



## The Relationship of Nutritional Status on Female Santri's Menstrual Cycle in Al-Jihad Islamic Boarding School in Surabaya

Warda Elmaida Rusdi<sup>1\*</sup>, Irmawan Farindra<sup>2</sup>, Muhammad Salsabeela Rusdi<sup>3</sup>, Irsandi Rizki Farmananda<sup>4</sup>, Wilhemus D.M.R. Bengé<sup>5</sup>

<sup>1</sup>Department of Public Health, Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia

<sup>2</sup>Department of Anatomy and Histology, Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia

<sup>3</sup>Department of Medical Research, Faculty of Medicine, Universitas Pembangunan Nasional "Veteran" Jawa Timur, Indonesia

<sup>4</sup>Faculty of Medicine, Universitas Islam Al-Azhar Mataram, Indonesia

<sup>5</sup>Faculty of Social and Political Sciences, Universitas Pembangunan Nasional "Veteran" Jawa Timur, Indonesia

\*Corresponding Author: [wardaelmaida@unusa.ac.id](mailto:wardaelmaida@unusa.ac.id)

DOI: 10.33086/iimj.v6i1.5364

### ARTICLE INFO

Keywords:  
Nutritional Status;  
Body Mass Index;  
Menstrual Cycle;  
Adolescents

Submitted: Nov  
10<sup>th</sup> 2023  
Reviewed: May  
27<sup>th</sup> 2024  
Accepted: June  
19<sup>th</sup> 2024

### ABSTRACT

**Introduction:** Menstruation is triggered by the monthly period, which creates the menstrual cycle. Several factors can lead to irregular menstrual cycles, including stress, smoking, taking hormonal supplements, disorders of the endocrine system, and nutritional deficiencies.

**Objective:** This research aims to investigate the connection between nutritional status and the period of menstruation in female students at Al-Jihad boarding school in Surabaya, Indonesia.

**Methods:** This study was conducted using an analytic observation approach. The research sample was determined using a simple random sampling technique, according to the inclusion and exclusion criteria that had been set. Questionnaires were used as data collection instruments, and anthropometric examinations were conducted to assess nutritional status and the menstrual cycle. Univariate analysis and bivariate analysis were performed to analyze the data. The chi-square statistical test was used as a bivariate analysis with a p-value <0.05 indicating significant data.

**Results:** A total of 65 respondents were used in the study because they met the inclusion criteria. Based on the survey results using questionnaires and anthropometric examinations, it was found that 4.6% of female students had an obese nutritional status, 7.7% were obese, and the remaining 87.7% were normal. The menstrual cycle experienced by female students is 27.7% of female students experience an abnormal menstrual cycle, and the other 72.3% have a normal menstrual cycle. Based on the Chi-Square test, the significance value of  $p = 0.290$  means no relationship between nutritional status and the menstrual cycle.

**Conclusion:** The menstrual cycle in adolescence is not influenced by nutritional status.

### Introduction

Menstruation will always occur periodically, this is called the menstrual cycle. Each woman has a different

menstrual cycle distance, the range of menstruation from one menstruation to another is between 15 to 45 days, but in general, women have a menstrual interval of

around 28 days, and the length of time for each cycle is between 2 to 8 days, with the average woman experiencing around 4 to 5 days with blood production of 60 to 80 ml per cycle (Prathita et al., 2017). According to Dya and Adiningsih (2019), several factors can disrupt the regularity of the menstrual cycle, including stress, smoking, taking hormonal drugs, endocrine disorders, and nutritional status (Dya & Adiningsih, 2019). There are several types of disorders in the menstrual cycle including polymenorrhea, oligomenorrhea, and amenorrhea.

Menstrual cycle irregularities can cause several problems. Polymenorrhea is a menstrual cycle that is less than 21 days in one cycle. Continuous polymenorrhea can disrupt hemodynamics in the body and cause ovulation disorders which result in impaired fertility. Oligomenorrhoea, defined as a patient with a menstrual cycle of more than 35 days, on a continuous basis, can lead to something similar to polymenorrhoea, which is a disorder of ovulation that can interfere with fertilisation. In addition, menstrual cycle disorders can cause stress to the sufferer (Sinaga et al., 2017). According to Anastasia et al. (2014), there are 20% of women who experience infertility caused by menstrual problems. The prevalence of women who experience infertilization due to the menstrual cycle is 60%, where

menstrual cycle disorders are caused by an unhealthy lifestyle (Simanjuntak, 2022).

