



MIKIA:
Mimbar Ilmiah Kesehatan Ibu dan Anak
(*Maternal And Neonatal Health Journal*)

THE RELATIONSHIP BETWEEN FOOD CONSUMPTION PATTERNS AND THE MENSTRUAL CYCLES

Afifah Dwi Handana¹, Widati Fatmaningrum²,
Endyka Erye Frety^{3✉}, Jimmy Yanuar Annas⁴

¹Midwifery Study Programme Faculty of Medicine
Universitas Airlangga Surabaya, Indonesia
endyka-erye-frety@fk.unair.ac.id

Article History

Received: 5 August 2021

Accepted: 30 September 2021

Published Online: 24 November 2021

* Corresponding Author:

Endyka Erye Frety, Midwifery
Study Programme Faculty of
Medicine Universitas Airlangga

E-mail: endyka-erye-frety@fk.unair.ac.id

Phone: +62 856-4670-6520



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ABSTRACT

The menstrual cycle is the number of days between one menstrual period and the next. Based on the cycle abnormalities are divided into three, namely polymenorrhea, oligomenorrhea and amenorrhea. Both short and long cycles, both show abnormalities in the metabolic and hormonal systems. This study aims to analyze the relationship between food consumption patterns and menstrual cycles in adolescent girls at Al-Mizan Islamic Boarding School Lamongan. The cross-sectional research method with the Proportionate Stratified Random Sampling sampling technique was carried out in May-June 2021. The research sample consisted of 108 female students according to the inclusion and exclusion criteria. menstruation. The chi square statistical test was used to determine the level of significance in the data. The bivariate results showed that the number of food consumption patterns did not affect the menstrual cycle with $p=0.896$ and the type showed $p=0.972$. The pattern of food consumption is one of the factors for the occurrence of irregular menstrual cycles in adolescent girls at the Al-Mizan Islamic Boarding School Lamongan.

Keywords:

Eating patterns, adolescents, menstrual cycles, reproductive health

INTRODUCTION

The menstrual cycle is the number of days between one menstrual period and the next (Laila, 2016). There are several factors that can cause an abnormal menstrual cycle including stress, nutritional consumption, smoking, consumption of hormonal drugs and endocrine disorders and nutritional status (Kusmiran, 2014). Menstrual cycle is the preparation of a woman's body for a possible pregnancy; it occurs monthly during the woman's reproductive years (from puberty to menopause) and usually lasts about 25 to 32 days⁹, out of this range may be considered as irregular cycles; however, women's menstrual cycles vary in their length and amount of bleeding, according to the woman's age, weight, diet, amount of

physical activity, level of stress and genetic (Kuzmar *et al.*, 2015). Food consumption patterns can also affect the menstrual cycle, for example, someone usually eats a lot and suddenly this diet will make the body become stressed. But this will improve if the nutritional intake is good (Dewi S, 2013).

The problem of nutritional status has a close relationship with diet. The intake of high-energy, high-fat, sugar and salt foods and beverages that are not balanced with the intake of nutritious foods such as fruits, vegetables, and whole grains can be one of the risk factors for non-communicable diseases (Kemenkes, 2014). The prevalence of the relationship between diet and the menstrual cycle based on previous research showed that 40.3% of young women with severe malnutrition, 52.8% of young women in eunutritional countries, and 6.9% of young women in overnutritional countries. Research conducted at several universities in Turkey found menstrual disorders in the form of menstrual cycle irregularities by 31.2%. In Indonesia, women aged 20-24 years who have regular menstrual cycles are 76.7%, and 14.4% are irregular, while in a study conducted at a university in North Sumatra, it was found that 66.8% of respondents experienced regular cycles and 33, 2% of respondents with irregular cycles. According to data from the World Health Organization (WHO, 2014). there are 75% of adolescents who experience menstrual disorders and this is the most reason why a young woman visits an obstetrician. Menstrual cycles in adolescents are often irregular, especially in the first year after menarche, about 80% of young women experience a period of one to two weeks late and about 7% of young women whose menstruation comes early due to ovulation that has not occurred. According to Ratna (in Rizki, 2015) revealed that around 70-90% of young women in Indonesia experience menstrual cycle irregularities, namely the percentage of irregular menstruation reaches 15.8% in the Special Region of Yogyakarta in the life cycle of puberty is an important stage in the development her sexuality. Al-Mizan Islamic Boarding School Lamongan is one of the Islamic boarding schools located in rural areas where the majority of the population work as civil servants (PNS) and some work as farmers. Based on the information that the researcher got from one of the administrators of the Al-Mizan Islamic boarding school Lamongan regarding the rules enforced by the female Islamic boarding school, the use of mass media is absolutely not allowed such as television, radio or cellphones.

One of the studies conducted by (Aziem *et al.*, 2011). also found that there was a significant difference between the length of the menstrual cycle for adolescents in the village, where only 15% of female adolescents experienced regular menstrual cycles. In

other study found that food consumption patterns and nutrient status had influence on the first menstruation (Dinarusta, 2019). The purpose of this study was to analyze the relationship between food consumption patterns and the menstrual cycle in adolescent girls at the Al-Mizan Islamic Boarding School Lamongan.

