



The Relationship Between Nutritional Status and Menarche Cycle in Students

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<p>Track Record Article</p> <p>Accepted: 10 March 2023 Revised: 30 March 2023 Published: 30 April 2023</p> <p>How to cite: Nuraida, I., Rahayu, Sri, Y., Suciati, N., & Putri, Lydia, D. (2023). The Relationship between Nutritional Status and Menarche Cycle in Students. <i>Contagion: Scientific Periodical Journal of Public Health and Coastal Health</i>, 5(2), 302–309.</p>	<p style="text-align: center;">Abstract</p> <p><i>Menstruation is periodic bleeding from the uterus that begins about 14 days after ovulation periodically due to the shedding of the lining of the uterus. Generally, the menarche cycle in normal women is 28-35 days and the duration of menstruation is between 3-7 days. The menarche cycle in women is said to be abnormal if the menarche cycle is less than 21 days or more than 40 days. Irregular menarche cycles can be caused by irregular eating patterns and unbalanced nutrition. The purpose of this research was to determine the relationship between nutritional status and the menarche cycle in female students. This type of research is quantitative research with a cross sectional approach. This type of research is quantitative research with a cross sectional approach. The sampling technique in this study was random sampling with a total sample of 51 female students who had been counted from a total population of 104 female students. Data processing uses univariate data analysis using a frequency distribution, while bivariate uses the Chi Square test. Most of the respondents had normal nutritional status, amounting to 66.7%, and respondents who had abnormal nutritional status amounted to 33.3%. Most of the respondents experienced regular menstruation as much as 70.6%, most of them experienced irregular menstruation as much as 29.4%. The statistical test results between nutritional status and the menarche cycle obtained a P value of 0.012 or a Pvalue <0.005, which means that there is a relationship between nutritional status and the menarche cycle. Nutritional status can affect the menarche cycle so there is a need to improve nutrition for female students.</i></p> <p>Keyword: Menarche cycle, Nutrition, Student</p>
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INTRODUCTION

Menstruation is periodic bleeding from the uterus that begins about 14 days after ovulation periodically due to the shedding of the uterine endometrial lining (Farinendya et al., 2019). This condition occurs if it occurs because there is no fertilization of the egg by sperm, so that the lining of the uterine wall (endometrium) which has thickened in preparation for pregnancy is shed (Sopha & Haeriyah, 2021). If a woman does not experience pregnancy, then the menarche cycle will occur every month (Hikma et al., 2021).

Generally, the menarche cycle in normal women is 21-35 days and the duration of menstruation is between 3-7 days. The menarche cycle in women is said to be abnormal if the menarche cycle is less than 21 days or more than 35 days (Ilmi & Selasmi, 2019). Nutritional

problems are caused by a mismatch of existing nutritional conditions (Nugraheni et al., 2020). WHO (World Health Organization) stated that in 2010 it was shown that around (19%) of women aged 18-55 years experienced complaints about menstruation (Anggoro, 2022). Poor nutritional status can cause reproductive function disorders (Lutfiyati & Susanti, 2021). Weight loss can cause a decrease in GnRH production for the release of LH and FSH hormones which results in decreased levels of the hormone estrogen so that it has a negative impact on the menstrual cycle, namely inhibiting the ovulation process (Amperaningsih & Fathia, 2018).

Based on Riskesdas data, data recorded in Indonesia in 2022 were mostly (68%) aged between 10-59 years indicating that their menarche cycles were regular while around (13.7%) they had irregular menarche cycle disorders within a span of last one year (Qomarasari & Mufidaturrosida, 2022). The problem of irregular menstruation has started to occur in women aged 45-49 years (17.4%) and 50-54 years (17.1%), most likely it has something to do with the age of menopause in women. The problem of irregular menstruation in women aged 17-29 years and women aged 30-34 years is quite large, namely 16.4% (Aspar & Aguslim, 2021).

A person's level of health is influenced by several factors including freedom from disease or disability, good socio-economic conditions, good environmental conditions, and good nutritional status (Widyaningrum et al., 2021). Nutritional status is an important factor in achieving optimal health status (Nasution et al., 2022). Nutritional problems are basically a reflection of the consumption of nutrients that are not sufficient for the body's needs. a person will have a good nutritional status, if the nutritional intake is in accordance with the needs of the body (Reyza & Sulistiawati, 2022). Intake of nutrients that are lacking in food can cause malnutrition, conversely, people with excessive nutritional intake will suffer from excess nutrition. So nutritional status can be done efforts to improve the level of health in the community (Lutfiyati & Susanti, 2021).

