



## The Relationship of Stress Levels on Menstrual Cycle Disorders in Adolescent Girls

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### ABSTRACT

Menstrual cycle abnormalities are a significant cause of infertility. Ovulation dysfunction accounts for 10-25% of female infertility cases. Data of youth care health services or Pelayanan Kesehatan Peduli Remaja (PKPR) at the Kota Dalam Public Health Center, Pesawaran Regency, in 2020, the number of adolescent girls was 728 people. 11.26% of adolescents have reproductive health problems, namely irregular menstrual cycles. This study aimed to determine the relationship between stress levels and menstrual cycle disorders in adolescent girls in the work area of the Kota Dalam Public Health Center, Pesawaran Regency, in 2021. This type of research was quantitative with an analytic design and cross-sectional approach. The population and sample of all adolescents girls were 38 people with the accidental sampling technique. The data analysis test used in this study used the Chi-Square test. The results showed that the distribution of the frequency of menstrual cycle disorders in adolescent girls, with the category of experiencing menstrual cycle disorders among as many as 18 respondents (47.40%), the distribution of stress frequencies in adolescent girls, with the variety of experiencing stress as many as 22 respondents (57.9%). There was a relationship between stress levels and menstrual cycle disorders in adolescent girls. The results of the analysis were obtained ( $p$ -value  $0.010 < 0.05$ ). OR: 8,000. It is suggested that young women can increase their knowledge about menstrual cycle disorders through electronic media or by conducting examinations on health services to avoid complications in menstruation. Teenage girls who experience stress can be overcome by adequate rest, relaxation, regular exercise, recreation, and body massage.

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### Kata kunci:

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### ABSTRAK

Kelainan siklus menstruasi merupakan penyebab infertilitas yang penting. Disfungsi ovulasi berjumlah 10-25% dari kasus infertilitas wanita. Berdasarkan data pelayanan kesehatan peduli remaja (PKPR) di Puskesmas Kota Dalam Kabupaten Pesawaran Tahun 2020, dari 728 orang remaja putri, terdapat sebanyak 11,26% remaja yang mengalami siklus menstruasi yang tidak teratur. Penelitian ini bertujuan untuk mengetahui hubungan tingkat stres terhadap gangguan siklus menstruasi pada remaja putri di wilayah kerja Puskesmas Kota Dalam Kabupaten Pesawaran Tahun 2021. Jenis penelitian kuantitatif dengan desain *analitik* dan pendekatan *cross sectional*. Populasi dan sampel seluruh remaja wanita sebanyak 38 orang dengan teknik *accidental sampling*. Uji analisis data yang digunakan pada penelitian ini menggunakan uji *Chi-Square*. Hasil penelitian diketahui remaja yang mengalami gangguan siklus menstruasi sebanyak 18 responden (47,40%), yang mengalami sebanyak 22 responden (57,9%). Ada hubungan tingkat stres terhadap gangguan siklus menstruasi pada remaja putri. Hasil analisis diperoleh ( $p$ -value  $0,010 < \alpha 0,05$ ). OR: 8.000. Disarankan para remaja putri dapat lebih menambah pengetahuannya mengenai gangguan siklus menstruasi melalui media elektronik maupun

dengan melakukan pemeriksaan pada pelayanan kesehatan untuk menghindari terjadinya komplikasi pada menstruasi. Remaja putri yang mengalami stres dapat diatasi dengan cara istirahat yang cukup, relaksasi, olahraga teratur, rekreasi, dan pemijatan tubuh.

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## INTRODUCTION

Reproductive health in women is closely related to menstruation. All normal women will experience menstruation. Because menstruation is one sign of sexual changes in women who are heading to the process of maturity. Menstruation is bleeding due to the shedding of the inner wall of the uterus (endometrium). The endometrial lining is prepared to accept implantation of the embryo. If implantation of the embryo does not occur, this layer will be shed. This bleeding occurs periodically, the interval between menstruation is known as one menstrual cycle (Purwoastuti and Walyani, 2015).

According to data from the World Health Organization (WHO) there are 75% of women who experience menstrual disorders. The concept of menstrual disorders in general is the occurrence of disorders of menstrual bleeding patterns such as oligomenorrhea (infrequent menstruation), polymenorrhea (frequent menstruation), and amenorrhea (no menstruation at all). Based on Risesdas data in 2018, the proportion of young women aged 10-19 years who have had their period/menstruation is 70.1% and 3.5% have irregular cycles (Risesdas, 2018).

