

THE RELATIONSHIP BETWEEN STRESS AND PHYSICAL ACTIVITY WITH *PREMENSTRUAL SYNDROME* IN ADOLESCENT GIRLS (AGED 12-15 YEARS) AT SMP NEGERI 4 POLEWALI

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Abstract

Backgrounds: Premenstrual syndrome is a group of symptoms that occur in the luteal phase of the menstrual cycle which causes disruption to a person's work and lifestyle. Premenstrual syndrome becomes more disturbing as you get older, stress factors can make premenstrual syndrome disorders worse, and lack of exercise and physical activity can also make premenstrual syndrome symptoms worse. **Objectives:** This study aims to determine the relationship between stress and physical activity with premenstrual syndrome in adolescent girls (aged 12-15 years). **Methods:** The research design used is a cross sectional study with data collection at one time. The sampling method used random sampling with the Slovin formula to obtain a sample of 198 people. The results of statistical tests using the Spearman correlation test between stress and premenstrual syndrome obtained a p-value of 0.000, which means it is smaller than a (0.05). **Results:** Thus it can be concluded that there is a significant relationship between stress and premenstrual syndrome in adolescent girls. Meanwhile, the results of statistical analysis using the Spearman Correlation test between physical activity and premenstrual syndrome obtained a p-value of 0.072 which means it is greater than a (0.05). **Conclusion:** Thus, it can be concluded that there is no significant relationship between physical activity and premenstrual syndrome in adolescent girls.

Keywords: *Premenstrual syndrome ; stress ; physical activity*

BACKGROUND

Adolescence, which marks the transition from childhood to adulthood, is characterized by physical, psychological, and psychosocial changes in life. Menstruation in adolescent girls is a sign of puberty. In 2010, the Minister of Health of the Republic of Indonesia stated that adolescents are classified as those who are unmarried and aged between 10 and 19 years. Adolescence or puberty is a stage of development of physical maturity, sexual organs, and the achievement of reproductive abilities. Approaching menstruation, a woman will feel uncomfortable symptoms that occur for a short period of time, ranging from a few hours to a few days. However, some of these symptoms can become stronger and interfere with daily activities. The disorder commonly experienced by women before menstruation is called Premenstrual Syndrome (PMS) (Timiyatun, I., Ibna, & Eka, 2021).

The World Health Organization (WHO) defines adolescence as the development from the onset of secondary sex signs to the achievement of reproductive sexual maturation, the transition from socioeconomic dependence to independence, and a process of achieving adult mentality and identity. When an adolescent experiences puberty, this is considered an indicator of the beginning of adolescence. However, if there is no biological sign, it is declared that adolescence has ended. Adolescent girls will experience very important changes, including physical and psychological changes. The physical change in question is the process of maturity that occurs in the reproductive organs of adolescent girls, which is marked by menstruation. When adolescent girls experience menstruation, which involves the release of blood from the uterus if the egg is not fertilized. In general, menstruation occurs every month (Wulan, Lubis, Ginting, Sembiring, & Gurusinga, 2021).

According to the Indonesian Ministry of Health (2014), adolescence is a period of rapid growth and development both physically, psychologically, and intellectually. Adolescence is characterized by puberty, with menstruation being a key indicator in adolescent girls. Menstruation accompanied by premenstrual syndrome (PMS) can affect the quality of life of adolescent girls. PMS is a set of physical, psychological, and behavioral symptoms that appear cyclically in women of reproductive age (Risky Fiskalia, 2018).

Premenstrual Syndrome, commonly known as PMS, refers to the symptoms felt by a woman one or two weeks before menstruation. PMS includes a range of physical, emotional, and behavioral complaints occurring in women of reproductive age. In adolescents, PMS generally starts around the age of 14 or two years after menarche, continuing through puberty and ending at menopause (Relationship, Physical, Regency, Wiwin, & Madani, 2023).

PMS is a group of symptoms that occur during the luteal phase of the menstrual cycle and can disrupt one's work and lifestyle. It can make young women unable to perform normal activities, requiring treatment and resulting in a decreased quality of life. For instance, female students suffering from PMS may find it hard to concentrate on learning, experience reduced motivation, and feel anxious about their condition due to their inability to carry out daily activities (Wulan *et al.*, 2021).

