Factors Related to Menstrual Disorders in Students of SMAN 12 City of Depok in 2022

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Abstract: Ideally menstruation in one cycle time is 21--35 days, if there is <21 and >35 days, the occurrence of pain during menstruation, until there is no menstruation, menstruation occurs, menstrual disorders occur. This study aims to determine the factors related to menstrual disorders in students of SMAN 12 Depok City in 2022. This study is a quantitative study with a Cross-Sectional design and a sample of 168 respondents. Data were obtained using nutritional status questionnaires with BMI/U, stress with watershed standard questionnaires, physical activity with GPAQ questionnaires, carbohydrate intake, protein intake, fat intake with 24-hour food recall, and menstrual disorders. Data analysis using the Chi-Square test. The results showed that there was a relationship between stress (p = 0.009), physical activity (p = 0.035) and menstrual disorders. However, there was no relationship between nutritional status, carbohydrate intake, protein intake, fat intake, and menstrual disorders (p > 0.05).

1 INTRODUCTION

Adolescence is characterized by puberty, which will be seen by changes physically, emotionally, and socially. However, in women puberty is characterized by the presence of menstruation (Manggul, 2016). Menstruation is naturally occurring a process by which the uterus (endometrium) is flowed to the cervix through the vagina in the form of blood. From puberty to menopause, women have menstruation every month (Begum *et al*., 2016). The time span that occurs between menstruation each month is called the menstrual cycle. Usually, the menstruation cycle is said to be ideal if it occurs between 21--35 days, with an average number of cycles of 28 days (Purwati & Muslikhah, 2020).

According to Novita (2018), WHO states that menstrual disorders experienced by adolescents are as much as 75%. Based on research as many as 60.20% of respondents experience menstrual disorders. There are several disorders in menstruation such as the condition of not having menstruation for 3 consecutive months called amenorrhea, this disorder is divided into primary amenorrhea, namely woman who is 18 years old but has never had menstruation, and secondary amenorrhea, which is having had menstruation but not having menstruation for at least 3 consecutive months. Oligomenorrhea is a menstrual cycle with a span of more than 35 days. Polymenorrhea is a menstrual cycle with a span of less than 21 days (Islamy, 2019). Dysmenorrhoea is menstrual pain that is felt in the lower abdomen. This pain is generally included cramps, nausea, and headaches (Miraturrofi'ah, 2020). Menstrual disorders that are not handled properly can result in a decrease in the quality of life, especially in daily activities (Santi, 2018).

In this study, researchers chose disorders such as amenorrhea that is did not have menstruation for three months in a row, polymenorrhea, which is a menstrual cycle that is less than 21 days, oligomenorrhoea, which is a menstrual cycle that is more than 35 days, and dysmenorrhea, which is pain in the lower abdomen during menstruation. The results of the study by Cakir M *et al* (2015) found that the largest prevalence of menstrual disorders was dysmenorrhoea as much as 89.5%, then the irregularity of the menstrual cycle by 31.2%, and the length of the menstrual cycle was 5.3%. Based on the results of research in India (2019) found that menstrual disorders that occur in adolescents are as much as 6.1% (Singh *et al*., 2019). Another study in Iran (2020) stated that menstrual disorders in adolescents were 28.4% (Shamloo *et al*., 2020). The

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results of another study in Bone (2019) found that menstrual disorders in adolescents ranged from 75.7% (Indriasari *et al*., 2019).

Data according to RISKESDAS (2013) in Sari (2019) states that Indonesian women aged 10--59 years have menstrual cycle irregularities of 13.7%. Data from West Java, according to RISKESDAS 2018, there are 72.15% of women who have experienced menstruation with an average age of the first menstruation of 12.70 years. According to the results of Cabral's research (2019) found menstrual disorders in adolescents around 100%. Another study by Fahira (2021) stated that menstrual disorders in adolescents are around 82.6%. Based on the results of Manggul's research (2016) found that menstrual disorders in adolescents were 66.2%.