METHOD

The research used was analytical observation using a cross sectional approach carried out in the month of June 2021. The population in this study were teenage students aged 15-18 years who live in Pondok Pesantren Al-Mizan Lamongan with a large population of 148 students, sampling using Stratified Random Sampling and obtained the results of 108 respondents who have met the inclusion and exclusion criteria. The inclusion criteria included the first being willing to be respondents, and the second being young women aged 15-18 years. Then on the first exclusion criteria, namely undergoing a certain diet and the second suffering from an illness that requires a certain eating pattern. All data collected using primary data. Data on food consumption patterns were taken using interviews and the menstrual cycle using a questionnaire. According to the level of energy and protein adequacy according to the recommendations of the 2012 National Food and Nutrition Widyakarya. The pattern of food consumption consists of the number and type of food consumption patterns. From each of these, the number of food consumption patterns has the criteria for a severe level of deficit if the energy adequacy level is less than 70%, a moderate deficit of 70-79%, a mild deficit of 80-89%, normal 90-119% and above the normal level. requirement if more than 120%. Then the type of food consumption pattern is fairly good if it consists of 5 types, namely carbohydrates, vegetable side dishes, animal side dishes, vegetables and fruit. and considered less if less than 5 types. Then the menstrual cycle is said to be regular if the cycle is 21-35 days and irregular if it is less than 21 days and more than 35 days. The data collected were analyzed univariately and bivariately using the computerized program Statistical Package for the Social Sciences (SPSS) version 21. The analysis in this study used the chi square statistical test with a 95% confidence level and was carried out by comparing the significant value with $= 0.05$. The results are said to be significant if $< \alpha$. This research obtained an ethical certificate from the Research Ethics Committee of the Faculty of Medicine, Universitas Airlangga number 138-KEPK on April 8, 2021.

RESULTS

Characteristics of Respondents

There were 108 respondents who participated in this study. Most of the adolescents were 16 years old (29.6%) and 17 years old (31.4%) and had good nutritional status and poor nutrition (43.5%). And the results obtained regarding the level of nutritional adequacy at an average energy of 62.70%, a summary of the characteristics of respondents based on age and nutritional status is presented in table 1

Table 1. Characteristics of Respondents

Characteristic	f (%)
Respondent's age	
15 years	16 (14.8)
16 years	32 (29.6)
17 years	34 (31.4)
18 years	26 (24.1)
Nutritional status (IMT/U)	
Malnutrition (-3SD sd <-2SD)	47 (43.5)
Good nutrition (-2SD sd + 1SD)	47 (43.5)
More nutrition (+1SD sd +2SD)	12 (11.1)
Obesity (> +2SD)	2 (1.85)

Univariate Analysis

The number of occurrences Respondents who have a number of dietary consumption patterns based on a weight deficit are 79 respondents but have a good type of eating pattern as many as 105 respondents with regular menstrual cycles (68.5%). The results of the univariate analysis are presented in table 2, 3 and 4.

Table 2. Frequency distribution of respondents the number of food consumption patterns based on the amount of energy

Variable	f (%)
Number of food consumption patterns	
Severe level deficit (<70%)	79 (73.1)
Moderate deficit (70-79%)	8 (7.4)
Mild deficit (80-89%)	9 (8.3)
Normal (90-119%)	10 (9.3)
Above the number of needs (>120%)	2 (1.9)

Table 3. Frequency distribution of respondents based on the type of food consumption pattern

Variable	f (%)
Type	
Good	105 (97.2)
Not enough	3 (2.8)

Table 4. Frequency distribution of respondents based on menstrual cycle

Variable	f (%)
Menstrual Cycle	
Regular	74 (68.5)
Irregular	34 (31.5)

Bivariate Analysis

The results of statistical tests through the SPSS program showed that there was no relationship between the number of food consumption patterns with the menstrual cycle ($p=0.896$) and the type of food consumption patterns ($p=0.972$) with the menstrual cycle in adolescent girls at Pondok Pesantren Al-Mizan Lamongan. The results of the bivariate analysis are presented in tables 5 and 6.

Table 5. Analysis of the Relationship between the Number of Eating Patterns Based on the Amount of Energy with the Menstrual Cycle

Number of food consumption patterns	Menstrual cycle		ρ value
	Regular	Irregular	
	f (%)	f (%)	
Severe level deficit(<70%)	54 (50)	25 (23.1)	0.896
Moderate deficit (70-79%)	5 (46)	3 (2.8)	
Mild deficit (80-89%)	7 (6.5)	2 (1.9)	
Normal (90-119%)	6 (5.6)	4 (3.7)	
Above the number of needs (>120%)	1 (0.9)	1 (0.9)	

Table 6. Analysis of the Relationship between Types of Eating Patterns with Menstrual Cycle

Types of eating patterns	Menstrual cycle		ρ value
	Regular	Irregular	
	f (%)	f (%)	
Good	71 (65.7)	34 (31.5)	0.972
Not enough	2 (1.9)	1 (0.9)	

DISCUSSION

Diet is a way or effort in regulating the amount and type of food with a specific purpose such as maintaining health, nutritional status, preventing or helping cure disease (Depkes RI, 2012).

