Natural: Jurnal Pelaksanaan Pengabdian Bergerak bersama Masyarakat
Volume 3, Nomor.1 tahun 2025
e-ISSN: 3031-0199; p-ISSN: 3031-0202, Hal 148-160
DOI : https://doi.org/10.61132/natural.v3i1.1130
Available online at: https://journal.arikesi.or.id/index.php/Natural

The Relationship between Stress Levels and the Incidence of Menstrual Pain in Adolescents at State High School (SMA) 1 Kutalimbaru District Kutalimbaru in 2023

Ninsah Mandala Putri Sembiring[1*], Maya Sari Hasibuan[2], Emma Dosriamaya[3], Basaria Manurung[4], Srilina Br Pinem[5], Ernamari[6]
[1-6]Department of midwifery, STIKes Mitra Husada, Medan, Indonesia

*Author correspondence: ninsahputri@yahoo.co.id**

Article History:
Received: Desember 12, 2024;
Revised: Januari 16, 2025;
Accepted: Februari 17, 2025
Published: Februari 20, 2025

Keywords: *adolescent girls, cross-sectional study, dysmenorrhea, menstrual pain, stress.*

Abstract*. Unhealthy lifestyle, stress, health problems, physical activity, hormonal imbalance, and nutritional status are all factors that contribute to irregular menstruation. Stress is a common cause of menstrual cycle disorders. It induces the pituitary gland to release ACTH (Adrenocorticotropic Hormone), which increases cortisol levels, disrupting the menstrual cycle. This study aims to investigate the relationship between stress levels and the occurrence of menstrual pain (dysmenorrhea) among adolescent girls at SMA Negeri 1 Kutalimbaru, Kutalimbaru District, in 2023. The research uses a cross-sectional design with an analytic survey approach. A sample of 45 adolescent girls was selected, consisting of two groups: case and control. Data were collected using a questionnaire, and data analysis was performed using univariate and bivariate analysis techniques. The results show that the majority of adolescents experience moderate stress (51.1%) and mild menstrual pain (48.9%). The analysis reveals a significant relationship between stress levels and the occurrence of dysmenorrhea, with a Spearman Rank correlation coefficient of 0.656 and a p-value of 0.000. This study highlights the importance of stress management in reducing menstrual pain among adolescent girls.*

1. INTRODUCTION

The health issue for 2030 in the SDGs (Sustainable Development Goals) is integrated into one goal, which is to ensure healthy lives and promote well-being for all people of all ages. There are 38 SDGs targets in the health sector that need to be achieved. One of the focuses of these targets is access to health and reproductive services for the community. One global strategy being implemented to complete the MDGs (Millennium Development Goals) is focusing on upholding health for women, children, and adolescents (SDGs 2016-2030).

According to the World Health Organization (WHO) in 2015, the global issues faced by adolescents revolve around menstrual disorders (38.45%), nutritional problems related to anemia (20.3%), learning disorders (0.7%), and psychological disorders (0.5%). Menstrual disorders are common and often require adolescents to consult a doctor. Unmanaged menstrual disorders can affect the quality of life and daily activities (Angrainy et al., 2020).

WHO's 2020 report shows that the prevalence of menstrual cycle disorders in women is around 45%. According to the Basic Health Research (Riskesdas) data (Ministry of Health of the Republic of Indonesia, 2018), 11.7% of adolescents in Indonesia experience irregular menstruation, with 14.9% of adolescents in urban areas experiencing menstrual irregularities, where the percentage reaches 15.8%.

According to Riskesdas data (2017), in Indonesia, 68% of women aged 10-59 have regular menstruation, and 13.7% have irregular menstruation in one year. The problems of irregular menstruation among women aged 17-29 and 30-34 years are quite high, at 16-14%. The reasons given by women aged 10-59 for experiencing irregular menstruation are stress and mental strain, at 5.1% (Nur Salmawati, Andi Mayasari Usman, 2022).

Unhealthy lifestyle, stress, health issues, physical activity, hormonal imbalance, and nutritional status are all factors that cause irregular menstruation. Stress is a common cause of menstrual cycle disturbances. Stress induces the pituitary to release ACTH (Adrenocorticotropic Hormone). The level of cortisol increases as a result of this hormone, thereby disrupting the menstrual cycle (Safitri et al., 2020).