Research conducted by Sitoayu (2017) stated that there are several factors that cause menstrual disorders, such as nutritional status, namely body condition which is measured from weight weighing and measuring respondents' height in accordance with anthropometric guidelines using BMI / U and processed using WHO Antroplus. The nutritional status needed by each person is different, but lack or even overnutrition will have a bad impact on health, especially in young women because it can affect FSH and LH hormones which result in menstrual disorders (Felicia *et al*., 2015). Stress is a sense of interfering both physical and psychic experienced by respondents that causes pressure, stress can affect the imbalance of FSH and LH hormones so as to increase crh and GnRH hormones which can cause menstrual cycles to be longer or shorter (AlJadidi *et al*., 2016). Physical activity is an activity carried out by respondents with a mild, moderate, severe level. The high physical activity carried out can cause menstrual disorders, but if the activity carried out tends to be normal, it can reduce the risk of menstrual disorders (Anindita *et al*., 2016). Carbohydrate intake was respondents consuming foods containing fructose within 24 hours before the time the study was conducted. Juveniles need carbohydrates as a source of energy during the luteal phase. Low carbohydrate intake can result in depressed work of the hormone estrogen so that the menstrual cycle is disturbed (Rachmawati & Murbawani, 2015). Protein intake, namely respondents consumed foods such as processed milk, and so on within 24 hours before the study was conducted. Protein functions as an energy reserve for the body that functions to respond to infertility and affects the follicular cycle (Rachmawati & Murbawani, 2015). Fat intake was that respondents consumed food sources of energy within 24 hours before the time the study was conducted. In reproduction, fats are beneficial in the production of the hormone estrogen (Hanapi, 2021) . According to the results of the study, there was a relationship between, adequacy of carbohydrate intake, adequacy of protein intake, adequacy of fat intake, nutritional status, and stress with menstrual disorders (Sitoayu *et al*., 2017). Subsequent studies found that there were research results related to physical activity and menstrual disorders (Kusumawati *et al*., 2021).

A preliminary study that has been conducted at SMAN 12 Depok City obtained from 30 female students taken randomly by 30 people showed results that as many as 70% of female students experienced a faster menstrual cycle, 53.3% of female students had menstruation twice in one month, 76.7% of female students experienced pain during menstruation, 70% of female students experienced pain in the lower abdomen alone. Based on this background, researchers are interested in conducting a study with the title "Factors related to menstrual disorders in students of SMAN 12 Depok City in 2022".

2 METHOD

This study used a Cross-Sectional design, where observing an object in the form of risk factors and their effects using one or more variables by collecting data and to observe the relationship between variables at the same time. The advantage of this design is that its simple implementation does not require complicated preparation, does not require much cost, is effective, and the time it takes is not too long so that the results are known faster (Siyoto, 2015).

This study is a quantitative study taken using primary data using questionnaires containing questions related to menstrual disorders, direct measurements for nutritional status, stress, physical activity, carbohydrate intake, protein intake, and fat intake.

This study uses probability sampling technique, namely with Simple Random Sampling, which is sampling that is carried out randomly without paying attention to the level in the population. The advantage of the Simple Random Sampling technique is that it does not require additional information other than the population list, the formula used is easier, and more efficient (Novita, 2018).

The sample in this study was 168 people. The selection of samples is in accordance with the inclusion criteria, namely active students of SMAN 12 Depok City, respondents have signed an approval sheet, have menstruation.

3 RESULT AND DISCUSSION

Table 1: Distribution of Respondents to Students of SMAN 12 Depok City in 2022.

Variable		Category	
		n	%
Menstrual Disorders	Yes	128	91,4
	No	12	8,6
Nutritional Status	Abormal	39	27,9
	Normal	101	72,1
Stress	Stress	88	62,9
	Not Stress	52	37,1
Physical Activity	High	107	76,4
	Low	33	23,6
Carbohydrate Intake	Not Good	126	90
	Good	14	10
Protein Intake	Not Good	55	39,3
	Good	85	60,7
Fat Intake	Not Good	64	45,7
	Good	76	54,3

In table 1, it presents that the results of a univariate analysis of menstrual disorder variables with the answer category were yes as many as 128 respondents (91.4%) and not as many as 12 respondents (8.6%). In the nutritional status variable with abnormal categories, there were 39 respondents (27.9%) and normal as many as 101 respondents (72.1%). The stress variable with the answer category of stress was 88 respondents (62.9%) and non-stress as many as 52 respondents (37.1%). The physical activity variable with a high category was 107 respondents (76.4%), and low as many as 33 respondents (23.6%). The variable carbohydrate intake with the bad category was 126 respondents (90%), and good as many as 14 respondents (10%). Protein intake variables with bad categories were 55 respondents (39.3%), and good as many as 85 respondents (60.7%). The variable fat intake with the bad category was 64 respondents (45.7%), and good as many as 76 respondents (54.3%).

Table 2: Chi Square Test Results on Students of SMAN 12 Depok City in 2022.