Usually, 4-10 days before menstruation, women may experience symptoms such as emotional overload, irritability, agitation, anxiety, depression, low self-esteem, decreased motivation to work or engage in activities, fatigue, appetite changes, sleep pattern changes, cramping, fluid retention, pelvic fullness, flatulence, headaches, and breast tenderness. These symptoms are known as premenstrual syndrome. Some women may suffer from depression and anxiety from two days to two weeks before menstruation, and stress and other pressures can prolong PMS symptoms (Timiyatun *et al.*, 2021).

According to Aulia (2012), PMS is more prevalent in women sensitive to hormonal changes in their menstrual cycle. Factors increasing the risk of PMS include age (with PMS becoming more disturbing between ages 15-34), stress, dietary habits (e.g., high sugar, salt, coffee, tea, chocolate, soft drinks, dairy products, and processed foods), nutritional

deficiencies (such as lack of B vitamins, vitamin E, vitamin C, magnesium, iron, zinc, manganese, and linoleic fatty acids), smoking, alcohol consumption, and lack exercise and physical activity can also aggravate PMS symptoms (Italia & Ramona, 2021).

Handoko (2001: 200) in Asih, Widhiastuti, & Dewi (2018) describes stress as a condition of tension affecting emotions, thought processes, and a person's condition. Excessive stress can impair one's ability to deal with their environment. Stress arises from a perceived mismatch between a person's personality, talents, and skills, and their environment, which results in his inability to deal effectively with the various demands on him.

Symptoms of *premenstrual syndrome* In addition to physical pain, anxiety is a primary symptom of PMS and can also cause sleep disorders such as insomnia or hyperinsomnia (Wulan *et al.*, 2021). Anxiety and sleep disorders, including insomnia or hyperinsomnia, are significant symptoms accompanying PMS (Leiwakabessy, Novita, Marlina, Rohaeti, & Kristianto, 2022).

According to Almatseir (2013), physical activity is defined as movements performed by the body's muscles and supporting systems. Fathonah (2016) that activity is divided into two internal physical activities and external physical activities, internal physical activity is an activity where the process of working the organs in the body at rest, while external physical activity is an activity carried out by the movement of limbs that a person does for 24 hours and expends a lot of energy. (Timiyatun *et al.*, 2021).

Physical activity is a factor that can reduce the pain of PMS, so if physical activity is low, it can increase the severity of PMS, such as tension, emotions, and depression. It is theorised that physical activity increases endorphin production, lowers levels of oestrogen and other steroid hormones, facilitates oxygen transport in muscles, lowers cortisol levels, and improves psychological behaviour.

Based on the results of a preliminary study conducted with 6 female students at SMP Negeri 4 Polewali in May 2023, interview data were obtained: of the 6 female students who were interviewed, 4 female students experienced stress before menstruation began and had diverse physical activities, usually at the age of 12-15 years the physical activity of adolescent girls varies, all kinds of problems at this age are many and physical activities such as light exercise, running, and aerobics are one way to relieve symptoms due to premenstrual syndrome. Therefore, researchers are interested in conducting research on the relationship between stress and physical activity with premenstrual syndrome in adolescent girls (aged 12-15 years) at SMP Negeri 4 Polewali.

METHODS

Type of Research

The type of research is observational with a cross sectional study design in which variables that are risk factors and variables that are effects are observed at the same time (Notoatmodjo, 2010).

Location and Time of Research

This research is located at SMP Negeri 4 Polewali, Polewali Mandar Regency. The research was conducted on 02 September 2023

Population and Sample.

In this study the population was adolescent girls in classes VII, VIII, IX at SMP Negeri 4 Polewali as many as 393 people. So the sample for class VII = 60 people, VIII = 67 people, IX = 70 people. The total sample as a whole is 198 people. The sampling technique in this study was stratified random sampling, which is a sampling technique based on class (level) (Sastroasmoro, 2010), as for determining the number of respondents, the calculation was carried out using the Slovin formula

Data Collection

Data collection was carried out using three questionnaires, the first questionnaire was a stress questionnaire consisting of 14 question items, using the Depression Anxiety Stress Scales (DASS) with 4 categories: Value 0 = None or never, Value 1 = according to what is experienced to a certain degree, or sometimes, Value 2 = often, Value 3 = very according to what is experienced, or almost every time. The second questionnaire was a physical activity

questionnaire using the PAL (Physical Activity Level) questionnaire. The third questionnaire was a premenstrual syndrome questionnaire using the Shortened Premenstrual Assessment Form (SPAF) questionnaire consisting of 10 questions.