Nowadays, teenagers, especially female teenagers, are very concerned about their appearance. This leads to a lack of nutritional intake, which can lead to malnutrition. There are 40.3% of women in Indonesia who are dissatisfied with their body shape (Normate et al., 2017). In Indonesia, in 2013, the percentage of adolescents aged 13-15 years who were underweight was 11.1%, while for adolescents aged 16-18 years it was 9.4% (Watson et al., 2019). Next in 2018, the percentage of nutrition adolescents in East Java had a nutritional status of very thin 1.1%, thin 6.8%, normal 75.7%, fat 11.3%, and obese 5.1%.

## Methods

This research is analytical observational research conducted by observation to explain a certain situation (Adiputra et al., 2021). The research design used a cross-sectional study or research conducted by collecting data simultaneously at one specific time. This study uses primary data from questionnaires and measurements of body weight and height of female santri of Al-Jihad Islamic Boarding School Surabaya.

The population in this study was all female students at Al-Jihad Islamic Boarding School Surabaya, with a total of

550 people. The research sample was determined in accordance with the inclusion criteria and exclusion criteria. The inclusion criteria are as follows: (1) female students who are registered at Al-Jihad Islamic Boarding School Surabaya, (2) willing to become research subjects and attend the study, (3) aged between 14-25 years, (4) have experienced menstruation for about 3 years. Meanwhile, the exclusion criteria set were (1) not yet menstruating, (2) having a history of reproductive disease, (3) having a history of thyroid disease, (4) taking drugs that interfere with hormones, (5) taking diet or weight loss drugs.

The sample size used in this study was determined using the Slovin calculation formula. The results of calculations using this formula show that the sample size required is 65 samples. A simple random sampling technique was used as a sampling method in this study.

Weight measuring devices (scales) and height (stature meter) were used as research instruments. In addition, a questionnaire taken from Nunung's (2017) research was used as a research data collection instrument. This questionnaire consists of 3 parts, the first part consists of the researcher's identity and research objectives, the second part contains the respondent's identity and consent statement, and the last part contains data on the

respondent's height, weight, and menstrual cycle.

The research data that has been collected through the distribution of questionnaires and weight measurements will then be processed using univariate analysis and bivariate analysis. The Chi-Square test was used as a bivariate analysis to analyze the correlation between the nutritional status of female students at Al-Jihad Islamic Boarding School Surabaya and the menstrual cycle. A p-value of  $<0.05$  indicates the data is significant.

## Results and Discussion

Through a questionnaire distributed to 65 respondents, we collected data related to the general description of the respondents' nutritional status and menstrual cycle. The data is presented in Table 1.

**Table 1.** Characteristics of respondents based on nutritional status and menstrual cycle

	Frequency	Percentage(%)
<b>Nutritional Status</b>		
Obesity	3	4.6
Obese	5	7.7
Normal	57	87.7
Skinny	0	0
Very skinny	0	0
<b>Menstrual Cycle</b>		
Normal	47	72.3
Not Normal	18	27.7

The data presented in Table 1 shows that 4.6% of female students at Pondok

Pesantren Al-Jihad Surabaya have an obese nutritional status, while 7.7% fall into the obese category, and the rest (87.7%) have a nutritional status in the normal category. Furthermore, in the observation of the respondents' menstrual cycles, we found that 18 female students had an abnormal

menstrual cycle, while the other 47 female students had a normal menstrual cycle. The Chi-Square test was conducted to analyze the relationship between the respondents' nutritional status and the menstrual cycle. The test results are presented in Table 2.

**Table 2.** Chi-Square test results of the relationship between nutritional status and the menstrual cycle of respondents

Menstrual Cycle	Status Gizi			Total	p-value
	Obesity	Obese	Normal		
Not Normal	n	2	1	15	0.290
	%	3.1	1.5	23.1	
Normal	n	1	4	42	
	%	1.5	6.2	64.6	
Total	n	3	5	57	
	%	4.6	7.7	87.7	

Based on Table 2, it is known that there are 57 female students who have normal nutritional status. Furthermore, 15 other female students experience an abnormal menstrual cycle and 42 female students experience a normal menstrual cycle. There are 5 female students recorded as having obese nutritional status with 1 female student experiencing an abnormal menstrual cycle, and there are 3 female students with obese nutritional status where 2 of them experience an abnormal menstrual cycle. The Chi-Square test results showed a significance value of  $p=0.290$ . This result indicates that there is no relationship between nutritional status and menstrual cycle.