From the preliminary survey conducted by the author at SMA Negeri 1 Kutalimbaru, Pancurbatu District, the data revealed that there were 142 female students in grade X, with 79 of them complaining of menstrual pain in 2023.

Based on this data, I am interested in conducting research with the title "The Relationship Between Stress Levels and Menstrual Pain Incidence Among Adolescents at SMA Negeri 1 Kutalimbaru, Kutalimbaru District, 2023."

2. LITERATURE REVIEW

Stress

Definition of Stress The term "stress" comes from the Latin word "stingere," which means "hard" (stricus). The stress response model was developed by Hans Selye, who explained the connection between stress and its impact on both physical health and well-being. Stress is a physical and mental response to demands that can cause tension and disrupt daily life. It functions as a self-preservation mechanism that helps maintain bodily equilibrium (Nasir et al., 2011; Donsu, 2017).

According to Selye, there are three stages of stress response:

a. Alarm

This stage occurs when the body detects a threat and triggers a "fight or flight" response to handle the stressor. Symptoms include shortness of breath, rapid heartbeat, headaches, difficulty swallowing, and cramps (Rice, 2011).

b. Resistance

During this stage, the body tries to adapt to prolonged stress. Ongoing resistance can lead to health issues such as arthritis, cancer, or hypertension (Lyon, 2012).

c. Exhaustion

This stage happens when the body can no longer cope with the stress, leading to organ damage and even death (Lyon, 2012; Rice, 2011).

2.1.2 Types of Stress

Stress can be categorized into three types:

a. Mild Stress

The symptoms are temporary and do not cause significant physiological disturbances. Examples include forgetfulness or falling asleep during activities.

b. Moderate Stress

Symptoms last for several hours to days and can interfere with physiological functions such as concentration, menstrual cycles, or digestion. Examples include heavy workloads or failure at work.

c. Severe Stress

This is chronic stress that persists for months and causes significant symptoms like rapid heartbeat, excessive sweating, and increased anxiety. Examples include financial difficulties, serious illness, or marital problems (Jumaini Andrian, 2021).

Adolescents

Definition of Adolescence is the transitional period between childhood and adulthood, involving physical, psychological, and social development. It begins with the onset of sexual maturity and ends when an individual reaches full adulthood (Sarwono, 2013). This phase typically spans ages 12 to 21 for females and 13 to 22 for males (Ali and Asrori, 2012).

Stages of Adolescence

Adolescence is divided into three phases:

a. Early Adolescence

Ages 12-15, typically corresponding to middle school. This stage is characterized by rapid physical changes and an increasing interest in the opposite sex.

b. Middle Adolescence

Ages 15-18, typically corresponding to high school. Physical maturity approaches adulthood, and social interactions increase.

c. Late Adolescence

Ages 18-21, typically corresponding to college or early adulthood. This phase reflects complete physical maturity and more developed attitudes.

Signs and Symptoms of Adolescence

a. Subjective:
   1. Assessing strengths and weaknesses
   2. Developing close friendships
   3. Interest in romantic relationships
   4. Discovering personal talents

b. Objective:
   1. Taking responsibility for assigned tasks
   2. Establishing personal identity
   3. Developing long-term goals
   4. Achieving academic success
   5. Forming peer groups (Keliat, 2019).

Menstruation

Definition of Menstruation is the shedding of the uterine lining (endometrium) when no fertilization occurs. This bleeding typically lasts 4-6 days and occurs in a regular cycle, averaging every 28 days (Purwoastuti, 2021).

a. Menstrual Cycle

The menstrual cycle involves several phases beginning with the growth of ovarian follicles, stimulated by the hormone FSH. Ovulation occurs midway through the cycle. If fertilization does not happen, progesterone levels drop, leading to the shedding of the endometrium and menstruation (Dewinny, 2022).

b. Physiology of the Menstrual Cycle

A typical menstrual cycle lasts 21-35 days, with menstruation occurring over 2-8 days. Menstrual cycle disturbances can affect fertility, lead to recurrent miscarriages, or contribute to malignancies.

c. Menstrual Disorders

1. Dysmenorrhea: Painful menstruation caused by uterine contractions.
2. Hypermenorrhea: Excessive menstrual bleeding and longer duration.