The procedure for collecting data for this study is that the researcher submits a research permit application letter to the STIKES Bina Generasi Polewali Mandar campus, after obtaining a research permit from the campus followed by a research permit to SMP Negeri 4 Polewali. Then the researcher determines the research respondents according to the inclusion and exclusion criteria, then visits the respondents who meet the inclusion criteria to explain the research mechanism. After that, the researcher asked permission and agreement to the respondent to become a sample and signed an informed consent sheet for respondents who were willing to become research samples. Then the researcher gave the questionnaire to the respondent.

Data Processing and Analysis

Data analysis methods used in this study are univariate analysis and bivariate analysis. Univariate analysis in writing is to describe each research variable using frequency distribution and average. While the bivariate analysis used in this study is the Pearson correlation test (if the data is normally distributed) with a significance level of <0.05 and the Spearman correlation test (if the data is not normally distributed) with a significance level of <0.05.

RESULTS AND DISCUSSION

Table 1. Frequency Distribution Based on stress Score

	Mean	SD	Median	Min	Max
Stress Score	20,28	5,028	21,00	2-32	2

Source: Primary Data 2023

Based on table 1 shows that the stress score value with a mean of 20.28 standard deviation value of 5.028 median value of 21.00 and a minimum value of 2 and a maximum of 32.

Table 2. Frequency Distribution Based on Physical Activity

Physical activity score	Mean	SD	Median	Min	Max
	1,5723	0,09431	1,5800	1,40	1,79

Source: Primary Data 2023

Based on table 2 shows that the value of physical activity scores with a mean of 1.5723 standard deviation value of 0.09431 median value of 1.5800 and a minimum value of 1.40 and a maximum of 1.79.

Table 3. Frequency Distribution Based on Premenstrual Syndrome

M	Mean	SD	Median	Max
PMS Score	44,14	11,524	48,00	13-59

Source: Primary data 2023

Based on table 3 shows that the PMS score value with a mean of 44.14 standard deviation value of 11.524 median value of 48.00 and a minimum value of 13 and a maximum of 59.

Bivariate Analysis

Bivariate analysis was conducted to determine the relationship between stress and physical activity with premenstrual syndrome in adolescent girls. Spearman correlation test is a statistical test to test 2 variables with ordinal data or one variable with ordinal data and the other nominal or ratio. The results of the spearman correlation test can be seen in the table below:

Table 4 Relationship between stress and premenstrual syndrome

Variables	N	p-value
Respondents' stress levels	98	0,000
Premenstrual syndrome	98	0,000
P= 0,05 < 0,000		

Source: Primary Data 2023

Based on table 4.5 shows that the level of stress p-value 0.000 and premenstrual syndrome p-value 0.000. The results of statistical analysis using the Spearman Correlation test obtained a p-value of 0.000 which means smaller than α (0.05). Thus it can be concluded that there is a significant relationship between stress and premenstrual syndrome in adolescent girls.

Table 5 Relationship between physical activity and premenstrual syndrome

Variables	N	p-value
Physical activity	198	0,072
Premenstrual syndrome	198	0,072
P= 0,05 > 0,072		

Source: Primary Data 2023

Based on table 5 shows that physical activity *p-value* 0.072 and *premenstrual syndrome p-value* 0.072. The results of statistical analysis using the *Spearman Correlation* test obtained a *p-value* of 0.072 which means greater than α (0.05). Thus it can be concluded that there is no significant relationship between physical activity and *premenstrual syndrome* in adolescent girls. Based on the results of data analysis and adjusted to the research objectives and research conceptual framework, the discussion is presented as follows:

Stress analysis

Based on the results of research conducted on 198 respondents of SMP Negeri 4 Polewali students using the DASS (*Depression Anxiety Stress Scales*) questionnaire from Lovibond (1995), it shows that the stress score value with a mean of 20.28 standard deviation value of 5.028 median value of 21.00 and a minimum value of 2 and a maximum of 32.