Type of food is a kind of staple food eaten every day consisting of staple food, animal side dishes, vegetable side dishes, vegetables and fruit consumed every day. Staple food is the main food source in Indonesia that is consumed by every person or group of people consisting of rice, corn, sago, tubers and flour. (Sulistyoningsih, 2011).

In other study, the Mediterranean diet, alcohol consumption and consuming typical foods from southern Spain appear to influence cycle length, menstrual flow and menstrual pain (Fern *et al*, 2019).

In a study conducted at the Pondok Pesantren Al-Mizan Lamongan with the number of respondents 108 who have a number of diet patterns with a heavy level deficit with menstrual cycles are 79 respondents and on the type of eating pattern with a good category with a menstrual cycle, namely 74 respondents.

Based on the results of the analysis using the chi square test the relationship between the number and type of food consumption patterns with the menstrual cycle, the results obtained p value = 0.896 and p value = 0.972 indicating that there is no relationship between the number and type of food consumption patterns with the menstrual cycle in adolescent girls at Pondok Pesantren Al Al. -Mizan Lamongan.

This study is in line with the research of (Pratiwi, 2013).which states that there is no significant relationship between diet and menstrual cycle irregularities with the chi square test with p value = 0.132. And in line with Nurul's research that results showed that respondents with normal nutritional status (66.3%) mostly had normal menstrual cycles (62.7%). Respondents with obesity tend to experience abnormal menstrual cycles (71.4%). Based on the results of statistical tests, it was known that there was a relationship between nutritional status with the menstrual cycle ($p = 0.036$) (Dya *et al*, 2019). In other study, the result of this study proved that food consumption patterns had influence on the first menstruation with P -value = $0,041 \leq \alpha = 0, 05$ (Masyudi, 2018).

Because basically every human being has fat reserves in the body, even though the person is fasting for a full month, it is not necessarily the menstrual cycle that is experienced irregularly or for example the person is carrying out a diet program that reduces carbohydrates such as rice, potatoes and so on and consumes more vegetables. , then the person experienced

regular menstrual cycles because they have fat reserves. The results of this study were also obtained from the level of nutritional adequacy, which stated that carbohydrates (46.5%), protein (22.75%) and energy (62.70%) were mostly in the poor category. Fat (30.90%) of adolescent girls are in the more category. According to (Adriani M., 2012) .states that lack of food consumption, both quantitatively and qualitatively will cause disturbances in the body's metabolic processes, which of course lead to the emergence of a disease. Likewise, if you consume excess food, without being balanced with an adequate physical activity, body disorders will appear. According to (Rahmawati, 2017). explains that someone with excess fat levels (obesity) will increase the role of the hormone estrogen. This increase in the hormone estrogen in the body will then provide negative feedback to the hypothalamic-pituitary pathway in the brain so that it stops or decreases the formation of gonadotropin hormones. This imbalance of the hormone estrogen will greatly affect the regularity of the menstrual cycle and ovulation in adolescent girls.

According to (Ellya, 2010). many teenagers go on a diet because they are worried about their appearance even though during this period they need a lot of nutrition, but diet is not only one of the factors that causes disruption of the menstrual cycle, there are many factors that cause disruption of the menstrual cycle such as weight loss. drastic, disorders of the uterine organs and cysts.

According to (Angraini T, 2012). a woman experiencing malnutrition or excess nutrition will have an impact on decreasing hypothalamic function which does not provide stimulation to the anterior pituitary to produce FSH and LH. Where FSH functions to stimulate the growth of about 3-30 follicles, each of which contains one egg. But only one follicle continues to grow, the others are destroyed. While LH functions in egg maturation or ovulation which later if not fertilized will experience sloughing (menstruation). So if the production of FSH and LH is disrupted, the menstrual cycle will also be disrupted. Associated with menstruation, specifically the number of anovulatory women will increase if their body weight changes (increases or decreases).

CONCLUSION

From this study, it can be concluded that the pattern of food consumption, both in number and type, can not affect the pattern of the menstrual cycle in adolescents. Further research that allows for better data collection methods is needed to reaffirm the results of this study. The authors would like to thank all research participants for their cooperation..

ABBREVIATIONS

WHO, World Health Organization ; SPSS, Statistical Package For the Social Sciences ; FSH, Follicle Stimulating Hormone ; LH, Luteinizing Hormone

COMPETING INTEREST

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AUTHORS' CONTRIBUTION

Afifah Dwi Handana as the main research collects related articles, conducts research, analyzes data and writes research manuscripts. Widati Fatmaningrum made material suggestions for research discussion materials. Endyka Erye Frety and Jimmy Yanuar Annas performs data analysis and represents the result of data analysis.

ACKNOWLEDGMENT

The research would like to thank the Pondok Pesantren Al-Mizan Lamongan for allowing the research to be carried out

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