3. Hypomenorrhea: Light and short menstrual bleeding.
4. Polymenorrhea: More frequent menstrual cycles.
5. Oligomenorrhea: Prolonged menstrual cycles.
6. Amenorrhea: Absence of menstruation, either primary (no menstruation by age 16) or secondary (absence of menstruation for three cycles).

d. Causes of Menstrual Disorders

1. Hormonal Imbalance
2. Systemic Conditions (e.g., metabolic disorders or diabetes)
3. Stress
4. Thyroid Disorders

Management depends on the underlying causes of the disorder (Atikah & Misaroh, 2022).

3. METHODS

The methods section outlines the steps followed in executing the study and provides a brief justification for the research methods used. This section should contain sufficient detail to allow the reader to evaluate the appropriateness of your methods and the reliability and validity of your findings. Additionally, the information should enable experienced researchers to replicate your study.

4. RESULTS

Univariate Analysis

a. Respondent Age

The respondent age data uses central tendency measurements, which include mean, median, mode, standard deviation, minimum, and maximum.

Table 1: Central Tendency of Respondents Based on Age

Variabel	Mean	Median	Mode	Standard Deviation	Minimum	Maximum
Age	16,27	16,00	16	0,863	15	18

Source: Respondent Questionnaire at SMA Negeri 1 Kutalimbaru, Kutalimbaru District, 2023

Based on Table 1, it can be seen that the average age of female adolescents at SMA Negeri 1 Kutalimbaru is 16.27, with a median of 16.00, and the age range spans from 15 to 18 years.

b. Class

There are two classes for female adolescents at SMA Negeri 1 Kutalimbaru, namely Class X and Class XI.

Table 2: Frequency Distribution of Respondents Based on Class

Kelas	Frequency	Percetage (%)
X	23	51,1%
XI	22	48,9%
Total	**45**	**100%**

Source: Respondent Questionnaire at SMA Negeri 1 Kutalimbaru, 2023

Based on Table 2, it can be observed that most respondents belong to Class X, with 23 respondents (51.1%).

c. Menarche Age

The age of menarche uses central tendency measurements, which include mean, median, mode, standard deviation, minimum, and maximum.

Table 3: Central Tendency of Respondents Based on Menarche Age

Variabel	Mean	Median	Mode	Standard Deviation	Minimum	Maximum
Age	12,36	12,00	12	0,981	11	14

Source: Respondent Questionnaire at SMA Negeri 1 Kutalimbaru, 2023

Based on Table 4.3, it can be observed that the average menarche age of female adolescents at SMA Negeri 1 Kutalimbaru is 12.36, with a median of 12.00, and the age range spans from 11 to 14 years.

d. Stress Level

The stress level of female adolescents is categorized into five groups: normal (no stress), mild stress, moderate stress, severe stress, and very severe stress.

Table 4: Frequency Distribution of Respondents Based on Stress Level

Stress Level	Frequency	Percentage (%)
Normal	0	0%
Mild Stress	18	40,0%
Moderate Stress	23	51,1%
Severe Stress	4	8,9%
Very Severe Stress	0	0%
Total	**45**	**100%**

Source: Respondent Questionnaire at SMA Negeri 1 Kutalimbaru, 2023

Based on Table 4, it can be observed that most female adolescents at SMA Negeri 1 Kutalimbaru experience moderate stress, with 23 respondents (51.1%), while a smaller number experience severe stress, with 4 respondents (8.9%).

e. Menstrual Pain (Dysmenorrhea)

Dysmenorrhea in female adolescents is categorized into three groups: mild dysmenorrhea, moderate dysmenorrhea, and severe dysmenorrhea.

