

NUTRITIONAL INTAKE AND PHYSICAL ACTIVITY ASSOCIATED WITH THE MENSTRUAL CYCLE IN MIDWIFERY STUDENTS DURING THE COVID-19 PANDEMIC

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ABSTRAK ASUPAN ZAT GIZI DAN AKTIVITAS FISIK BERHUBUNGAN DENGAN SIKLUS MENSTRUASI PADA MAHASISWI KEBIDANAN SELAMA PANDEMI COVID – 19

Latar belakang: Pandemi Covid-19 di Indonesia telah berdampak pada masyarakat di berbagai kelompok, umur termasuk remaja. Kebijakan lockdown yang dibuat pemerintah Indonesia menyebabkan semua kegiatan yang biasa dilakukan di kampus diberhentikan untuk sementara waktu. Kebijakan tersebut memberi dampak bagi Kesehatan termasuk Kesehatan remaja. Aktivitas fisik yang teratur akan berpengaruh pada kebugaran fisik, kapasitas kerja dan kesehatan seseorang. Ketidakseimbangan asupan zat gizi dan aktivitas fisik akan mempengaruhi fungsi reproduksi sehingga dapat menyebabkan terjadinya gangguan siklus menstruasi pada remaja.

Tujuan : penelitian ini bertujuan untuk mengetahui hubungan antara asupan zat gizi dan aktivitas fisik dengan gangguan siklus menstruasi pada mahasiswa kebidanan tingkat I UNIKA St. Paulus Ruteng selama masa pandemi Covid – 19.

Metode: Riset ini ialah riset analitik observasional dengan pendekatan cross– sectional. Variabel bebas (independent) dalam penelitian ini adalah asupan zat gizi dan aktivitas fisik sedangkan variabel terikatnya (dependent) adalah keteraturan siklus menstruasi. Populasi dalam penelitian ini adalah mahasiswa kebidanan tingkat I UNIKA St. Paulus Ruteng yang berjumlah 79 orang yang didapatkan dengan total sampling. Instrument yang digunakan adalah kuesioner food recall 24 jam dan kuesioner IPAQ . Data dianalisis secara univariat dan bivariat menggunakan uji chi square. Penelitian ini dilaksanakan pada bulan April sampai dengan bulan Juni tahun 2021 di prodi kebidanan UNIKA St. Paulus Ruteng.

Hasil: Hasil analisis data menunjukkan bahwa ada hubungan antara asupan energi dengan gangguan siklus menstruasi dengan p value : 0,038 < 0,05, ada hubungan antara asupan protein dengan gangguan siklus menstruasi dengan p value : 0,006 < 0,05, ada hubungan antara asupan karbohidrat dengan gangguan siklus menstruasi dengan p value : 0,022 < 0,05 dan pada aktivitas fisik ada hubungan dengan gangguan siklus menstruasi dengan p value : 0,045 < 0,05.

Kesimpulan: konsumsi zat gizi serta kegiatan fisik mempunyai hubungan dengan siklus haid.

Saran : selama masa pandemic covid-19 ini, diharapkan mahasiswa tetap mampu menjaga pola konsumsi sesuai dengan prinsip gizi seimbang dan tetap melakukan aktivitas fisik sedang agar keteraturan siklus menstruasi terjaga.

Kata kunci: Aktivitas Fisik , Asupan Gizi, Mahasiswi , Siklus Menstruasi

ABSTRACT

Background: The Covid-19 pandemic in Indonesia has had an impact on people in various groups, including teenagers. The lockdown policy made by the Indonesian government has caused all activities that are usually carried out on campus to be temporarily suspended. The policy has an impact on health, including adolescent health. Regular physical activity will affect a person's physical fitness, work capacity and health. Imbalance of nutrient intake and physical activity will affect reproductive function so that it can cause menstrual cycle disorders in adolescents.

Purpose: To determine the relationship between nutrient intake and physical activity with menstrual cycle disorders in midwifery students at UNIKA St. Paulus Ruteng during the Covid-19 pandemic.

