



The Relationship of Nutritional Status with The Incidence of Dysmenorrhea in Adolescent Women

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Abstrak

Dismenorea primer merupakan salah satu masalah ginekologis yang paling sering dialami remaja putri dan berdampak pada kenyamanan fisik, psikososial, serta aktivitas belajar. Status gizi diduga berperan dalam menentukan tingkat keparahan dismenorea melalui mekanisme hormonal dan inflamasi. Penelitian ini bertujuan menganalisis hubungan antara status gizi dan kejadian dismenorea pada siswi kelas X di SMA Negeri 8 Kota Kediri. Penelitian ini menggunakan desain survei analitik dengan pendekatan cross-sectional. Sebanyak 52 responden dipilih secara simple random sampling. Data status gizi diperoleh melalui pengukuran antropometri, sedangkan data dismenorea dikumpulkan melalui kuesioner terstruktur. Analisis data menggunakan uji Chi-square dengan $\alpha = 0.05$. Sebagian besar responden berada pada kategori berat badan 40–45 kg (59,6%) dan tinggi badan >150 cm (67,3%). Status gizi didominasi kategori kurus (44,2%). Mayoritas responden mengalami dismenorea (63,5%). Terdapat hubungan signifikan antara status gizi dan kejadian dismenorea ($p = 0.001$), di mana remaja dengan status gizi kurus lebih banyak mengalami dismenorea (52,0%) dibandingkan remaja dengan status gizi normal. Status gizi berhubungan secara signifikan dengan kejadian dismenorea pada remaja putri. Perbaikan pola makan dan intervensi gizi perlu ditingkatkan sebagai upaya pencegahan dini dismenorea dan untuk mendukung kesehatan reproduksi remaja.

Kata Kunci : *Dismenore Primer, Status Gizi, Nyeri Menstruasi, Kesehatan Reproduksi*

Abstract

Primary dysmenorrhea is one of the most prevalent gynecological problems among adolescent girls and significantly affects physical comfort, psychosocial functioning, and academic performance. Nutritional status is considered an important factor influencing menstrual pain through hormonal and inflammatory pathways. This study aimed to examine the relationship between nutritional status and the incidence of dysmenorrhea among tenth-grade female students at Senior High School 8, Kediri City. An analytical survey with a cross-sectional approach was conducted on 52 respondents selected using simple random sampling. Nutritional status was assessed through anthropometric measurements, while dysmenorrhea was measured using a structured questionnaire. Data were analyzed using the Chi-square test with a significance level of $\alpha = 0.05$. Most respondents had a body weight of 40–45 kg (59.6%) and a height above 150 cm (67.3%). Nutritional status was dominated by the underweight category (44.2%). The majority experienced dysmenorrhea (63.5%). A significant association was found between nutritional status and dysmenorrhea ($p = 0.001$), with underweight adolescents more likely to experience menstrual pain (52.0%) compared to those with normal nutritional status. Nutritional status was significantly associated with dysmenorrhea among adolescent girls. Improving dietary habits and nutritional interventions is essential to prevent dysmenorrhea and support adolescent reproductive health.

Keywords: *Primary Dysmenorrhea, Nutritional Status, Menstrual Pain, Reproductive Health*

INTRODUCTION

Primary dysmenorrhea is one of the most common gynecological problems experienced by adolescent girls worldwide. It remains a significant public health concern due to its impact on physical comfort, psychosocial well-being, and academic performance. Menstrual pain is influenced by various biological, psychological, and lifestyle factors, among which nutritional status is considered important. Previous evidence indicates that dietary patterns and nutritional adequacy can alter prostaglandin synthesis, hormonal balance, and inflammatory responses, all of which contribute to menstrual pain. Specific dietary modifications can significantly reduce the severity of dysmenorrhea among university students, emphasizing the role of nutritional habits in menstrual health (Bavil et al., 2018; Ginting et al., 2021; Istianah & Oktaviani, 2022).

Several studies have further highlighted the association between nutritional factors, including anthropometric indices, and dysmenorrhea. Young women with inadequate nutrition or poor dietary habits often exhibit a higher incidence of menstrual pain, suggesting that weight status and body composition may influence the severity or onset of dysmenorrhea (Bavil et al., 2018; Mohamadirizi & Kordi, 2015). Research conducted in diverse populations has shown that both underweight and overweight adolescents are more prone

to menstrual disturbances, irregular cycles, and heightened menstrual pain due to hormonal imbalance and metabolic stress (Rad et al., 2018; Taheri et al., 2020). These findings underscore the complex relationship between nutritional status and menstrual function, particularly during adolescence.

