

## The relationship between stress and the occurrence of dysmenorrhea: A literature review

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### Abstract

One of the psychological factors causing dysmenorrhea is stress. Stress causes endocrine system is disrupted so that menstruation is irregular and can worsen the pain of dysmenorrhea. The purpose of this study was to determine the relationship between stress and dysmenorrhea. This research used literature study method. The data for this study were sourced from national scientific journal articles obtained through Science Direct, Google Scholar, and Pubmed. This study found that there is a relationship between stress and dysmenorrhea but not all research results show this because there are still several other factors that cause dysmenorrhea.

**Keywords:** Stress; Dysmenorrhea; Relationship; Psychological factors

### 1. Introduction

Dysmenorrhea is a health problem that has a negative impact on physical and emotional health [1]. Dysmenorrhea is the most common disorder in Indonesia, the incidence of dysmenorrhea is 64.25% divided by 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea. Based on data from the profile of the Central Java Health Office of Central Java Province in 2017 as many as 50.5% of adolescent girls aged 10-19 years experience dysmenorrhea [2]. Primary dysmenorrhea that occurs can interfere with productivity because severe pain makes adolescents need complete rest [3]. When menstruation occurs, most women experience cramps in the lower abdomen and lower abdomen and accompanied by pain, this is also commonly referred to as dysmenorrhea (menstrual pain). There are several symptoms experienced in dysmenorrhea conditions, namely cramps at the bottom of the abdomen which usually spread to the back, then to the legs, the base of the abdomen, and the back continuing to the legs, groin and vulva (the outside of the female genitals), the pain comes on an irregular basis. Generally the pain starts at the onset of menstruation or during menstruation, and peaks within 24 hours and disappears after 2 days. Other symptoms may include anxiety, depression, sensitivity, irritability, sleep disturbances, fatigue, weakness, food cravings and sometimes rapid mood swings. Physical complaints such as breast tenderness or swelling, abdominal bloating, dizziness, joint pain, saki, nausea, vomiting, diarrhea or constipation, skin problems such as acne [4]. Psychological factors can cause dysmenorrhea, such psychological factors are stress. Stress can disrupt the endocrine system, causing irregular menstruation and pain during menstruation (dysmenorrhea) [5]. Dysmenorrhea is a menstrual pain that is most often felt by women who have entered adolescence, menstrual pain that occurs is sometimes more often felt when adolescents experience anxiety, tension and anxiety or even stress can increase prostaglandins in the body of every woman, so that women who experience dysmenorrhea are more likely to feel it. increase prostaglandins in every woman's body, so women who experience dysmenorrhea immediately go to the doctor or buy drugs to relieve the pain felt during menstruation [6]. Based on the above facts, the researcher wants to conduct a literature review with the title "The relationship between stress and the occurrence of dysmenorrhea".

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## 2. Material and methods

This research uses the literature review method. The data were sourced from national scientific journal articles obtained through Science Direct, Google Scholar, and Pubmed using the keywords "Stress", and "Dysmenorrhea". The inclusion criteria for this study were titles that fit the research theme, namely the relationship between stress and dysmenorrhea and scientific articles published from 2018 to 2023 (the last five years). Relevant research articles were identified using the literature review method, by comparing similar articles in the research, especially those related to stress and dysmenorrhea.

## 3. Results and discussion

Based on the collected and analyzed articles, the findings are presented as follows:

**Table 1** List of Articles

No.	Author	Research Title	Method	Result
1.	Asriani Tahir et al.	The influence of macronutrient intake, stress and prostaglandin levels (pgf2) of urine with the incidence of dysmenorrhea in adolescents.	Observational analytic with a cohort study.	A multivariate analysis showed a variable that strongly affects dysmenorrhea is stress with the value $p = 0.000$ and the level of prostaglandins with $p\text{-value} = 0.003$ compared to other variables. Stress and prostaglandin levels significantly affect the occurrence of dysmenorrhea in adolescents [1].
2.	Alhaliza Rizma Elvariani et al.	The relationship between stress levels and incidence of dysmenorrhea.	Correlational analytic with cross sectional approach.	There is a relationship between stress levels and dysmenorrhea with a pvalue of 0.000 ( $p\text{-value} < 0.05$ ) [2].
3.	Elok Dwi Sulistian et al.	The relationship between stress levels and the incidence of primary dysmenorrhea in adolescents in ponorogo district, indonesia: a cross-sectional study.	A quantitative approach, with the type of analytic observational and cross-sectional research.	In Ponorogo District, the primary dysmenorrhea experienced was in the moderate pain category, and the stress level was in the normal category, with the test results showing that there was a weak relationship between stress levels and primary dysmenorrhea [3].
4.	Dwi Hariyanti, and Indah Ridiyawati.	Correlation of Stress, Physical Activity, and the Menstrual Cycle with Dysmenorrhea in Tenanger Yogyakarta.	A analytic survey with a cross-sectional	There is no relationship among stress, physical activity, and the menstrual cycle and the incidence of dysmenorrhea in fourth-semester students of the Public Health Study Program in 2021 [4].
5.	Tazkyatunnisa Adinda Aprilia et al.	The relationship between physical activity, nutritional status and stress levels with the incidence of dysmenorrhea in female college students in the city of bogor.	Quantitative research with a cross-sectional approach	The results showed that there was a relationship between physical activity ( $p\text{-value} = 0.000$ ), nutritional status ( $p\text{-value} = 0.038$ ) and stress level ( $p\text{-value} = 0.030$ ) with the incidence of dysmenorrhea shows that there is a relationship between physical activity, nutritional status and stress level with the incidence of dysmenorrhea in female college students in Bogor City [5].
6.	Muhammad Bahrul Ilmi	The relationship between stress levels as a cause of dysmenorrhea in	cross sectional	Data analysis using Chi Square test, obtained the results of 32.1% of respondents with mild stress levels with severe pain, while 39.3% of

	and Eddy Rahman.	puteri mts nurul falah juai kec. juai kab. balangan		respondents with mild stress levels with moderate pain. Test results statistical test results obtained p-value = 0.001 in other words there is a significant relationship between stress level with dysmenorrhea at MTs Nurul Falah Juai Village, Juai Kec. Juai Kab. Balangan [6].
7.	Yufika Pialiani et al.	Correlation Between Stress Levels and Dysmenorrhea on Students of Medical Faculty of Bandung Islamic University	Observational study with cross sectional approach	The results showed that 72.7% had moderate stress, and 6.4% severe stress. As many as 45.5% had moderate dysmenorrhea, 32.7% mild dysmenorrhea, and 21.8% severe dysmenorrhea. The incidence of moderate dysmenorrhea on moderate stress group are greater than mild stress, but the correlation is not statistically significant different (p value = 0,63) . Similarly, the incidence rate of severe dysmenorrhea on the subjects who had have experienced severe stress is greater than mild stress and none had mild dysmenorrhea [7].
8.	Almira Rosyidika Sriwati et al.	Relationship between stress level and primary dysmenorrhea in college students first year faculty of medicine.	A cross-sectional study design	The results showed that more than half of the respondents were not stressed (65.1 %) and neither have primary dysmenorrhea (93.8%). The results of the bivariate analysis showed that there was no correlation between stress levels and primary dysmenorrhea with p = 0.720 (p> 0.05) [8].
9.	Sri Rejeki et al.	Correlation of stress levels and characteristics of teenage girl with the primary dismenore incidence	A cross-sectional study design.	The results showed that 89% of adolescent girls experienced moderate stress and there was a relationship between stress level and dysmenorrhea. stress level with dysmenorhea with a P value = 0.006 (P < 0.05) [9].
10.	Marini Agustin	The relationship between dysmenorrhea level and stress level in female students of akper as-syafi'iyah jakarta	A cross-sectional study design.	The results showed that the level of dismenorrhea in moderate level 64.5% and stress level in moderate level 71%. From the analysis results Fisher's Exact = 0.001 $\leq \alpha = 5\%$ . This means there is a significant relationship between level of dysmenorrhea with stress levels in adolescents at Akper As-Syafi'iyah Jakarta.