Methods: This research is an observational analytical research with a cross-sectional approach. The independent variables (independent) in this study were nutrient intake and physical activity, while the dependent variable was the regularity of the menstrual cycle. The population in this study were midwifery students at level I UNIKA St. Paulus Ruteng, totaling 79 people, was obtained by total sampling. The instruments used were the 24-hour food recall questionnaire and the IPAQ questionnaire. Data were analyzed by univariate and bivariate using

chi square test. This research was conducted from April to June 2021 at the Midwifery Study Program UNIKA St. Paul Ruteng.

Results: The results of data analysis showed that there was a relationship between energy intake and menstrual cycle disorders with p value: $0.038 < 0.05$, there was a relationship between protein intake and menstrual cycle disorders with p value: $0.006 < 0.05$, there was a relationship between carbohydrate intake with menstrual cycle disorders with p value: $0.022 < 0.05$ and on physical activity there is a relationship with menstrual cycle disorders with p value: $0.045 < 0.05$.

Conclusion: consumption of nutrients and physical activity have a relationship with the menstrual cycle

Suggestion: during this covid-19 pandemic, it is hoped that students will be able to maintain consumption patterns in accordance with the principles of balanced nutrition and continue to do moderate physical activity so that the regularity of the menstrual cycle is maintained.

Keywords: Menstrual Cycle, Nutritional Intake, Physical Activity, Student

INTRODUCTION

The Covid-19 pandemic is a serious problem for all countries, including Indonesia. In Indonesia, the highest increase in Covid-19 cases occurred in March 2020 and spread throughout Indonesia. The Minister of Education and Culture (Mendikbud) issued a policy for learning in tertiary institutions that fall into the mandatory zone category to be carried out online. The Covid-19 pandemic in Indonesia has also had an impact on people in various age groups, including teenagers/students.

The lockdown policy made by the Indonesian government regarding the regulation of online lectures has caused all activities that are usually carried out on campus, outside the home to be temporarily suspended and all students are encouraged to continue studying from inside their homes. The policy has an impact on health, including adolescent health. This pandemic also has an impact on the economy of parents so that many have difficulty in meeting the needs of their children to pay for tuition and living costs in universities, this will have an impact on meeting the needs of balanced nutrition. Regular physical activity will affect a person's physical fitness, work capacity and health (Thakur & Jain, 2020).

The results of interviews obtained by researchers with Midwifery students Level I UNIKA St. Paul Ruteng that the average food intake they eat every day is consuming foods that do not contain

nutrition such as consuming light snacks so that it can cause menstrual cycle disorders, while the physical activity carried out by respondents is classified as moderate, namely doing assignments from campus, watching YouTube, playing Instagram, playing games and relaxing walks.

Nutrient intake was calculated based on the average food intake for 24 hours and then energy, protein, and carbohydrate intake were calculated. Nutritional needs are closely related to the growth

period, if nutritional intake is met, growth will be optimal. Nutritional intake that is not strong can lead to inadequate intake of nutrients that are not good so that it can affect menstrual irregularities in most adolescents. Carbohydrate intake is related to calories during the luteal phase, protein intake is related to the length of the follicular phase while fat intake is related to reproductive hormones (Yulia & Ratna, 2018).

In addition to meeting the needs of nutritional intake, physical activity is also one of the factors causing irregular menstruation. Physical activity is one of the factors that can be done easily so that physical activity does not have to do heavy activities but can be in the form of light activities such as leisurely walks (Anindita, Darwin, & Afriwardi, 2016).

The menstrual cycle in adolescents that often occurs is irregular menstruation, especially in the first year after the first menstruation (menarche). Several factors can cause menstrual cycle disorders, namely the number of adolescent groups in Indonesia according to the 2010 population census is 43.5 million people or 18% of the total population and for the world it is estimated at 1.2 billion teenagers (Yulia & Ratna, 2018). Adolescent groups are divided into two phases, namely early adolescence between the ages of 13-17 years and late adolescence between the ages of 17-18 years. Early and late adolescence have different characteristics because in late adolescence individuals have reached a developmental transition that is closer to adulthood (Laras, Dewi, & Erry, 2017).