Table.5: Frequency Distribution of Respondents Based on Menstrual Pain (Dysmenorrhea)

Dysmenorrhea Level	Frequency	Percentage (%)
Mild Dysmenorrhea	22	48,9%
Moderate Dysmenorrhea	15	33,3%
Severe Dysmenorrhea	8	17,8%
Total	**45**	**100%**

Source: Respondent Questionnaire at SMA Negeri 1 Kutalimbaru, 2023

Based on Table 5, it can be observed that most female adolescents at SMA Negeri 1 Kutalimbaru experience mild dysmenorrhea, with 22 respondents (48.9%), while a smaller number experience severe dysmenorrhea, with 8 respondents (17.8%).

Crosstab

Crosstab Relationship Between Stress Level and Dysmenorrhea Incidence in Female Adolescents at SMA Negeri 1 Kutalimbaru. The results of the crosstab calculation on the relationship between stress level and dysmenorrhea are as follows:

Table 6: Crosstab Relationship Between Stress Level and Dysmenorrhea Incidence in Female Adolescents at SMA Negeri 1 Kutalimbaru

Stress Level	Dysmenorrhea							
	Mild	%	Moderate	%	Severe	%	Total	%
Normal	0	0	0	0	0	0	0	0
Mild Stress	7	15,6	8	17,8	3	6,7	18	40,0
Moderate Stress	13	28,9	6	13,3	4	8,9	23	51,1
Severe Stress	2	4,4	1	2,2	1	2,2	4	8,9
Very Severe Stress	0	0	0	0	0	0	0	0
Total	22	48,9	15	33,3	8	17,8	45	100
P *value* =0,000 N=45 Correlation Coefficient =0,656								

Source: Respondent Questionnaire at SMA Negeri 1 Kutalimbaru, 2023

Based on the analysis of Table 4.6, the relationship between stress level and dysmenorrhea incidence in female adolescents at SMA Negeri 1 Kutalimbaru shows that female adolescents with mild stress, numbering 18 respondents (40.0%), experience mild dysmenorrhea with 7 respondents (15.6%), moderate dysmenorrhea with 8 respondents (17.8%), and severe dysmenorrhea with 3 respondents (6.7%). Female adolescents with moderate stress, numbering 23 respondents (51.1%), experience mild dysmenorrhea with 13 respondents (28.9%), moderate dysmenorrhea with 6 respondents (13.3%), and severe dysmenorrhea with 4 respondents (8.9%). Female adolescents with severe stress, numbering 4

respondents (8.9%), experience mild dysmenorrhea with 2 respondents (4.4%), moderate dysmenorrhea with 1 respondent (2.2%), and severe dysmenorrhea with 1 respondent (2.2%).

The Spearman rank test resulted in a correlation coefficient of 0.656 and a p-value of 0.000 < 0.05, which indicates that there is a significant relationship between stress level and dysmenorrhea incidence in female adolescents at SMA Negeri 1 Kutalimbaru. The correlation coefficient value of 0.656 shows a strong relationship between the two variables.

Discussion

a. Stress Levels in Female Adolescents at SMA Negeri 1 Kutalimbaru

Based on Table 5.4, it can be seen that out of the total 45 respondents in the data for female adolescents at SMA Negeri 1 Kutalimbaru, the majority experienced moderate stress, with 23 respondents (51.1%), while a smaller portion experienced severe stress, with 4 respondents (8.9%). The results of the questionnaire analysis for the 23 respondents with moderate stress are marked by symptoms such as irritability, difficulty resting, being easily offended, and restlessness. This is consistent with the Psychology Foundation's theory of stress, which can last from several hours to several days, for instance, unresolved conflicts with others.

From the interviews conducted by the researcher with the respondents, the majority of those with moderate stress often became angry when they received poor grades on daily tests and became easily frustrated when their results did not meet their expectations. This is consistent with Nasution's statement that frustration can occur when individuals face obstacles or lose opportunities to achieve desired results. Frustration can also be understood as a psychological effect in response to threatening situations, such as reactions of anger, rejection, or depression.

According to Proverawati, adolescence is a turbulent period, during which mood swings can occur rapidly. These drastic mood changes in adolescents are often caused by homework burdens, school assignments, or daily activities at home. Furthermore, according to Ade, emotionality during adolescence is influenced by factors such as maturation, learning, sadness, sulking, outbursts of anger, and a tendency to cry. During this period, adolescents may also experience anxiety, restlessness, and quick temper.