In Indonesia, similar patterns have been reported across various regions. Several national studies found that adolescents with poor nutritional status, especially those categorized as underweight, are more likely to experience primary dysmenorrhea (Ginting et al., 2021; Kosim et al., 2019; Lail, 2019). Moreover, other contributing factors such as stress levels and menstrual cycle irregularities have been identified as determinants of dysmenorrhea, further reinforcing the multifactorial nature of this condition (Istianah & Oktaviani, 2022; Kosim et al., 2019). However, despite the growing literature, the interaction between nutritional status and dysmenorrhea remains inconsistent across populations. Further, school-based research is needed to provide context-specific findings, particularly among Indonesian high school students.

Given these gaps, research exploring the relationship between nutritional status and dysmenorrhea among adolescents in various educational settings remains crucial. Limited studies have specifically examined this association among high school girls in Kediri, despite indications that dietary behavior and anthropometric status may vary across regions. Therefore, this study aims to analyze the relationship between nutritional status and the incidence of dysmenorrhea among tenth-grade female students at Senior High School 8, Kediri City. Understanding this association is expected to contribute valuable evidence for early prevention strategies, nutritional interventions, and adolescent reproductive health programs (Bajalan et al., 2019; Monday et al., 2019; Onieva-Zafra & et al, 2020; Rohaeni, 2022).

RESEARCH METHOD

This study employed an analytical survey design to examine the relationship between nutritional status and the incidence of dysmenorrhea among adolescent girls. The research was conducted at Public Senior High School 8 of Kediri City, Indonesia, with the primary objective of determining whether nutritional status was associated with the occurrence of dysmenorrhea among tenth-grade students. A total of 52 respondents were selected using a simple random sampling technique to ensure population representativeness. Data were collected through a structured questionnaire assessing menstrual pain characteristics and supported by anthropometric measurements to determine nutritional status. All collected data were analyzed using the Chi-square test with $\alpha = 0.05$ to evaluate the association

between nutritional status and dysmenorrhea.

RESULTS AND DISCUSSION

Table 1. Distribution of Respondents Based on Body Weight, Body Height, Nutritional Status, and Dysmenorrhea (n = 52)

Variable	Category	Frequency	Percentage (%)
Body Weight	< 40 kg	12	23.1
	40–45 kg	31	59.6
	> 45 kg	9	17.3
Body Height	< 145 cm	7	13.5
	145–150 cm	10	19.2
	> 150 cm	35	67.3
Nutritional Status	Underweight	29	44.2
	Normal	23	55.8
	Overweight	0	0.0
Dysmenorrhea	Pain	33	63.5
	No pain	19	36.5
Total Respondents		52	100

The majority of respondents weighed 40–45 kg (59.6%), while the smallest proportion weighed less than 40 kg (23.1%). Most respondents had a body height of more than 150 cm (67.3%), with the lowest proportion being those with a height of less than 145 cm (13.5%). Regarding nutritional status, the largest percentage of respondents was underweight (44.2%), followed by those with normal nutritional status (55.8%), with none classified as overweight. In terms of dysmenorrhea, most respondents experienced pain (63.5%), and the remaining 36.5% reported no pain.

Table 2. Distribution of Dysmenorrhea Based on Nutritional Status (n = 52)

Nutritional Status	Pain	%	No Pain	%	p-value
Underweight	27	52.0	2	3.8	0.001
Normal	6	11.6	17	32.7	
Overweight	0	0.0	0	0.0	

Total	33	63.6	19	36.4	
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The majority of respondents who experienced dysmenorrhea were in the underweight category (52.0%), whereas only 11.6% of those with pain had a normal nutritional status. Meanwhile, most respondents who did not experience dysmenorrhea were in the normal nutritional status category (32.7%). No respondents were categorized as overweight. Statistical analysis showed a significant association between nutritional status and dysmenorrhea ($p = 0.001$), indicating that nutritional status was related to the occurrence of menstrual pain among the respondents.

DISCUSSION

Nutritional Status

The nutritional status of adolescents in this study showed that a considerable proportion was underweight, indicating suboptimal nutritional intake that may have affected their reproductive health. Adequate nutrition is crucial for regulating hormonal balance, especially estrogen and progesterone, which govern the menstrual cycle and ovulatory function. Previous studies noted that insufficient nutrient intake and low body fat percentage could lead to decreased leptin production, impaired endocrine function, and menstrual disturbances (Bajalan et al., 2019; Rad et al., 2018). These physiological alterations may increase sensitivity to menstrual pain or lead to irregular cycles, underscoring the importance of balanced nutrition during adolescence.