Based on theory, stress is a physical and psychological reaction to any demands that cause tension and disrupt the stability of daily life. Stress levels are divided into five levels, namely normal stress, mild stress, moderate stress, severe stress, and very severe stress (Priyoto, 2019). Stress in adolescents is the same as that in adults, stress can have a negative effect on the adolescent body, the only difference is the source and how they respond. If stress lasts a long time and occurs continuously, it can cause more severe stress levels and cause complaints and even disorders in the body if it cannot manage stress properly. (Hartanto, Astuti, Nugrahati, Sutomo, & Nada, 2018).. Stress that occurs has impacts, including: physiological, psychological, and behavioural impacts (Priyoto, 2019).

Stress management is certainly in accordance with its nature, meaning that if stress causes benefits in life then it should be enjoyed and vice versa, if it causes distress then action needs to be taken to overcome it. (Musradinur, 2019). Stress management techniques consist of stress prevention, stress resolution strategies, and intensive health care. Stress management that can be done is the use of good coping mechanisms, for example by regulating diet and nutrition, rest and sleep, exercising (holding gymnastics at least once every 2 weeks to relax the body and mind of students), managing weight, and others (Setiawati, 2018).

Physical activity analysis

The results obtained showed that the physical activity score value with a mean of 1.5723 standard deviation value of 0.09431 median value of 1.5800 and a minimum value of 1.40 and a maximum of 1.79.

Lack of physical activity causes the absence of nerve impulses that stimulate the hypothalamus and hypophysin to secrete β -endorphin so that there is no physical and emotional improvement in women. (Fatul, 2020). According to WHO (2010) the level of physical activity is any body movement that is the result of skeletal muscles that require energy expenditure. The level of physical activity is divided into three categories, namely light, medium and heavy. The level carried out tends to be light and of the 36 respondents most of them do daily activities such as cleaning, shopping and walking. According to Riskesdas (2003) physical activity is any body movement that increases energy expenditure and energy burning.

Light physical activity can increase the severity of *premenstrual syndrome*, such as tension, emotions, and depression due to increased serotonin levels in the brain. A woman if she does not do routine activities such as light exercise can cause *premenstrual syndrome* to be more severe. Respondents with light physical activity tend to experience more *premenstrual syndrome*. (Ritung & Olivia, 2018).

Exercise has more influence on the incidence of *Premenstrual Syndrome* (PMS). Nashruna *et al* (2018) stated that regular sustainable sports activities contribute to increasing the production and release of endorphins. Endorphins play a role in endogenous regulation.

Women who experience *premenstrual syndrome* events occur due to excess estrogen, excess estrogen can be prevented by increasing endorphins. This proves that regular exercise can reduce the risk of *Premenstrual Syndrome* (PMS). In women who rarely exercise regularly, the estrogen hormone will be higher so that the possibility of *premenstrual syndrome* (PMS) is greater.

Analysis of *premenstrual syndrome*

The results obtained showed that the PMS score value with a mean of 44.14 standard deviation value of 11.524 median value of 48.00 and a minimum value of 13 and a maximum of 59.

Premenstrual syndrome is a condition where a number of symptoms occur regularly and are associated with the menstrual cycle, symptoms usually occur 7-10 days before menstruation and disappear when menstruation begins. *Premenstrual Syndrome* begins during the fertility period until the end of the fertile period, namely when entering menopause. (Kusumawardani & Adi, 2019). *Premenstrual syndrome* is divided into three, namely mild, moderate, and severe *premenstrual syndrome*. (Alvionita, 2018). *Premenstrual syndrome* can cause symptoms in the form of emotional disturbances and physical changes. (Andiarna, 2018). *Premenstrual syndrome* occurs during the luteal phase, in this phase there will be an imbalance between the hormones estrogen and progesterone, where estrogen will suppress progesterone which causes physical symptoms of *premenstrual syndrome*. Symptoms of *Premenstrual Syndrome* can be predicted and usually occur regularly in the two week period before menstruation. (Namsa, Palandeng, & Kallo, 2019)..

The main causes of *premenstrual syndrome* are hormonal factors, namely changes in gonadal hormones such as progesterone and estrogen, brain chemistry changes such as the GABA (*gamma-aminobutyric acid*) system. (Ritung & Olivia, 2018) and serotonin (Rodiani & Rusfiana, 2020).. Women who experience *premenstrual syndrome* occur due to an imbalance of estrogen and progesterone hormones, where estrogen levels increase and progesterone levels decrease, resulting in a decrease in serotonin synthesis which affects mood and behaviour changes. (Pratiwi Putri & Margawati, 2019).