Women will experience menstrual periods that will begin when puberty takes place. In general, a woman's menstrual cycle will last about 25 to 35 days, with an average of 28 days (Baker & Scheuermaier, 2013; Szmelskyj et al., 2015). The difference in the length of the menstrual cycle in each individual occurs due to differences in hormones, i.e. the hormones estrogen, progesterone, FSH, and LH (Fitri, 2017). Furthermore, several researchers have identified several factors that are thought to interfere with or affect a woman's menstrual cycle, such as genetic factors, lifestyle, smoking, alcohol consumption, stress, environment, and nutritional status

(Ghare Naz et al., 2022; Godari Akhila et al., 2020).

Nutritional status is a description of the fulfillment of nutritional needs from foods and drinks that have been consumed. Nutritional status is also one of the factors that affect a person's intelligence and growth (Muchtar et al., 2022). Assessment of nutritional status in adolescents can be done using the calculation of Body Mass Index or Age (IMT/U) (Hafiza et al., 2021).

The results of observations and analysis of the nutritional status of respondents showed that the majority of female santri at the Al-Jihad Surabaya Islamic Boarding School were in normal status. A person's nutritional status can be influenced by several factors, both internally and externally. The development of the economy, technology, and knowledge has a role in improving a person's nutrition (Sitepu, 2018). In addition to this, there are several other factors, which are divided into primary factors and secondary factors. Primary factors are factors that affect the entry of food or nutrients into the body, while secondary factors are factors that affect the absorption of nutrients (Harjatmo et al., 2017).

The results of this study showed that 72.3% of respondents had a normal menstrual cycle, while 27.7% of respondents experienced an abnormal menstrual cycle (< 21 days or > 35 days).

The results of research conducted by Aesthetica Islamy and Farida (2019) are in line with this study, that 77.5% of respondents have a normal menstrual cycle and 22.5% of respondents have an abnormal menstrual cycle. These results indicate that the majority of respondents' menstrual cycles are mostly normal. Several factors can affect the menstrual cycle, including physical activity, stress, nutrition, and age of menarche (Andriana & Aldriana, 2018). Based on what has been mentioned, it is known that there are factors other than nutrition that can affect the menstrual cycle.

Based on the results of the Chi-Square test, we found that nutritional status and menstrual cycle have no relationship or correlation with each other. The results of this study are in line with the results of research conducted by Armayanti et al. (2021) also showed similar results where a significance value of  $p = 0.219$  was obtained. It is possible that in this study, menstrual cycle irregularities can occur due to other factors such as stress, hemoglobin levels, age, and a lot of physical activity. According to Armayanti et al. (2021), hemoglobin levels can affect menstrual cycle regularity (Armayanti & Damayanti, 2021). In addition, research by Islamy and Farida (2019) showed that age, stress, and physical activity also play a role in influencing the menstrual cycle (Islamy & Farida, 2019).

## Conclusion

The menstrual cycle experienced by female students at Pondok Pesantren Al-Jihad Surabaya is not related to the nutritional status of the students. We conclude that there are other factors that affect the menstrual cycle, such as stress, activity, and so on, that were not examined in this study.

## Acknowledgment

We would like to thank Universitas Nahdlatul Ulama Surabaya for their assistance so that this research can be carried out.

## Conflict of Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## References

Adiputra, I. M. S., Trisnadewi, N. W., Oktaviani, N. P. W., Munthe, S. A., Hulu, V. T., Budiastutik, I., Faridi, A., Ramdany, R., Fitriani, R. J., Tania, P. O. A., Rahmiati, B. F., Lusiana, S. A., Susilawaty, A., Sianturi, E., & Suryana. (2021). *Metodologi Penelitian Kesehatan*. Yayasan Kita Menulis.

Andriana, & Aldriana, N. (2018). Faktor-Faktor Yang Mempengaruhi Siklus

Menstruasi pada mahasiswi di Universitas Pasir Pengaraian. *Jurnal Martenit and Neonatal*, 2(5), 271–271. <https://e-journal.upp.ac.id/index.php/akbd/article/view/1596>

Armayanti, L. Y., & Damayanti, P. A. R. (2021). Faktor-Faktor yang Mempengaruhi Keteraturan Siklus Menstruasi pada Remaja Putri di SMA Negeri 2 Singaraja. *Jurnal Media Kesehatan*, 14(1), 75–87. <https://doi.org/10.33088/jmk.v14i1.630>

Baker, F., & Scheuermaier, K. (2013). Circadian Rhythm Disorders: Does Sex Matter? *Encyclopedia of Sleep*, 102–106. <https://doi.org/10.1016/B978-0-12-378610-4.00289-8>

Dya, N. M., & Adiningsih, S. (2019). Hubungan antara Status Gizi dengan Siklus Menstruasi pada Siswi MAN 1 Lamongan. *Amerta Nutrition*, 3(4), 310–314.