Bogor is one of the cities in West Java and based on the results of a preliminary study at the research location it was described that many female students had abnormal menstrual cycles. Based on the explanation above, it is necessary to analyze the relationship between nutritional status and the menstrual cycle in female students.

METHODS

This type of research is quantitative research with a cross sectional approach. This research was conducted at the Annisa Jaya Midwifery Academy students who were measured in January 2023. The data collection technique used was a questionnaire filling method which included written questions used to obtain information, as well as additional data taken not from a

questionnaire on female students for data collection that measured the independent variables (Nutritional Status) and the dependent (menarche cycle). The sampling technique in this study was simple random sampling with a sample of 51 female students who were counted from a total population of 104 female students. Data processing uses univariate data analysis using frequency distribution, while bivariate uses the Chi Square test to analyze the relationship between the independent variables and the dependent.

RESULTS

Table 1 Characteristics of Respondents (n=51)

Variable	n	%
Age		
20	15	29,4
21	22	43,1
22	5	9,8
23	9	17,6
Age of Menarche		
Early adolescent	34	66,6
middle adolescent	17	33,4

According to table 1, it can be seen that in this study the ages of the respondents were from 20-23 years old. Table 1 states that 43.1% of respondents are 21 years old with an average age of 21.16 years. It is known that the respondents experienced menarche for the first time in their early adolescents as much as 66.6%, while other respondents experienced menarche in their middle adolescents as much as 33.4%

Table 2 Relationship between Nutritional Status and Menarche Cycle of Respondents

Nutritional Status	Menarche Cycle						P-Value	CI
	Irregular		Regular		Total			
	n	%	n	%	n	%		
Abnormal	9	52.9	8	47.11	7	100	0.012	3,364 (1,270-7,566)
Normal	6	17.6	28	82.4	34	100		

From table 2 it can be illustrated that the response that has abnormal nutritional status with irregular menarche conditions is 52.9% and respondents who have normal nutritional status with regular menarche conditions are 82.4%. Based on the results of the analysis using the chi-square test, it can be stated that there is a relationship between nutritional status and the

menstrual cycle because it has a p value = 0.012. The CI value was 3.364, which means that the nutritional status of female students affected the menarche cycle 3.364 times.

DISCUSSION

The results of this study explain that there is a relationship between nutritional status and the menstrual cycle. Female students with abnormal nutritional status face more irregular menstrual cycles when compared to female students with normal nutritional status. More than half of respondents with normal nutritional status have regular menstrual cycles (82.4%). From the results of research conducted by previous researchers stated that there is a relationship between nutritional status and the menstrual cycle. In this study, it was found that respondents with normal nutritional status experienced more regular menstrual cycles when compared to those with abnormal nutritional status tended to experience more irregular menstrual cycles (Juliana et al., 2019). The relationship between nutritional status and the menstrual cycle shows that most of the respondents had normal nutritional status with regular menstrual cycles (82.4%) Compared to those with abnormal nutritional status, they tended to experience irregular menstrual cycles (52.9%) (Sunarsih, 2017).

Nutritional status in women when in conditions of excess or deficiency can cause hypothalamic function to decrease so that it does not provide stimulation to the anterior pituitary to excrete FSH (Folicle Stimulating Hormone) and LH (Leuteinizing Hormone) (Gultom et al., 2021). In adolescents who experience excess nutrition there is an increase in the amount of the hormone estrogen in the blood due to an increase in the amount of body fat (Sunarsih, 2017). High levels of the hormone estrogen provide a negative feedback on the production of GnRH (Gonadotropin Hormone) through the secretion of protein inhibitors which can inhibit the work of the anterior pituitary to produce the hormone FSH (Maedy et al., 2022). These obstacles cause disruption of follicle proliferation so that follicles cannot form maturely which results in lengthening of the menstrual cycle (Fitriani, 2020).

An increase in the hormone estrogen also provides positive feedback to the LH hormone so that there is a rapid increase in LH hormone levels in the body. The LH hormone works in tandem with the FSH hormone (Syafriani et al., 2021). If there is a disturbance in FSH secretion, then LH is also not working properly (Pawiyarni, 2022). LH that is released too quickly causes the growth of new follicles to be continuously stimulated but does not reach the process of maturation and ovulation, causing an abnormal menstrual cycle (Sebayang & Sidabutar, 2021). Poor nutritional status can cause reproductive function disorders (Mouliza, 2020). Weight loss can cause a decrease in GnRH production for the release of LH and FSH

hormones which results in decreased levels of the hormone estrogen so that it has a negative impact on the menstrual cycle, namely inhibiting the ovulation process. This can lead to lengthening of the menstrual cycle (Enggar et al., 2022).