The problem that often occurs in adolescents is menstrual cycle disorders so that it can reduce a woman's quality of life. Menstrual cycle disorders are important indicators to show reproductive system disorders that can be associated with an increased risk of various diseases such as uterine cancer, breast cancer and infertility (Sari, 2016). Adolescence is a period of transition between the life

of children and the period of adult life which is marked by biological and psychological growth and development. The menstrual cycle is categorized as normal if it is 21-35 days and abnormal if it is <21 days or >35 days (Hidayati & Farid, 2016).

The balance between the nutritional intake needed on a daily basis can increase metabolic needs, so that a person will achieve optimal nutritional status (Rachmayani, Kuswari, & Melani, 2018). Teenagers now spend a lot of time sitting watching television, doing assignments, playing games, this kind of physical activity is a moderate type of activity (Naibaho, Riyadi, & Suryawan, 2014). This study aims to determine the relationship between nutrient intake and physical activity with menstrual cycle disorders in midwifery students at level I Unika St. Paulus Ruteng during the Covid-19 pandemic.

Based on the description above, it is necessary to conduct research to determine the relationship between nutrient intake and physical activity with the menstrual cycle in level I midwifery students at Unika St. Paul Ruteng during the covid 19 pandemic

RESEARCH METHODOLOGY

This research is an observational analytical research with a cross-sectional approach. Data on nutrient intake was obtained through filling out a 24-hour food recall questionnaire and physical activity

data obtained from filling out the IPAQ questionnaire. This research was conducted on Level I Midwifery students at Unika St. Paulus Ruteng which was held from April to June 2021. The population in this study were Level I Midwifery students, totaling 79 people who were obtained by total sampling. The *independent* variables in this study were nutrient intake and physical activity, while the dependent variable was the regularity of the menstrual cycle. Analysis of test data using *Pearson Chi-Square* with a value ($p < 0.05$) to determine the relationship of the independent and dependent variables.

RESEARCH RESULT

Univariate Analysis Results

Table 1

Variable	N	(%)	Total (%)
Energy intake			
Good	37	46.84	100
Not good	42	53.16	
Protein intake			
Good	35	44.30	100
Not good	44	55.70	
Carbohydrate Intake			
Good	48	60.76	100
Not good	31	39.24	
Physical activity against			
Light	25	31.65	
Medium	49	62.02	100
Heavy	5	6.33	

Bivariate Analysis Results

Table 2.

The relationship between energy intake, protein intake and carbohydrate intake with the menstrual cycle

Category	Menstrual Cycle				Total		P
	Normal		Not normal		N	%	
	N	%	N	%			
Energy intake with menstrual cycle							
Good	30	81.1	7	18.9	37	100	0.038
Not good	25	59.52	17	40.48	42	100	
Protein intake with the menstrual cycle							
Good	30	85.71	5	14.29	35	100	0.006
Not good	25	56.82	19	43.18	44	100	
Carbohydrate intake with menstrual cycle							
Good	38	79.16	10	20.84	48	100	0.022
Not good	17	54.84	14	45.16	31	100	

Table 2 shows that abnormal menstrual cycles are more common in respondents with poor energy intake, as many as 17 people (40.48%) compared to respondents with good energy intake, as many as 7 people (18.9%). The results of the *Chi Square* test obtained a p value of 0.038 < 0.05, this means that there is a relationship between energy intake and the menstrual cycle.

Based on the pattern of protein intake, it was found that abnormal menstrual cycles were more common in respondents with poor protein intake, namely 19 people (43.18%) compared to respondents with good protein intake, namely 5 people (14.29%). In carbohydrate intake, it was found that abnormal menstrual cycles were more common in respondents with bad carbohydrate intake, namely 14 people (45.16 %) compared to respondents with good carbohydrate intake, namely 10 people (20.84%).