Premenstrual syndrome at a severe level is when the student cannot carry out activities and must rest. (Alvionita, 2018). The causes of *premenstrual syndrome* occur due to a combination of various complex factors, one of which is due to hormonal changes that occur before menstruation. (Rodiani & Rusfiana, 2020). The factors that cause *premenstrual syndrome* are heredity, biological factors, excessive body mass index (BMI), consumption of large amounts of caffeine (Finurina, 2018). (Finurina, 2018) chemical factors, lifestyle factors, and psychological factors (stress). (Nuvitasari et al., 2020).

When a person experiences continuous stress there will be a decrease in serotonin, if serotonin levels are low it can trigger a shift in the pattern of estrogen and progesterone hormones which can cause several physical symptoms of *premenstrual syndrome* such as breast pain and bloating. (Ritung & Olivia, 2018). The symptoms of *premenstrual syndrome* will be more clearly experienced by adolescent girls who are constantly under psychological pressure (Ramadani, 2018). The more severe a person's psychological stress can aggravate the imbalance of estrogen and progesterone hormones (estrogen hormones increase and progesterone hormones decrease) which causes the more severe *premenstrual syndrome* experienced. In addition, stress can also increase prolactin production which can aggravate *premenstrual syndrome* complaints. (Rudiyanti & Nurchairina, 2018).

Analysis of the relationship between stress and *premenstrual syndrome* in adolescent girls

Based on the results of research conducted on 198 respondents of SMP Negeri 4 Polewali students using the DASS (*Depression Anxiety Stress Scales*) questionnaire from

Lovibond (1995), it shows that the stress score value with a mean of 20.28 standard deviation value of 5.028 median value of 21.00 and a minimum value of 2 and a maximum of 32. The results of statistical analysis of the relationship between stress and *premenstrual syndrome* in adolescent girls using the *Spearman Correlation* test obtained a *p-value* =

0.000 which means smaller than α (0.05), this indicates H_a is accepted and H_0 is rejected, thus it can be concluded that there is a significant relationship between stress and *premenstrual syndrome* in adolescent girls (aged 12-15 years) at SMP Negeri 4 Polewali.

The results of this study are supported by research conducted by (Nuvitasari et al., 2020) who said that there was a relationship between stress levels and *premenstrual syndrome* in female

students, who used a research questionnaire from Lovibond (1995), where a significance value of 0.0001 was obtained so that $p < \alpha = 0.05$, so H_0 was rejected.

The results of this study are also in line with the results of previous research conducted by (Fatimah, Prabandari, & Emilia, 2016) which states that the more severe a person's stress is, the risk of experiencing *premenstrual syndrome* increases. This research is also supported by Susanti, Ilmiasih, Arvianti, et al. (2017), showing a significant relationship between the severity of *premenstrual syndrome* and stress levels.

The results of other studies also show that there is a significant relationship between stress and *premenstrual syndrome* in adolescent girls by (Hardaniyati et al., 2022) However, it can be seen from the statistical test results that the *p-value* is 0.003 so that $p < \alpha = 0.05$.

Although stress level is not the only factor that increases the incidence of *premenstrual syndrome*, this study shows that stress level can be one of the factors that increase the incidence rate and can aggravate the symptoms of *premenstrual syndrome*. Whether or not the level of stress affects *premenstrual syndrome* is influenced by several things including age, classroom environment, age of first menstruation, length of menstrual experience, and lifestyle in the school itself. From the results of the study it is known that stress levels also have an influence on *premenstrual syndrome*. The results of the study when connected with the theory that states that there is an influence of stress levels on *premenstrual syndrome* in junior high school students of Negeri 4 Polewali, then the theory can be proven by researchers. It can be concluded that there is a correlation between the level of stress and *premenstrual syndrome* in female students of SMP Negeri 4 Polewali. It is explained that the higher the stress level of female students, the more aggravating the occurrence of *premenstrual syndrome*.

Based on the theory of stress is a part of life that has positive and negative effects caused by environmental changes. In simple terms, stress is a condition in which there is a body response to change to achieve normal. Meanwhile, a stressor is something that can cause someone to experience stress. Stressors can be internal, such as hormonal changes, illness, or external, such as temperature and pollution. (Suardi & Dahlan, 2022)..

