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The Relationship between Nutritional Status, Age of Menarche, and Physical Activity with Polymenorrhea in Female Students of Kader Bangsa University, Palembang in 2024

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ABSTRACT

Polymenorrhea is a menstrual cycle disorder ≤ 21 days that often occurs in adolescents, this problem can arise due to poor nutritional status, early age of menarche and heavy physical activity. The purpose of this study was to determine the relationship between nutritional status, age of menarche, and physical activity with polymenorrhea in female students of Universitas Kader Bangsa Palembang in 2024. Quantitative research method with cross-sectional research design. The sampling technique used Accidental Sampling. The population in this study were all female students of Universitas Kader Bangsa who came on June 4-5, 2024 and the sample used was 54 respondents. The data source came from primary data. Data analysis used univariate and bivariate. The results of this study showed that of the 54 respondents who filled out the questionnaire, as many as (22,2%) experienced abnormal nutritional status, (3,7%) early menarche, and (18,5%) heavy physical activity. As many as (20,4%) experienced polymenorrhea and (79,6%) did not experience polymenorrhea. The conclusion of this study is that there is a relationship between nutritional status and physical activity with polymenorrhea and there is no relationship between age of menarche and polymenorrhea in female students of Universitas Kader Bangsa Palembang in 2024.

INTRODUCTION

The term menstruation in Latin is called "menstruus" which means month[1]. Menstruation is an initial process that indicates that a teenage girl has experienced puberty[2]. The shedding of the uterine wall (endometrium) is caused by a decrease in the hormones estrogen and progesterone. This phase occurs regularly every month except during pregnancy with a cycle of 21-35 days and a duration of 5-7 days[3]. Polymenorrhea is a menstrual disorder in which the menstrual cycle is less than 21 days. Polymenorrhea can be caused by an imbalance of the hormonal system in the hypothalamus-pituitary-ovary system[4]. This can disrupt the ovulation process (release of eggs) or shorten the time needed for a normal menstrual cycle to occur, making menstruation more frequent. According to the World Health Organization (WHO) in 2021, around 75% of adolescents in the world experience polymenorrhea[5].

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Polymenorrhea in Sri Lanka is 65,7% higher than in Australia which is 44%[6]. This problem is caused by the striking differences between the health systems in developed and developing countries. The problem of primary health care in developing countries is the slow process of health care. In developing countries, the use of access is hampered by long distances, the use of access is not optimal, and the use of access according to the provisions is still not optimal by officers, while in developed countries the problem that occurs is the difficulty of getting a consultation schedule with a doctor, especially after working hours due to busy schedules. Preventive and promotive health efforts in developed countries have been better implemented compared to developing countries which are more curative than preventive[7].

Based on data found at the research location in the initial survey, it was obtained that 21,6% of female students admitted to having a menstrual cycle of ≤ 21 days. In the short term, polymenorrhea can cause weakness, impaired concentration in learning, and immune system disorders, as well as long-term impacts in the form of anemia due to more frequent menstrual blood loss[8]. Nutritional status has an influence on the menstrual cycle, as someone with a higher nutritional status tends to have a fairly high fat mass, while fat is a molecule that plays an important role in the formation of the estrogen hormone which influences the menstrual cycle[9]. A person with poor nutritional status generally has little fat mass, which affects the production of estrogen levels, which tend to be deficient, and if this hormone is deficient, it will have an impact on GnRH, which will affect the release process of LH (luteinizing hormone), resulting in a decrease and affecting the luteal phase, which becomes shorter[10].

Menarche that is too early (≤10 years) causes the reproductive organs to not develop optimally and cervical narrowing still occurs, which can affect menstrual cycle disorders[11]. Physical activity is the third factor that affects menstrual cycle disorders. The type of activity and intensity of exercise can affect the severity of symptoms of menstrual cycle disorders due to hypothalamic dysfunction, excessive physical activity every day can have a negative impact on women's health, where physical activity will cause physical and mental fatigue, physical fatigue and unstable emotions can affect the menstrual cycle, namely the occurrence of menstrual cycle disorders[12]. With these impacts, researchers conducted research at Universitas Kader Bangsa Palembang. The occurrence of polymenorrhea in female students can interfere with learning activities and concentration during lectures so that if not treated, it can cause discomfort for female students. Therefore, further treatment is needed to overcome polymenorrhea so that it does not become a more serious problem in the future.