Variable		P*value*	Description
Nutritional Status	Abormal Normal	1,000	No Relationship
Stress	Stress Not Stress	0,009	Relationship
Physical Activity	High Low	0,035	Relationship
Carbohydrate Intake	Not Good Good	0,610	No Relationship
Protein Intake	Not Good Good	1,000	No Relationship
Fat Intake	Not Good Good	0,229	No Relationship

Based on table 2, the results of bivariate analysis using the Chi-Square test were obtained that the nutritional status variable had a Pvalue of 1,000 which stated that there was no relationship between the nutritional status variable and the menstrual disorder variable (*Pvalue >0.05*), the stress variable had a Pvalue of 0.009 which stated that there was a relationship between the stress variable and the menstrual disorder variable (*Pvalue <0.05*), the physical activity variable had a Pvalue of 0.035 which stated there was a relationship between the activity variable physical with variable menstrual disorders (*Pvalue <0.05*), carbohydrate intake variable has pvalue 0.610 which states no relationship between carbohydrate intake variable and menstrual disorder variable (*Pvalue >0.05*), protein intake variable has Pvalue 1.000 which states there is no relationship between protein intake variable and menstrual disorder variable (*Pvalue >0.05*), fat intake variable has Pvalue 0.229 which states no relationship between variable protein intake and menstrual disorder variable (*Pvalue >0.05*).

Menstruation is a natural cycle in women that shows hormonal maturity characterized by bloody discharge from the uterus. This process is caused by a decrease in the hormones estrogen and progesterone so that menstruation occurs (Nuraini, 2018). This study was conducted on students of SMAN 12 Depok City, the results showed that as many as 128 respondents (91.4%) had menstrual disorders, while as many as 12 respondents (8.6%) did not experience menstrual disorders. The most respondents experienced pain that occurred during menstruation as many as 118 respondents (84.3%).

Based on research, it was found that stress has a relationship with menstrual disorders. Stress is a condition that puts a person under pressure and requires a person to act (Suparji, 2019). If stress persists continuously, it will have an impact on immunity and hormone balance in the body which results in disruption of the reproductive system (Irwan, 2021). Univariate results of stress with a total of 88 respondents (62.9%), while non-stress a total of 52 respondents (37.1%). The results of the bivariate analysis obtained Pvalue (0.009) this shows that there

is a relationship with menstrual disorders. A similar study conducted by Manggul (2016) stated that there was a relationship between stress and menstrual disorders Pvalue 0.003 (Pvalue < 0.05) in class xii students of Karya Ruteng High School. Research conducted by Nathalia (2019) showed that there is a relationship between stress and menstrual disorders Pvalue 0.000 (Pvalue < 0.05) in STIT Diniyyah Puteri Students in Padang Panjang City.

Menstrual cycle irregularities are caused by heavy physical exertion and are carried out continuously (Loa *et al*., 2022). Excessive physical activity results in fatigue and causes disturbed GnRH secretion, resulting in menstrual disorders (Kusumawati *et al*., 2021). Univariate results obtained high physical activity with a total of 107 respondents (76.4%), while low physical activity was 33 respondents (23.6%). The results of the bivariate analysis obtained Pvalue (0.035) this shows that there is a relationship with menstrual disorders. Another study in line with Rante (2021) stated that there was a relationship between physical activity and menstrual disorders Pvalue 0.048 (Pvalue < 0.05) in Pre-Clinical students of the Faculty of Medicine, Nusa Cendana University in 2020. The results of a study conducted by Sari (2019) showed that there was a significant relationship between physical activity and menstrual disorders Pvalue 0.040 (Pvalue < 0.05) in Dharma Husada Pekanbaru students in 2019.

4 CONCLUSION

Based on research that has been conducted at SMAN 12 Depok City, it was found that as many as (91.4%) respondents experienced menstrual disorders, (27.9%) respondents with abnormal nutritional status, (62.9%) respondents experienced stress, (76.4%) respondents with high activity, (90%) respondents with poor carbohydrate intake, (39.3%) respondents with bad protein intake, (45.7%) respondents with bad fat intake.

Based on bivariate results, it can be concluded that factors related to menstrualdisorders are found in stress (Pvalue 0.009), and physical activity (Pvalue 0.035). Meanwhile, factors such as nutritional status (Pvalue 1,000), carbohydrate intake (Pvalue 0.610), protein intake (Pvalue 1,000), and fat intake (Pvalue 0.229) were not related to menstrual disorders.

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