Based on the results of research and theory, it can be concluded that stress factors will aggravate *premenstrual syndrome* disorders because they affect the release of the hormonal system regulated by the central nervous system. Hormonal imbalance between estrogen and progesterone and increased prolactin production will aggravate *premenstrual syndrome* complaints. Young women are expected to maintain their emotional condition so as not to become stressed, especially before menstruation so that the reproductive process runs smoothly.

Analysis of the relationship between physical activity and *premenstrual syndrome* in adolescent girls

The results obtained showed that the physical activity score value with a mean of 1.5723 standard deviation value of 0.09431 median value of 1.5800 and a minimum value of 1.40 and a maximum of 1.79. The results of statistical analysis using the *Spearman Correlation* test

obtained a *p-value* of 0.072 which means greater than α (0.05). Thus it can be concluded that there is no significant relationship between physical activity and *premenstrual syndrome* in adolescent girls.

These results differ from previous research conducted by (Nashruna, Maryatun, & Wulandari, 2018) namely there is a relationship between *premenstrual syndrome* and the level of physical activity has a value of $p = 0.008$ which means there is a relationship between the level of physical activity and *premenstrual syndrome*.

Endorphins are called *endogenous opiates* because they originate from the body and their effects resemble those of heroin and morphine. These substances are associated with natural pain relief in response to stress or exercise. It is thought that exercise or physical activity levels trigger the production of endorphins, a natural drug that increases a woman's tolerance to the changes *premenstrual syndrome brings to her* life. (Fatul, 2020). Several biological mechanisms may explain the relationship between physical activity levels and *premenstrual syndrome*. Physical activity levels can increase endorphins, decrease oestrogen and other steroid hormones, increase oxygen transport in muscles, reduce cortisol levels and improve psychological state. (Ramadani, 2018).

There are differences in the results obtained from previous studies, which could be due to several factors, namely due to different levels of physical activity, the respondents of this study showed the level of physical activity they did towards the level of physical activity carried out in everyday life. BMC Journal of Health (2014) research suggests that these activities cannot be categorised as exercise, whereas the respondents in the previous study moved towards exercise rather than daily activities. Using SPAF in the degree of symptoms experienced by respondents, this assessment has different degrees of thinking between respondents and other respondents. (Fatul, 2020).

The results of statistical analysis using the *Spearman Correlation* test in this study obtained a *p-value* of 0.072 ($p > 0.05$) indicating that there is no significant relationship between physical activity and *premenstrual syndrome*. The absence of a significant relationship between physical activity and *premenstrual syndrome* is suspected that the level of physical activity carried out by respondents is the level of physical activity carried out in everyday life. Activities carried out in everyday life cannot be classified as sports activities. In addition, almost all respondents rarely do sports activities such as aerobics, jogging and running. This is because the free time that respondents have on holidays is only used to relax at home or rest such as sleeping and playing gadgets.

There are other factors in influencing *premenstrual syndrome* that cannot be seen through questionnaire tools, the shortcomings of this study if using SPAF respondents see subjectively, because each symptom has a different response, resulting in differences with previous research. Subjective assessment of the description of symptoms of *premenstrual syndrome* that makes each respondent have a different assessment

CONCLUSIONS

Based on the results of the study, it can be concluded that there is no relationship between physical activity and *premenstrual syndrome* in adolescent girls (aged 12-15 years) at SMP Negeri 4 Polewali, in the *spearman correlation* test with a *p-value* of 0.072 (> 0.05). And there is a relationship between stress and *premenstrual syndrome* in adolescent girls (aged 12-15 years) at SMP Negeri 4 Polewali, in the *spearman correlation* test with a *p-value* of 0.000 (< 0.05).