From the results of research that has been conducted by Ratna, Sutyarso, and Elvira also support the results of this study. According to the previous shows that there is a relationship between nutritional status and the menstrual cycle. Based on the results of this study, respondents with normal nutritional status tended to experience regular menstrual cycles (Amperaningsih & Fathia, 2018). Nutritional status affects every organ function, growth and reproductive organs without exception. Food intake that is balanced with needs can affect the menstrual cycle and can optimize reproductive function (Dya & Adiningsih, 2019). Good food intake will affect nutritional status to be good so that it can make the hypothalamus work well to produce the reproductive hormones needed so that the menstrual cycle can become regular (Aryani, 2019).

The nutritional status of women with deficiency or excess can lead to decreased hypothalamic function as a result of not being able to continue stimulation of the anterior pituitary to excrete FSH (Folicle Stimulating Hormone) and LH (Leuteinizing Hormone) (Aprilia et al., 2022). In women who face excess nutrition, there is an increase in the amount of the hormone estrogen in the blood due to an increase in the amount of body fat. High levels of the hormone estrogen continue the negative feedback on the production of GnRH (Gonadotropin Hormone) through the secretion of protein inhibitors which can slow down the work of the anterior pituitary to create the hormone FSH (Azis et al., 2022). This disorder results in impaired follicular proliferation as a result of which follicles cannot form maturely which results in lengthening of the menstrual cycle (Maedy et al., 2022).

The increased estrogen hormone also provides positive feedback to the LH hormone, causing a rapid increase in LH hormone levels in the body. The LH hormone works together with the FSH hormone (Nugraheni et al., 2020). If there is an obstacle to FSH secretion, then LH is also not going well. LH that is released too quickly causes the growth of new follicles which will continue to be stimulated but not until the process of maturation and ovulation results in abnormal menstrual cycles (Fernanda et al., 2021). Poor nutritional status can cause reproductive function disorders (Melliniawati et al., 2021). Weight loss can cause a decrease in GnRH production for the release of LH and FSH hormones which causes estrogen levels to decrease so that it has a negative impact on the menstrual cycle, namely inhibiting the ovulation process. This can lead to lengthening of the menstrual cycle (Nasution et al., 2022).

But from the results of this study there were still respondents with normal nutritional status who experienced irregular menstrual cycles and abnormal nutritional status but experienced regular menstrual cycles (Farinendya et al., 2019). This may be due to factors other than nutritional status because women's menstrual cycles are very susceptible to being influenced by other conditions so that there are still respondents with normal nutritional status but who have irregular menstrual cycles and respondents with abnormal nutritional status who experience regular menstrual cycles (Pawiyarni, 2022). Other factors that may affect the menstrual cycle include nutrient intake, stress, and there are many other factors that might affect the production of reproductive hormones (Dya & Adiningsih, 2019).

Someone who is experiencing stress tends to have irregular menstrual cycles and vice versa, someone who is not experiencing stress will have regular menstrual cycles. In this study, there were still respondents who had normal nutritional status but experienced irregular menstrual cycles this was due to stress rest time for female students. In addition, the menstrual cycle is also influenced by nutrient intake. Good nutritional intake can develop reproductive function and affect the menstrual cycle (Aprilia et al., 2022).

According to the researchers, based on the conditions in the field and the results of the study, the nutritional status of female students can affect the menarche cycle, this is because the nutritional status will have an impact on reproductive function. A decrease in nutritional status will have an impact on the production of GnRH which results in a decrease in the production of the hormone estrogen, this will have an impact on the menarche cycle which is hampered due to ovulation. It can be seen that female students who experience abnormal nutritional status have menarche cycles that are not smooth. It is advisable for female students to improve their nutritional status, especially by consuming a balanced diet to meet their needs and to increase the production of the hormone estrogen which will improve the menarche cycle.

CONCLUSIONS

There is a relationship between the nutritional status of students with the menstrual cycle. The nutritional status of students will have an impact on the menstrual cycle so there needs to be a nutritional balance so that it will have an impact on good nutritional status and a normal menstrual cycle.

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