METHOD

This type of research is quantitative using an analytical survey method with a cross-sectional approach, namely research in which all variables, both independent variables and dependent variables, are observed or collected simultaneously at the same time. The population in this study were all female students of Universitas Kader Bangsa Palembang. The sample was taken using accidental sampling according to the inclusion and exclusion criteria, namely 54 respondents. The research was conducted in June at Universitas Kader Bangsa Palembang. The data in this study are primary data, primary data is a data source that directly provides data to data collectors[12]. The instruments used in this study were questionnaires, body scales, and microtoises. The research questionnaire contained respondents' biodata, weight, height, BMI, age of menarche and questions related to physical activity using the Physical Activity Questionnaire for Older Children (PAQ-A) questionnaire consisting of nine questions to identify respondents' physical activity. Data collection for this study was carried out after obtaining permission from the campus, then explaining the research to prospective respondents, asking for their willingness to become respondents and filling out the informed consent form, providing questionnaires and measuring height and weight, and checking the completeness of the questionnaires returned by respondents. The data obtained were then processed using a computer program using univariate analysis and chi square tests.

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RESULTS AND DISCUSSION

Results

Polymenorrhea is an abnormality of the menstrual cycle of less than 21 days, the measuring instrument uses a questionnaire, the measurement results, yes if the cycle is less than 21 days, no if the cycle is 21-35 days. The measurement scale uses an ordinal scale. Measurement of the nutritional status of respondents uses anthropometric measurements of the Body Mass Index (BMI) according to WHO standards, namely normal if BMI is 18,5-24,5.

Based on table 1, the results of the measurement of the nutritional status of female students were 22,2% (12 people) with abnormal nutritional status and female students with normal nutritional status were 77,8% (42 people). The average age of menarche for female students is 11-13 years. The fastest age of menarche is 9 years and the slowest age of menarche is 13 years. Female students who experience menarche not on time are 96,3% (52 people) and those who experience early menarche are 3,7% (2 people). Respondents' physical activity was obtained from the sum of the physical activity questionnaire scores which were then divided into two categories, namely heavy and light. Students who were classified as heavy were obtained from the results of physical activity scores of 3-5 and students who were classified as light were obtained from physical activity scores of 1-2. Students who did heavy physical activity were 18,5% (10 people) and those who did light physical activity were 81,5% (44 people).

The relationship between nutritional status and polymenorrhea can be seen in Table 2. The data shows that there is a significant relationship between nutritional status and polymenorrhea (p value = 0.00 ≤ 0.05), there is no relationship between age of menarche and polymenorrhea (p value = 0.36 ≥ 0.05), and there is a relationship between physical activity and polymenorrhea (p value = 0.021 ≤ 0.05).

Table 1.
Respondent Characteristics Based on Polymenorrhea, Nutritional Status, Age of Menarche, and Physical Activity in Female Students of Kader Bangsa University, Palembang in 2024

Characteristics	Number (N)	Presentation
Polymenorrhea		
Yes	43	79,6
No	11	20,4
Nutritional status		
Abnormal	12	22,2
Normal	42	77,8
Age of Menarche		
Earlier	2	3,7
Not earlier	52	96,3
Physical Activity		
Heavy	10	18,5
Light	44	81,5

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Table 2.
The Relationship between Nutritional Status, Age of Menarche, and Physical Activity with Polymenorrhea in Female Students of Kader Bangsa University, Palembang in 2024

Variables	Polymenorrhea				Total		*p value*
	Yes		No				
	N	%	N	%	N	%	
Nutritional status							
Abnormal	10	83,3	2	16,7	12	100	0,00
Normal	1	2,4	41	97,6	42	100	
Age of Menarche							
Earlier	1	50,0	1	50,0	2	100	0,36
Not earlier	10	19,2	42	80,0	52	100	
Physical Activity							
Heavy	5	50,5	5	50,5	10	100	0,02
Light	6	13,6	38	86,4	44	100	