Table 3.
The relationship between Physical Activity and the menstrual cycle

Category	Menstrual Cycle				Total		P
	Normal		Not normal		N	%	
	N	%	N	%			
Physical activity on the menstrual cycle							
Light	13	52	12	48	25	100	0.045
Medium	39	79.59	10	20.41	49	100	
Weight	3	60	2	40	5	100	
Total	55	69.62	24	30.38	79	100	

Table 3 shows that abnormal menstrual cycles are more common in respondents with light physical activity, namely 12 people (48%) compared to respondents with moderate physical activity, namely 10 people (20.41%) and heavy physical activity, namely 2 people (40 people). %. The results of the *Chi Square* test obtained a p value of 0.045 <0.05 which means that there is a relationship between physical activity and the menstrual cycle.

DISCUSSION

This research was conducted on midwifery students at level I UNIKA St. Paulus Ruteng, totaling 79 respondents with an age range of 19 - 22 years and already menstruating and has been willing to fill out a 24-hour food recall questionnaire. Adolescent girls are included in the nutritional vulnerable group. Teenage girl who

Malnutrition can cause health problems, including menstrual cycle problems. Menstrual cycle constraints need to be watched out for because they indicate ovulation problems or the effects of disease formation. Nutrient intake was calculated based on the average food for 24 hours and then calculated the intake of energy, protein, and carbohydrates and then analyzed using the *Statistical Package for Social Science (SPSS) program*.

To carry out various activities, a person really needs a fit and healthy energy to support various daily activities, both light, medium and heavy, so intake is needed. diet of nutrients. Physical activity is the average amount of energy in units of calories expended in 24 hours which is calculated based on the type and duration of activities carried out that require energy expenditure. Measurement of physical activity was measured using IPAQ (Putri, Eryati, & Afriwardi, 2016).

Physical activity based on the level of intensity is divided into 3 categories, namely low intensity, medium intensity and high intensity. Respondents were categorized as low intensity physical activity if METs < 600, moderate intensity physical activity if METs > 600 but < 1500 and high intensity physical activity if METs > 1500 (IPAQ, 2002).

The menstrual cycle is the number of days between one menstrual period and the next. The menstrual cycle occurs during the reproductive period from puberty to menopause as a reaction to variations in hormone movement (Proverawati and Misaroh, 2016). A normal menstrual cycle occurs once every 21-35 days, with menstrual periods ranging from 3-7 days. The amount of normal menstrual blood ranges from 30-40 milliliters (mL) (Sibagariang et al., 2013). Menstrual cycles recorded on the menstrual questionnaire were viewed based on the last 3 months of menstruation. The menstrual cycle is categorized as normal if it is 21-35 days long and abnormal if it is < 21 days or > 35 days.

Relationship of Energy Intake with Menstrual Cycle Disorders

Energy in humans can arise due to the burning of carbohydrates, proteins and fats. Carbohydrates, proteins and fats are nutrients that can provide calories to the human body. Lack of energy intake results in decreased levels of the hormone estrogen which is a hormone that regulates the menstrual cycle. Low levels of the hormone estrogen result in a decrease in reproductive function and disruption of the menstrual cycle (Rachmawati & Murbawani, 2015)

Based on the results of statistical tests (*Chi Square*) the p-value is 0.038 <0.05, this means that

there is a relationship between energy intake and the menstrual cycle. This study is also in line with research conducted by Hidayah et al (2016) on young women at the Salafiyah Kauman Islamic boarding school, Pemalang Regency where there are

relationship between energy intake and menstrual cycle disorders.

The results of the research that have been carried out are in line with the theory which states that the nutritional status of adolescents can affect the occurrence of menarche, complaints that occur during menstruation and the length of the menstrual cycle. Insufficient energy intake is also caused by small portions when eating, especially rice, but most prefer to consume snacks with lower calorie levels such as light snacks, fruit juices and fresh fruit.

Relationship of Protein Intake with Menstrual Cycle Disorders

Protein is an energy-producing nutrient that does not act as an energy source, but functions as a substitute for damaged body cell tissue as fuel in the body, building blocks and body regulators.