Based on Table 4.4, it can be seen that out of the total 45 respondents in the data for female adolescents at SMA Negeri 1 Kutalimbaru, a small portion experienced severe stress, with 4 respondents (8.9%). The results of the questionnaire analysis for these 4 respondents (8.9%) with severe stress are marked by symptoms such as feeling unable to carry out activities, being easily discouraged, losing interest in everything, feeling unappreciated, and believing there is no hope for the future. This is in line with the Psychology Foundation's (2010) theory

of chronic stress, which lasts for several weeks, such as continuous conflicts with teachers or friends, long-term physical illness, and financial difficulties.

In the interviews with the respondents, a small group experiencing severe stress attributed it to the pressure from their parents to always achieve good grades at school. This is in line with Needlman's theory, which states that there are demands often placed on children to get good grades, regardless of the child's abilities. The heavy burden experienced by these adolescents can lead to various health issues, such as headaches, loss of appetite, and excessive anxiety. Some respondents mentioned disagreements with their parents about activities outside of school, such as tutoring, where parents insisted their child participate in these activities to perform well in national exams, while the child resisted. This situation aligns with Mutadin's (2002) theory, where adolescents often face significant dilemmas between following their parents' wishes or their own desires. This situation is known as ambivalence, which can lead to conflicts within the adolescent.

Based on these findings, the researcher argues that female adolescents experiencing moderate stress do so due to exhaustion from daily activities at school, such as homework, and after-school tutoring, which makes it difficult for them to rest at home, leading to irritability, sensitivity, and restlessness. Meanwhile, those experiencing severe stress are affected by the pressure from their parents to achieve good grades and their parents' insistence, which leads to stress and depression.

b. Dysmenorrhea in Female Adolescents at SMA Negeri 1 Kutalimbaru

Based on Table 5.5, it can be seen that, out of the total 45 respondents in the data for female adolescents at SMA Negeri 1 Kutalimbaru, the majority experienced mild dysmenorrhea, with 22 respondents (48.9%), while a smaller portion experienced severe dysmenorrhea, with 8 respondents (17.8%). The analysis of the questionnaire for the 22 respondents with mild dysmenorrhea shows symptoms such as being able to engage in activities and concentrate on studying. This is consistent with Manuaba's theory, which states that if the pain lasts for a short time and only requires brief rest, the individual can continue with daily activities and does not need medication.

From the researcher's interviews with the respondents, the majority of those experiencing mild dysmenorrhea noted that the pain they felt only lasted for a few hours. This is in accordance with Fauziah's (2019) theory, which states that dysmenorrhea typically occurs shortly after menarche, usually after 12 months or more. Generally, it is non-ovulatory and not accompanied by pain. Pain usually begins just before or with the onset of menstruation and lasts for a few hours, although some cases may last for several days. The pain is typically

colicky, often limited to the lower abdomen, but can spread to the lower back and thighs. Along with the pain, symptoms such as nausea, vomiting, headaches, and diarrhea may also occur.

Based on Table 4.5, it can be seen that, out of the total 45 respondents in the data for female adolescents at SMA Negeri 1 Kutalimbaru, a small portion experienced severe dysmenorrhea, with 8 respondents (17.8%). The analysis of the questionnaire for the 8 respondents with severe dysmenorrhea showed symptoms such as lower abdominal pain, back pain, loss of appetite, dizziness, inability to carry out activities, and fainting. This is consistent with Manuaba's (2010) theory, which states that severe dysmenorrhea requires several days of rest, strong medication, and even surgery as it can disrupt menstruation.

In the interviews, a small group of respondents experiencing severe dysmenorrhea reported that the pain lasted for 2 days and was continuous throughout their menstrual period. This aligns with Fauziah's (2012) theory that dysmenorrhea lasts for 2 to 3 days or up to less than 2 weeks. When menstruation occurs, it often leads to symptoms such as thigh soreness, breast pain, fatigue, irritability, loss of balance, clumsiness, sleep disturbances, and bruising on the thighs and upper arms.