Supporting evidence from various populations further highlighted that underweight status was closely related to inadequate dietary patterns and micronutrient deficiencies, both of which contribute to hormonal instability and increased vulnerability to menstrual disorders (Bavil et al., 2018; Taheri et al., 2020). Adolescents with poor nutritional status often consume diets low in essential nutrients, such as omega-3 fatty acids, vitamin B6, vitamin E, and magnesium, which are known to play roles in regulating inflammatory responses and prostaglandin synthesis. In the context of this study, the predominance of underweight adolescents suggested that nutritional challenges remained a significant concern, potentially predisposing them to menstrual health problems and emphasizing the need for improved dietary awareness and interventions.

Dysmenorrhea

Dysmenorrhea was found to be a common condition among adolescents in this study, reflecting patterns reported in previous research that identified menstrual pain as one of

the most frequent gynecological complaints in this age group. Primary dysmenorrhea is generally attributed to excessive production of prostaglandins, leading to increased uterine contractions, reduced uterine blood flow, and heightened pain sensation. Evidence showed that adolescents commonly experience these symptoms due to hormonal fluctuations during early reproductive years, with studies emphasizing that inadequate dietary intake and lifestyle factors may further exacerbate menstrual discomfort (Mohamadirizi & Kordi, 2015; Taheri et al., 2020). These findings aligned with the high proportion of respondents in this study who reported experiencing menstrual pain.

Further supporting evidence suggested that dietary habits and nutritional patterns played an important role in modulating the severity of dysmenorrhea. Research conducted among student populations demonstrated that poor diet quality, low consumption of anti-inflammatory nutrients, and irregular eating patterns were significantly associated with increased dysmenorrhea intensity (Kosim et al., 2019; Onieva-Zafra & et al, 2020). Studies also indicated that insufficient intake of specific micronutrients such as omega-3 fatty acids, magnesium, and vitamins B6 and E could contribute to elevated prostaglandin synthesis and inflammatory responses, worsening menstrual pain. In the context of this study, the high prevalence of dysmenorrhea may have been influenced by dietary and lifestyle patterns common among adolescents, reinforcing the need for targeted nutritional and reproductive health education.

Nutritional Status and Dysmenorrhea

The findings of this study demonstrated a significant association between nutritional status and the occurrence of dysmenorrhea, with underweight adolescents showing a higher likelihood of experiencing menstrual pain. This relationship was biologically plausible, as inadequate nutritional intake may disrupt hormonal homeostasis and increase prostaglandin production, subsequently intensifying uterine contractions and menstrual discomfort. Similar results were reported in previous studies conducted in Indonesia and other regions, where underweight adolescents were more prone to dysmenorrhea compared to those with normal nutritional status (Ginting et al., 2021; Istianah & Oktaviani, 2022). Moreover, systematic evidence suggested that poor dietary quality and micronutrient deficiencies commonly observed in undernourished individuals contributed to inflammatory and endocrine disturbances that exacerbate pain during menstruation (Bajalan et al., 2019; Kartal & Akyuz, 2018).

Additional literature supported the notion that nutritional improvement could reduce dysmenorrhea severity. A randomized controlled trial found that dietary modifications,

including increased intake of anti-inflammatory nutrients, reduced menstrual pain intensity among young women, highlighting the therapeutic potential of optimal nutrition (Kartal & Akyuz, 2018). Likewise, studies indicated that adolescents with adequate nutritional status were less likely to report menstrual pain due to more stable hormonal regulation and balanced prostaglandin synthesis (Bavil et al., 2018; Taheri et al., 2020). In the context of the present study, the significant association between nutritional status and dysmenorrhea underscored the importance of promoting healthy dietary behaviors among adolescents as a preventive measure to improve menstrual health and overall well-being.

CONCLUSION

This study demonstrated a significant relationship between nutritional status and dysmenorrhea, with underweight adolescents showing a higher likelihood of experiencing menstrual pain. These findings highlight the importance of maintaining adequate nutritional intake to support hormonal balance, reduce inflammatory responses, and minimize menstrual discomfort. Strengthening nutrition education and implementing school-based dietary interventions may serve as effective strategies to improve menstrual health and overall well-being among adolescent girls.

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