value* < 0.05 which is 0.000 which shows a relationship between sleep quality and incidence *Dysmenorrhea*. Value *Odds Ratio (OR)* showing a figure of 29.7 which can be interpreted as respondents who have poor sleep quality have the opportunity to experience a risk of experiencing *Dysmenorrhea* 29.7 times compared to respondents who had good sleep quality.

The Relationship between the Menstrual Cycle and the Incidence of *Dysmenorrhea* in Al Bana Vocational School Students

Table 11 Relationship of the Menstrual Cycle to Incidence *Dysmenorrhea* At Al Bana Vocational School

Menstrual Cycle	*Dysmenorrhea*		No *dysmenorrhea*			*P-Value*	OR (95% CI)
	n	%	n	%	**Total %**		
Irregular	52	92,9%	4	7,1%	56 (100,0%)	0,000	34,0
Orderly	2	15,4%	11	84,6%	13 (100,0%)		
Total	54	78,3%	15	21,7%	69 (100,0%)		

Based on Table 11, it shows that respondents with irregular menstrual cycles experience more *Dysmenorrhea* (92.9%), while respondents who did not experience *Dysmenorrhea* most common in respondents with regular menstrual cycles (84.6%). The results of the statistical test obtained a value *p-value* < 0.05 which is 0.000 which shows a relationship between the menstrual cycle and the incidence of *Dysmenorrhea*. Value *Odds Ratio (OR)* showing a figure of 34.0 which can be interpreted as respondents who have irregular menstrual cycles have the opportunity to experience a risk of experiencing *Dysmenorrhea* 34.0 times compared to respondents who had regular menstrual cycles.

DISCUSSION

The Relationship between Stress Risk and the Incidence of *Dysmenorrhea*

Based on the results of the DASS 42 questionnaire which was categorized into mild stress and severe stress, of the 69 female students most experienced severe stress, namely with *dysmenorrhea* of 91.7%. Based on the results of filling out the questionnaire, students feel angry because of trivial things, tend to overreact to situations, have difficulty relaxing, easily feel upset, feel like they spend a lot of energy because of anxiety, irritable, difficult to rest, irritable, difficulty calming down after something disturbing, difficult to tolerate disturbances to what is being done, being in a tense state, unable to understand anything that is blocking you To get things done you are doing, it's easy to get restless.

Test results *Chi-Square* shows that there is a relationship between stress and the occurrence *Dysmenorrhea* students of SMK Al Bana as seen from the results *p-value* <0.05 is (0.006). This happens based on the proportion of female students who experience *Dysmenorrhea* with a higher level of severe stress 91.3% compared to students who did not experience *Dysmenorrhea* with a normal stress level of 60.0%.

This research is in line with the research conducted by Putri et al (2021) conducted on adolescent women who showed that the level of stress with *Dysmenorrhea* have a relationship with *p-value* 0.000 (p = <0.05) with the

conclusion of the relationship between stress level and health *Dysmenorrhea* can be a reference and describe interventions to young women who experience *Dysmenorrhea* (Prahardian, et al. 2021).

The Relationship of Physical Activity with the Incidence of *Dysmenorrhea*

The results of *the GPAQ Global Physical Activity Questionnaire* which are categorized into high physical activity, moderate physical activity and low physical activity, were obtained from 69 female students, most of whom had moderate physical activity, this is because many female students who did physical activity during the past week, the percentage reached (71.0%) while female students who experienced low activity were (14.5%).

Based on test results *Chi-Square* shows that there is no relationship between physical activity and the incidence of *Dysmenorrhea* students of SMK Al Bana with *p-value* 0.791 which shows no relationship between physical activity and incidence *Dysmenorrhea*.

In line with Tristiana's (2017) research conducted on students at Islamic Boarding School X in Bogor, it shows that there is no relationship between physical activity and *P-value dysmenorrhea* showing 0.791 (p = >0.05) This can be caused by psychosomatic factors that are often experienced by adolescent girls. These psychosomatic factors cause a person to have a low pain threshold (Tristiana 2017).

The Relationship between Sleep Quality and the Incidence of *Dysmenorrhea*

The results of the PSQI (*Pitssburgh Sleep Quality Index*) questionnaire, which are categorized into good sleep quality and poor sleep quality, were obtained from 69 students, most of whom had *dysmenorrhea* with poor sleep quality, namely 52 students based on the results of the questionnaire, while 8 students who did not experience *dysmenorrhea* with good sleep quality.

Based on test results *Chi-Square* shows that there is a relationship between sleep quality and incidence *Dysmenorrhea* students of SMK Al Bana with *p-value* 0.000 (p= < 0.05). The OR value of 29.7 which shows that female students who have poor sleep quality are more at risk of experiencing *Dysmenorrhea* 29.7 times compared to female students who had good sleep quality.

In line with the research of Lestari et al. (2018) conducted on UPN Veteran FK students, it shows that there is a relationship between sleep quality and incidence *P-value dysmenorrhea* 0.004 indicates (p = < 0.05) so that it can be concluded that the sleep quality variables are meaningfully related (Lestari et al. 2018).

The Relationship of the Menstrual Cycle with the Incidence of *Dysmenorrhea*

The results of the menstrual cycle questionnaire, which are categorized into good menstrual cycles and bad menstrual cycles, were obtained from 69 students, most of whom experienced *dysmenorrhea* with irregular menstrual cycles, namely 52 students, while 11 students who did not experience *dysmenorrhea* with regular menstrual cycles were based on the results of the menstrual cycle questionnaire.

Based on test results *Chi-Square* shows that the menstrual cycle with the incidence of *Dysmenorrhea* in the students of SMK Al Bana there is a

relationship with *p-value* 0.000 (p= < 0.05). There is an OR value of 34.0 which shows that female students who have irregular menstrual cycles are more at risk of experiencing *Dysmenorrhea* compared to female students who have regular menstrual cycles.

In line with research by Wardani et al (2021) conducted on class x students, it shows that the menstrual cycle with the incidence of *Dysmenorrhea* there is a connection with *p-value* 0.000 (p = < 0.05) Ho was rejected, so it was concluded that there was a significant (significant) relationship between the Menstrual Cycle and the Incidence *Dysmenorrhea* Primary for students at SMA Negeri 15 Bandar Lampung in 2020 (Wardani et al. 2021).

Conclusion

The incidence of *dysmenorrhea* in students of SMK Al Bana is quite high, namely (78.3%) of students who experience *dysmenorrhea.* The characteristics (age and class) of SMK Al Bana students were more 16 years old (47.8%) compared to 15-year-old students (11.6%). More respondents were in grade 10 with a total of 43 students compared to grade 11 with a total of 26 students.

Al Bana Vocational School students experienced more severe stress, namely 24 students, compared to students who experienced normal stress, namely 5 students. The majority of students of SMK Al Bana experienced moderate physical activity with a total of 46 students while students who experienced less physical activity and less high activity with a total of 10 students. Poor sleep quality was more experienced by Al Bana Vocational School students with a total of 59 students compared to good sleep quality which amounted to 10 students.

It was concluded that there were more students of SMK Al Bana who had irregular menstrual cycles, namely 56 students, compared to regular menstrual cycles, namely 13 students. There is a relationship between stress and the incidence of *dysmenorrhea* in Al Bana Vocational School students. There is a relationship between sleep quality and the incidence of *dysmenorrhea* in Al Bana Vocational School students. There is a relationship between the menstrual cycle and the incidence of *dysmenorrhea* in students of SMK Al Bana. There was no relationship between physical activity and the incidence of *dysmenorrhea* in Al Bana Vocational School students.This section discusses conclusions (first-level titles).

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