One factor contributing to dysmenorrhea in female adolescents is early menarche. Based on Table 4.3, it can be seen that the youngest age for menarche among the respondents was 11 years, which aligns with Sudjana's (2005) theory that menarche, the first menstruation, usually occurs between the ages of 10 and 16, with the average age being between 12 and 13 years. Statistics show that the age of menarche is influenced by genetic factors, nutrition, and health. Furthermore, Sulistyowati (2009) states that menstruation usually begins at around 12 or 13 years, although some may experience it as early as 9 years or as late as 16 years. One risk factor for dysmenorrhea is having the first menstruation at an unusually early age. Studies indicate that early menarche (before 12 years old) can lead to dysmenorrhea.

According to research by Desriani (2019), menarche generally occurs between the ages of 12 and 13 years. Early menarche, when the reproductive organs are not yet fully prepared for development and the cervix is still narrowing, can cause pain during menstruation or dysmenorrhea.

Based on these findings, the researcher concludes that female adolescents experiencing mild dysmenorrhea do so because they can still carry out activities and concentrate on studying well. Meanwhile, factors that contribute to severe dysmenorrhea include lower abdominal pain, back pain, loss of appetite, dizziness, the inability to engage in activities, fainting, early menarche, and the lowest age of menarche among respondents being 11 years. If menarche

occurs before 12 years old, it can lead to pain during menstruation or dysmenorrhea, and the average age for menarche is typically between 12 and 13 years.

c. The Relationship Between Stress Levels and Dysmenorrhea in Female Adolescents at SMA Negeri 1 Kutalimbaru

Based on the analysis in Table 4.6, the relationship between stress levels and the occurrence of dysmenorrhea in female adolescents at SMA Negeri 1 Kutalimbaru shows that 18 respondents (40.0%) with mild stress had 7 (15.6%) experiencing mild dysmenorrhea, 8 (17.8%) with moderate dysmenorrhea, and 3 (6.7%) with severe dysmenorrhea. Among the 23 respondents (51.1%) with moderate stress, 13 (28.9%) experienced mild dysmenorrhea, 6 (13.3%) had moderate dysmenorrhea, and 4 (8.9%) had severe dysmenorrhea. Among the 4 respondents (8.9%) with severe stress, 2 (4.4%) had mild dysmenorrhea, 1 (2.2%) had moderate dysmenorrhea, and 1 (2.2%) had severe dysmenorrhea.

The Spearman rank statistical test yielded a correlation coefficient of 0.656 and a p-value of $0.000 < 0.05$, indicating a significant relationship between stress levels and the occurrence of dysmenorrhea in female adolescents at SMA Negeri 1 Kutalimbaru. The Spearman rank correlation coefficient of 0.656 suggests a strong relationship between these two variables.

Stress is a natural response of the body when experiencing pressure from the environment. The effects of stress can vary and may impact both mental and physical health. One consequence of stress on health is dysmenorrhea. When a person experiences stress, a neuroendocrine response occurs, causing the secretion of Corticotrophin Releasing Hormone (CRH), which stimulates the release of Adrenocorticotrophic Hormone (ACTH). ACTH increases the secretion of cortisol from the adrenal glands. These hormones inhibit the secretion of Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH), which disrupts follicle development. This disturbance causes reduced progesterone synthesis and release, leading to an increase in prostaglandin F2α and E2. The imbalance between prostaglandin F2α, E2, and prostacyclin (PGI2) leads to increased PGF2α activity, causing ischemia in the myometrial cells and enhanced uterine contractions. Excessive contractions result in dysmenorrhea (Hendrik, 2018). Based on this explanation, stress is a contributing factor to the occurrence of dysmenorrhea. Dysmenorrhea can be minimized if stress is prevented. A clear understanding of the menstrual process can help stabilize emotions, which may reduce the occurrence of stress and dysmenorrhea during menstruation.