REFERENCES

- Alvionita, F. (2018). The Relationship between Diet and Premenstrual Syndrome in Undergraduate Midwife Education Students, Faculty of Medicine, Universitas Airlangga. *Journal of Chemical Information and Modelling*, 53(9), 1689-1699.
- Andiarna, F. (2018). Correlation of Stress Level with the Incidence of Premenstrual Syndrome in College Students. *Journal of Health Science and Prevention*, 2(1), 8-13.
- Asih, gusti yuli, Widhiastuti, H., & Dewi, R. (2018). *Work Stress*. semarang: semarang university press.
- Astikasari, N. D., & Kofi, J. (2022). Analysis of the Level of Knowledge about Reproductive Health on the behaviour of dealing with Premenstrual Syndrome in Adolescents. *Journal for Quality in Women's Health*, 5(1), 8-16. <https://doi.org/10.30994/jqwh.v5i1.127>
- Donsu, jenita doli tine. (2019). *nursing research methodology*. Yogyakarta. Department of Tanjungkarang Poltekkes. *Journal of Nursing*, XI (1), 41-46.
- Fatimah, A., Prabandari, Y. S., & Emilia, O. (2016). Stress and incidence of premenstrual syndrome in female students of Surya Global Islamic boarding school. *Community Medicine News*, 32(1), 13. <https://doi.org/10.22146/bkm.8452>
- Fatul, S. (2020). The Relationship between Premenstrual Syndrome and Physical Activity Level in College Students of the Faculty of Social and Political Sciences, Universitas Airlangga. *AnthroUnairdotNet*, VI(2), 234.
- Finurina, I. (2018). *Anxiety of college students The Effect Of Premenstruation Syndrome To Anxiety On*. 12-20.
- Hardaniyati, H., Maya Herlina, S., & Soekmawaty Riezqy Ariendha, D. (2022). Analysis of Factors Associated with the Incidence of Hyperemesis Gravidarum. *Scientific Journal of STIKES Yarsi Mataram*, 12(1), 20-24. <https://doi.org/10.57267/jisym.v12i1.156>
- Hartanto, S. S., Astuti, W., Nugrahati, T., Sutomo, H., & Nada, S. K. (2018). The Relationship Between Stress Levels and the Incidence of Premenstrual Syndrome in College Students in the Women's Dormitory of Stikes Bahrul Ulum Tambak Beras Jombang. *Well Being*, 3(1), 12-19.
- Hidayat, A. A. (2015). *Health Research Methods* (Aulia, ed.). Surabaya: Health Books.
- Italia, & Ramona, Y. (2021). Literature study on the analysis of handling Premenstrual Syndrome (PMS) in adolescent girls. *JKM*, 1(2), 183-190.
- Kusumawardani, E., & Adi, annis caur. (2019). physical activity and soy consumption in adolescent girls who experience premenstrual syndrome at SMKN 10 Surabaya. *Indonesian Nutrition Media*, 5(1). <https://doi.org/10.12962/j2580-0914.v4i3.9950>.
- Leiwakabessy, A., Novita, H., Marlina, E. D., Rohaeti, A. T., & Kristianto, J. (2022). Journal of Health Science: p - ISSN: 2723-4339 e-ISSN : 2548-1398 Effect of Adolescent Girls Class and Android Application Model Integration "My Period Tracker" to Reduce Premenstrual Syndrome Anxiety Symptoms. *Journal of Health Science*, 3(12).
- Maulidah, N. (2016). The Relationship of Knowledge about Premenstrual Syndrome with Anxiety of Adolescent Girls When Facing Premenstrual Syndrome at Smp Negeri 1 Kasihan Bantul Yogyakarta. *Journal of Chemical Information and Modelling*, 53(9), 1689-1699.
- Meita, J. T. (2020). *Factors Associated with Premenstrual Syndrome (PMS) in Adolescent Girls at SMA N 01 Palembang City*.
- Mufidah, N. (2018). The Effect of Premenstrual Syndrome (PMS) on the Motivation to Study of FKMS Students at UIN Malang. *Maulana Malikk Ibrahim State University Library*, 11-54. Retrieved from http://etheses.uin-malang.ac.id/769/6/10410127_Chapter_2.pdf
- Musradinur. (2019). Stress and How to Overcome It in the Perspective of Psychology.