### 3.1 Stress and Dysmenorrhoea

Menstruation is a period of bleeding that occurs in women regularly every month during their fertile period unless pregnancy occurs. Some women get menstruation without complaints, but not a few of them get menstruation accompanied by complaints resulting in discomfort in the form of dysmenorrhoea. The nature of the pain is sharp pain, usually in the lower abdomen, can spread to the waist and thighs. Along with the pain can be found nausea, vomiting, headache, and diarrhoea. The condition worsens when accompanied by unstable psychological conditions, such as stress, depression, excessive anxiety, and excessive sadness [10]. One of the psychological factors causing dysmenorrhoea is stress. Stress causes the endocrine system is disrupted so that menstruation is irregular and can worsen the pain during dysmenorrhoea. During stress the body produces adrenaline, estrogen, and prostaglandin hormones continuously. The continuous production of oestrogen and prostaglandin hormones increases excessive uterine contractions and muscle tension occurs in the body including the uterine muscles, causing pain during menstruation. While the increase in adrenaline hormone results in contraction of the uterine muscle and causes vasospasm of the oluterine artery and ischaemia (reduced blood flow to the body) and cramps in the abdomen. to the body) as well as cramps in the lower abdomen that stimulate menstrual pain [2]. Stress experienced by women can affect their lives and result in health, one of these impacts is the occurrence of pain during the menstrual cycle or commonly known as dysmenorrhoea [3]. Dysmenorrhoea occurs due to an increase in prostaglandin F2 which causes

vasoconstriction in the myometrium resulting in ischaemia and pain in the lower abdomen. Women who experience dysmenorrhoea can feel uncomfortable, causing irritability, nausea, vomiting, and back pain. Women who experience dysmenorrhoea have higher prostaglandin levels compared to women who do not experience dysmenorrhoea, usually starting at 2-3 years after menarche and peaking at 15-25 years of age [5]. Based on research data that respondents who experience dysmenorrhoea also experienced stress, both mild stress and severe stress, but there were also those who experienced no stress. Experiencing no stress. From these data, the stress experienced by respondents is strongly related to dysmenorrhoea. Stress can interfere with the work of the endocrine system endocrine system so that it can cause pain during menstruation or dysmenorrhoea. In addition, psychological factors are very influential on dysmenorrhoea because pain can be aroused or aggravated by a psychological state [6]. In times of stress, through the sensory nerves the stressor will be forwarded to the nerve part of the brain called the limbic system (neurotransmitters), then the stimulus will be forwarded to the glands glands (endocrine) which is the the body's immune system and the organs organs that are innervated. The stimulus will cause the production of the hormone adrenaline to increase and then enter the blood circulation and affect the the heart (palpitations), blood pressure increases, stomach acid increases, uncontrollable emotions, and etc. Disorders of the endocrine system endocrine system that experiences stress in the form of irregular menstrual disorders and dysmenorrhoea. In times of stress, the body produces the hormones adrenaline, estrogen, progesterone and prostaglandins in excess. Estrogen can increase contractions of the uterus. The increase in adrenaline also causes the body's muscles to tense including the uterine muscles which results in decreased perfusion to the endometrium, so that blood vessels pinched by the uterine muscle which causes oxygen supply is reduced and becomes ischaemic [9]. The results of the research conducted in this study with female student respondents were different from the theory that discusses the relationship between stress and dysmenorrhoea, that pain during menstruation will affect biochemical and cellular processes throughout the body including the brain and psychology. When stressed, the body will produce excessive adrenal hormones, estrogen, progesterone and prostaglandins. Increased oestrogen hormones can cause an increase in excessive uterine contractions [4]. The results showed that 60% of subjects who experienced moderate stress experienced dysmenorrhoea. In the study, hypothesis testing was carried out and it was concluded that there was no relationship between stress levels and the incidence of dysmenorrhoea [7]. The results of this study are not in accordance with the theory above. This study found that 51 people were stressed, but the group that experienced primary dysmenorrhoea with stress was 4 people and 5 people experienced primary dysmenorrhoea without stress. Many factors affect primary dysmenorrhoea besides stress, such as menarchedini, high BMI, nulliparous, long menstruation, family history of dysmenorrhoea. Based on table 1 who experienced primary dysmenorrhoea as many as 9 (6.2%) people, this can be caused by the different pain thresholds of each person. Other research is needed to determine the cause of dysmenorrhoea [9].

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#### 4. Conclusion

This study shows the relationship between stress and dysmenorrhoea, however there are still studies that do not show the relationship between the two. Therefore, further research needs to be done to find out the risk factors of dysmenorrhoea.

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#### Compliance with ethical standards

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