Discussion

This research is in line with the theory[13], women who experience malnutrition are at greater risk of experiencing polymenorrhea due to decreased hypothalamic function which inhibits the production of luteinising hormone (LH) and follicle stimulating hormone (FSH). Thus disrupting estrogen production and disrupting the menstrual cycle. Based on the researcher's assumption, the results obtained from the study were as many as 2.4% of female students who had normal nutritional status but still experienced polymenorrhea, this is because nutritional status is not the only cause of polymenorrhea but there are other causes, namely stress. Female students admitted that they often experienced physical and mental fatigue because some female students were studying while working, coupled with personal mental burdens that could not be told so that female students did not have time to exercise, and an unhealthy lifestyle can thus affect the balance of estrogen and progesterone hormones so that it disrupts the menstrual cycle. Then there are also research results of female students with BMI ≤18.5 and ≥24.5 but did not experience polymenorrhea as much as 16.7% because even though the female students have BMI ≤18.5 and ≥24.5, the female students' body fat molecules are sufficient so that polymenorrhea does not occur.

This research is in line with the theory[14] , that the age of menarche that is too young (≤11 years) can cause the reproductive organs to not develop optimally and there is still narrowing of the cervix so that it can have an impact on polymenorrhea. Based on the researcher's assumption from the results of this study, as many as 19.2% of female students who have a late age of menarche experience polymenorrhea, this is due to poor nutritional intake. From the results of the interview, female students admitted that they rarely consume healthy foods due to limited costs and time so that female students prefer instant noodles as a side dish because they tend to be cheaper and easier to process, this causes the nutrients needed to be insufficient which causes abnormal nutritional status and polymenorrhea occurs. As many as 50.0% of female students experience early menarche but do not experience polymenorrhea because menarche occurs in adolescence, but as they get older, female students begin to pay attention to their lifestyle by consuming healthy foods and also with a healthy lifestyle such as reducing junk food consumption, exercising, and getting enough rest so that they can avoid polymenorrhea.

This research is in line with the theory[15]excessive physical activity every day can have a negative impact on health where, physical activity that is done will cause physical and mental fatigue, tired physical conditions and unstable emotions can affect hormone stability so that polymenorrhea occurs. Based on research that has been conducted by researchers, as many as 13.6% of female students

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who do light physical activity experience polymenorrhea because even though female students rarely do heavy activities, the food consumed daily is less nutritious. Female students admit that they rarely consume vegetables, fruits, and protein, the only protein-rich foods consumed are eggs, even then they are rare because eggs tend to smell fishy so female students prefer fast food, fried foods, seblak, meatballs, models, and tekwan as daily foods, then as many as 50.0% of female students who do heavy physical activity do not experience polymenorrhea, this is because the time management carried out by female students is good by taking the time to consume balanced nutritious food also accompanied by adequate rest patterns and avoiding stress so that female students do not experience polymenorrhea. As many as 86.4% of female students who do light physical activities do not experience polymenorrhea because their daily activities are not heavy so they do not cause physical, mental, and emotional fatigue. This keeps female students happy and not stressed so they can avoid polymenorrhea.

CONCLUSION

There is a relationship between nutritional status, age of menarche, and physical activity simultaneously with polymenorrhea in female students of Universitas Kader Bangsa Palembang in 2024. There is a partial relationship between nutritional status and polymenorrhea in female students of Universitas Kader Bangsa Palembang in 2024 with a P value = 0.000 ≤ 0.05. There is no partial relationship between age of menarche and polymenorrhea in female students of Universitas Kader Bangsa Palembang in 2024 with a P value = 0.369 ≥ 0.05. There is a partial relationship between physical activity and polymenorrhea in female students of Universitas Kader Bangsa Palembang in 2024 with a P value = 0.021 ≤ 0.05. It is expected that the results of this study can increase knowledge about the relationship between nutritional status, age of menarche and physical activity with polymenorrhea, and can be used as a reference and input, referral, or capital for further researchers who want to conduct research with the same topic but the variables are those who want to conduct research with the same topic but with different variables and a larger number of samples.

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