Based on the results of statistical tests (*Chi Square*) obtained a p value of $0.006 < 0.05$, this means that there is a relationship between protein intake and the menstrual cycle. This study is in line with research conducted by Hidayah et al (2016) on young women at the Salafiyah Kauman Islamic boarding school, Pemalang Regency where there is a relationship between

between protein intake and menstrual cycle disorders. Adequate low protein intake is caused by irregular food patterns such as frequently consuming side dishes or dishes containing low protein sources. Based on the results of a 24-hour food recall, the respondent's consumption of vegetable side dishes was higher than the consumption of animal side dishes, namely students often consumed fried tempeh compared to fried chicken or the like which had high nutrition . Animal side dishes that are most often consumed are dishes such as fried chicken and the most frequently consumed vegetable side dishes are dishes form of fried tempeh (Laras, Dewi, & Erry, 2017)

Relationship of Carbohydrate Intake with Menstrual Cycle Disorders

Carbohydrates are a source of increasing caloric intake during the luteal phase. In the luteal phase there is an increase in food or energy intake, so that if carbohydrate intake is met, there will be no shortening of the luteal phase. However, teenagers tend to eat *fast food* which is lacking in carbohydrate

nutrients. If this situation continues, it will affect the function of body organs and disrupt reproductive functions such as menstrual cycle disorders (Hanapi, Arda, & Bahi, 2021).

Based on the results of statistical tests (*Chi Square*) obtained p value of $0.022 < 0.05$, which means that there is a relationship between carbohydrate intake with the menstrual cycle. This study is in line with research conducted by Laras et al. (2017) on adolescents at SMA Negeri 21 Jakarta with the results of the *Chi-Square statistical test* showing that there is a significant relationship between the adequacy of carbohydrate intake and the menstrual cycle.

If carbohydrate intake is met, there will be no shortening of the luteal phase, so there will be no disturbances in the menstrual cycle. Based on the 24-hour food recall, the results showed that the level I midwifery students at Unika St. Paulus Ruteng often consumes rice which is the main source of carbohydrates compared to other types of food. Choosing a good food intake can lead to an increase in balanced nutrition in a teenager.

Relationship of Physical Activity with Menstrual Cycle Disorders

Student physical activity can be measured with a certain intensity such as participating in sports activities on campus morning leave and walking. The higher the intensity and frequency of physical activity, the greater the possibility of menstrual cycle disturbances. High-intensity physical activity can increase the risk of menstrual cycle disorders, while moderate-intensity physical activity can reduce the risk of menstrual cycle disorders.

A person's level of physical activity is very influential for calcium absorption. During physical activity changes in calcium metabolism depend on the intensity of work. Endurance activity increases density , bone strength and level of bone formation (Hidayah, M, & Aruben, 2016)

Based on the results of statistical tests (*Chi Square*) obtained a p-value of $0.045 < 0.05$, which means that there is a relationship between physical activity and the menstrual cycle. This means that physical activity can affect the menstrual cycle. The results of this study are also in line with research conducted by Baadiah, et al (2021) on female students in Ponorogo where there is a relationship between physical activity and menstrual cycle disorders.

The results of the research show that students have a light level of physical activity. This is because students can only do light physical activities such as

studying, watching television, watching YouTube, playing Instagram, playing games, homework and having sufficient rest time, especially during the Covid-19 pandemic like this which can limit all activities. to reduce the risk of increasing transmission due to Covid-19 so that many students can only carry out activities from home.

CONCLUSION

There is a relationship between the intake of energy, protein, carbohydrates and physical activity with the regularity of the menstrual cycle in midwifery students at level I UNIKA St. Paul Ruteng during the covid-19 pandemic.

SUGGESTION

During this COVID-19 pandemic, it is hoped that students will be able to maintain consumption patterns in accordance with the principles of balanced nutrition and continue to do moderate physical activity so that the regularity of the menstrual cycle is maintained.

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