- JOURNAL OF EDUCATION: Journal of Guidance Counselling*, 2(2), 183.
<https://doi.org/10.22373/je.v2i2.815>
- Namsa, A., Palandeng, H., & Kallo, V. (2019). Relationship between nutritional status and premenstrual syndrome in adolescent girls at Sma Frater Don Bosco Manado. *UNSRAT Nursing Journal*, 3(3), 111676.
- Nashruna, I., Maryatun, & Wulandari, R. (2018). The relationship between exercise activity and obesity with the incidence of premenstrual syndrome in the village of Pucangmiliran Tulung Klaten. *Gaster | Journal of Health Sciences*, 9(1), 65-75. Retrieved from <http://jurnal.stikes-aisyiyah.ac.id/index.php/gaster/article/view/33/30>
- Nuvitasari, W. E., Kristiana, A. S., Study, P., Ners, P., High, S., Health, I., ... Timur, J. (2020). Stress Level Connected With Premenstrual Syndrome on Student in Islamic Vocational High School. *Journal of Mental Nursing*, 8(2), 109-116.
- Pamungkas, R. A., & Usman, A. M. (2017). *Nursing research methodology*. east jakarta.
- Pratiwi Putri, R. P. D., & Margawati, A. (2019). The relationship between the degree of premenstrual syndrome and physical activity with eating behaviour in adolescent girls. *Journal of Nutrition College*, 2(4), 645-651. <https://doi.org/10.14710/jnc.v2i4.3826>
- Puspitaningrum, E. M. (2018). The Relationship between Knowledge of Adolescent Girls with the Behaviour of Overcoming Symptoms of Premenstrual Syndrome (PMS) at Man Model Jambi City. *Menara Ilmu*, XII(80), 27-32.
- Puspitasari, R. L., Elfidasari, D., & Rahayu, K. M. (2015). Knowledge of female students of Al Azhar University Indonesia towards Premenstrual Syndrome. *Journal of Al- Azhar Indonesia Science and Technology Series*, 2(3), 193.
<https://doi.org/10.36722/sst.v2i3.141>
- Ramadani, M. (2018). Premenstrual syndrome (PMS). *Encyclopedia of Endocrine Diseases*, 7(1), 432-435. <https://doi.org/10.1016/B978-0-12-801238-3.03915-5>
- Relationship, T., Physical, B., Regency, T., Wiwin, S., & Madani, U. Y. (2023). *Nusantara Hasana Journal*. 2(8), 140-144.
- Risky Fiskalia. (2018). Relationship between Physical Activity and Premenstrual Syndrome (Pms) in Adolescent Girls at Sman 8 Kendari. *Kendari Health Polytechnic*.
- Ritung, D. C. N., & Olivia, S. (2018). The relationship between stress and Premenstrual Syndrome (PMS) in female students of the Faculty of Medicine, Tarumanagara University Class of 2011. *Tarumanagara Medical Journal*, 1(1), 59-62.
- Rodiani, & Rusfiana, A. (2020). The Relationship of Premenstrual Syndrome (PMS) with Psychological Factor in Adolescent. *The Relationship of Premenstrual Syndrome (PMS) to Psychological Factors in Adolescents*, 5(1), 18-22. Retrieved from <http://journal.unair.ac.id/download-fullpapers-aunf37edc8630full.pdf>
- Rudiyanti, N., & Nurchairina. (2018). The Relationship between Nutritional Status and Stress with the Incidence of Pre Menstrual Syndrome in Students of the Midwifery
- Safitri, R., Herawati, H., & Rachmawati, K. (2017). Risk Factors for Premenstrual syndrome in Adolescents of Sma Darul Hijrah Puteri. *Dunia Keperawatan*, 4(2), 118.
<https://doi.org/10.20527/dk.v4i2.2515>
- Setiawati, S. E. (2018). The Effect of Stress on Menstrual Cycle in Adolescents. *Journal Majority*, 4(1), 94-98.
- Suardi, D., & Dahlan, F. M. (2022). *The Relationship Of Physical Activity And Stress With The Event Of Premenstrual Syndrome (PMS) Among Adolescent Girls At Tonjong Junior High School In 2021*. 11(2).
- Sujarwerni, V. wiratn. (2014). *Research methodology: complete, practical and easy to understand*.

The 2nd Nani Hasanuddin International Health Conference (NHIHC)
“Navigation The Future of Health Care Addressing Challenges and Embracing Innovation in Nursing, Midwifery, Nutrition and Pharmaceutical Profession”
The STIKES Nani Hasanuddin, Makassar, August 10-11, 2024

Sutejo. (2020). *mental health nursing*. Yogyakarta.

Timiyatun, E., I, S. Y. M. M., Ibna, R. D., & Eka, O. (2021). Original Article The Relationship between Knowledge of Premenstrual Syndrome and Anxiety Level in Adolescent Girls in Elementary School. *Journal of Advanced Nursing and Health Sciences*, 2(1), 8-14.

Wulan, S. R. I., Lubis, B., Ginting, N. B. R., Sembiring, I. M., & Gurusinga, R. (2021). *Facing Premenstrual Syndrome*. 4(1), 51-5