5. CONCLUSION AND LIMITATION

Conclusion

Based on the research titled The Relationship Between Stress Levels and Dysmenorrhea Incidence in Adolescent Girls at SMA Negeri 1 Kutalimbaru, it can be concluded that the majority of female students have moderate stress levels (51.1%), and most of them experience mild dysmenorrhea (48.9%). A significant relationship was found between stress levels and dysmenorrhea, with a strong correlation coefficient of 0.656 and a p-value of 0.000 < 0.05. This study provides valuable insights for respondents to understand the impact of stress on dysmenorrhea. It is recommended that SMA Negeri 1 Kutalimbaru offer educational programs on stress management, coping techniques, and methods to reduce dysmenorrhea. For STIKes Mitra Husada Medan, the findings contribute to the literature on stress and dysmenorrhea, and future research should consider additional variables to improve the quality of the study and provide more comprehensive results.

Limitation

In this study, several limitations inevitably influenced the research findings. First, the research was conducted within a limited timeframe and with constrained resources at SMA Negeri 1 Kutalimbaru. This limited scope of resources and time led to a sample size of only 45 female adolescents, which may not fully represent the broader population. Therefore, the results may not be entirely generalizable to other schools or regions.

Second, the study focused solely on female adolescents, which means the findings reflect only their experiences. This limitation excludes any potential differences in stress levels and dysmenorrhea among male adolescents or other demographic groups, thus restricting the broader applicability of the results.

Third, the data collection was based on questionnaires and interviews, which are inherently subjective and reliant on the respondents' perceptions. Respondents may have had difficulty accurately assessing or describing their stress levels or dysmenorrhea symptoms, which could have affected the data's reliability. Additionally, some external factors such as family issues, social pressures, or financial conditions were not controlled for, which could have influenced the respondents' stress levels. These factors may have had an impact on the study’s outcomes but were not directly addressed.

Another limitation is the measurement of dysmenorrhea, which was based on self-reported symptoms. The experience of dysmenorrhea can vary significantly between individuals, and some respondents may not have recognized or reported mild symptoms, leading to a possible underreporting of the condition’s prevalence and severity.

Finally, while a correlation between stress levels and dysmenorrhea was found, this study cannot establish a clear cause-and-effect relationship between the two. Other factors, such as dietary habits, physical activity, or psychological influences, may also contribute to the experience of stress and dysmenorrhea but were not explored in depth in this study.

Given these limitations, future research should aim to include a larger and more diverse sample, extend the study across different regions, and consider additional external factors to provide a more comprehensive understanding of the relationship between stress and dysmenorrhea in adolescents.

REFERENCES

Andrian, J. N. N. P. (2021). Hubungan tingkat stres dengan indeks massa tubuh pada mahasiswa Fakultas Kedokteran Universitas Kristen Indonesia. *Jurnal Kedokteran*, *9*, 1353.

Angrainy, R., & Yanti, P. D. (2020). Hubungan tingkat stres dengan siklus menstruasi pada remaja putri di SMAN 5 Pekan Baru tahun 2019. *Jurnal Ilmu Kebidanan, 9*, 155.

Fauziah Botutihe, S., Suntin, S., & Nur Hijrah Tiala, S. (2022). *Aktivitas fisik dan tingkat stres dengan gangguan pola menstruasi*. CV. Tuang Tentor.

Proverawati, A., & Misaroh, S. (2022). *Menarche: Menstruasi pertama penuh makna*. Nuha Medika.

Purwoastuti, A. E. S. W. A. K. S. P. T. E. (2021). *Kesehatan reproduksi dan keluarga berencana*. PT. Pustaka Baru.

Safitri, L. R., Irsam, M., & Kurniati, I. D. (2020). Efek tingkat stres mahasiswi Blok 19–20 terhadap siklus menstruasi. *Universitas Muhammadiyah Semarang Seminar Nasional Publikasi Hasil-Hasil Penelitian dan Pengabdian Masyarakat*, *3*, 415–420.

Salmawati, N., Usman, A. M., & N. F. (2022). Hubungan tingkat stres dan aktivitas fisik dengan siklus menstruasi pada mahasiswi keperawatan semester VII Universitas Nasional Jakarta 2021. *Jurnal Penelitian Keperawatan Kontemporer, 2*, 108.

Sujarweni, V. W. (2022). *Metodologi penelitian*. Pustaka Baru Press.