<https://doi.org/10.2473/amnt.v3i4.2019>

Fitri, I. (2017). *Lebih Dekat dengan Sistem Reproduksi Wanita*. Gosen Publishing.

Ghare Naz, M. S., Farahmand, M., Dashti, S., & Tehrani, F. R. (2022). Factors Affecting Menstrual Cycle Developmental Trajectory in Adolescents: A Narrative Review. *International Journal of Endocrinology and Metabolism*, 20(1), 120438. <https://doi.org/10.5812/IJEM.120438>

- Godari Akhila, Asra Shaik, & R. Dinesh Kumar. (2020). Current factors affecting the menstrual cycle. *International Journal of Research in Hospital and Clinical Pharmacy*, 2(1), 18–21. <https://doi.org/10.33974/ijrhcp.v2i1.165>
- Hafiza, D., Utmi, A., & Niriyah, S. (2021). Hubungan Kebiasaan Makan dengan Status Gizi pada Remaja SMP YLPI Pekanbaru. *Al-Asalmiya Nursing Jurnal Ilmu Keperawatan (Journal of Nursing Sciences)*, 9(2), 86–96. <https://doi.org/10.35328/keperawatan.v9i2.671>
- Harjatmo, T. P., Par'i, H. M., & Wiyono, S. (2017). *Penilaian Status Gizi (Pertama)*. Kementerian Kesehatan Republik Indonesia .
- Islamy, A., & Farida. (2019). Faktor-Faktor yang Mempengaruhi Siklus Menstruasi pada Remaja Putri Tingkat III. *Jurnal Keperawatan Jiwa*, 7(1), 13–18.
- Muchtar, F., Sabrin, S., Effendy, D. S., Lestari, H., & Bahar, H. (2022). Pengukuran status gizi remaja putri sebagai upaya pencegahan masalah gizi di Desa Mekar Kecamatan Soropia Kabupaten Konawe. *Abdi Masyarakat*, 4(1). <https://doi.org/10.58258/abdi.v4i1.3782>
- Normate, E. S., Nur, M. L., & Toy, S. M. (2017). Hubungan Teman Sebaya, Citra Tubuh, dan Pola Konsumsi dengan Status Gizi Remaja Putri. *Unnes Journal of Public Health*, 6(3), 141. <https://doi.org/10.15294/ujph.v6i3.17016>
- Prathita, Y. A., Syahredi, S., & Lipoeto, N. I. (2017). Hubungan Status Gizi dengan Siklus Menstruasi pada Mahasiswi Fakultas Kedokteran Universitas Andalas. *Jurnal Kesehatan Andalas*, 6(1), 104–109. <https://doi.org/10.25077/JKA.V6I1.653>
- Simanjuntak, L. Y. (2022). Faktor-Faktor Resiko Terjadinya Infertilitas pada Wanita Pasangan Usia Subur di Dusun V Desa Kolam Kecamatan Percut SEI TUAN Tahun 2020. *Jurnal Darma Agung Husada*, 9(1).
- Sinaga, E., Saribanon, N., Suprihatin, Sa'adah, N., Salamah, U., Murti, Y. A., Trisnamiati, A., & Lorita, S. (2017). *Manajemen Kesehatan Menstruasi*. Universitas Nasional IWWASH Global One.
- Sitepu. (2018). *Hubungan Indeks Massa Tubuh dengan Siklus Menstruasi pada Remaja Putri di SMA Negeri 1 Tigapanah Kabupaten Kaeo Tahun 2018* [Undergraduated Thesis]. Politeknik Kesehatan Kemenkes Medan.
- Szmelskyj, I., Aquilina, L., & Szmelskyj, A. O. (2015). Identification and management of conditions detrimental to IVF outcome. *Acupuncture for IVF and Assisted Reproduction*, 185–235.

<https://doi.org/10.1016/B978-0-7020-5010-7.00008-4>

Watson, F., Minarto, Sukotjo, S., Rah, J. H.,  
& Maruti, A. K. (2019). *Pembangunan  
Gizi di Indonesia*. Kementerian  
PPN/Bappenas.