Menstrual cycle abnormalities are an important cause of infertility. Ovulation dysfunction accounts for 10-25% of female infertility cases. Severe nutritional disturbances, weight loss and strenuous activity are associated with impaired ovulation. Changes in a woman's menstrual cycle can occur, the cause can be psychological disorders such as stress and emotions (Purwoastuti and Walyani, 2015).

Health problems in adolescents who occupy the largest percentage compared to others are menstrual disorders. Disorders of the menstrual cycle (longer bleeding duration and cycle irregularities) are caused by several factors, one of which is stress. Stress is known as a causal factor (etiology) of menstrual cycle disorders. Stress will trigger the release of the hormone cortisol where the hormone cortisol is used as a benchmark to see a person's level of stress. Cortisol hormone is regulated by the hypothalamus of the brain and pituitary gland, with the start of hypothalamic activity, the pituitary secretes FSH and the ovarian stimulus process will produce estrogen (Hutapea, 2021).

The problem faced by the Pesawaran District Office at this time is that the youth care health program (PKPR) has not been maximally implemented at the Puskesmas and is still socializing in schools in the working area of the Puskesmas, but not all schools, so that adolescent access to reproductive health problems is still low. Adolescent sexual and reproductive health refers to the physical and emotional

well-being of adolescents and includes their ability to remain free from unwanted pregnancies, unsafe abortions, STIs (including HIV/AIDS), and all forms of sexual violence and coercion. Based on data on youth care health services (PKPR) at the Kota Dalam Public Health Center, Pesawaran Regency in 2020 where the number of teenage girls is 728 people, 11.26% of adolescents have reproductive health problems, namely irregular menstrual cycles. normal menstruation as many as 28 respondents or 42.4%. the results obtained as many as 80.3% of respondents experienced severe stress, and 19.7% experienced mild stress. with a p-value of 0.005 and an OR of 6.4.

## METHOD

This research is quantitative. And the analytical survey design with a cross sectional approach. The population in this study were all young women who did health checks at the Kota Dalam Public Health Center in Pesawaran Regency in 2021 with an average of 38 visits. The sample is 38 people. Sampling using accidental sampling technique, is taken from the total population. Collecting data using a questionnaire sheet. The data analysis technique used the Chi-Square (X<sup>2</sup>) statistical test.

## RESULT

### *Teenage age*

Based on table 1, it is known that the age of adolescent girls in the Kota Dalam Public Health Center Pesawaran Regency in 2021, most of them are 18 years old as many as 19 respondents (50%). The age of respondents who experienced menstrual cycle disorders were mostly 17 years old as many as 9 respondents (23.70%), and the age of respondents who experienced stress were mostly 18 years old as many as 15 respondents (39.47%).

### *Menstrual cycle disorders*

Based on table 2, it is known that menstrual cycle disorders in young women in the Kota Dalam Public Health Center Pesawaran Regency in 2021, with the category of experiencing menstrual cycle disorders as many as 18 respondents (47.40%), while the category of not experiencing menstrual cycle disorders was 20 respondents (52.60%).

**Table. 1**  
**Characteristics the Age of Adolescent Girls in The Kota Dalam Puskesmas, Pesawaran Regency**

Age Of Adolescent Girls	Frekuensi	Percentage
17 years	11	28,95
18 years	19	50,00
19 years	8	21,05
Total	38	100,00

Teenagers with menstrual cycle disorders		
17 years	9	23,70
18 years	6	15,79
19 years	3	7,90
Total	18	47,40
Teenagers who experience stress		
17 years	5	13,15
18 years	15	39,47
19 years	2	5,26
Total	22	57,90

**Table 2**  
Distribution of the Frequency of Menstrual Cycle Disorders In Adolescent Girls

Menstrual cycle disorders	Frekuensi	Percentage
Menstrual Cycle Disorders	18	47,40
No Menstrual Cycle Disorders	20	52,60
<b>Total</b>	<b>38</b>	<b>100</b>

### Stress

Based on table 3, it is known that the level of stress in young women in the Kota Dalam Public Health Center,

Pesawaran Regency in 2021, with the category of experiencing stress as many as 22 respondents (57.9%), while in the category of not experiencing stress as many as 16 respondents (42.1%).

**Table 3**  
Distribution of the Frequency of Stress Levels In Adolescent Girls

Stress	Frekuensi	Percentage
Stres	22	57,9
No Stress	16	42,1
Total	38	100,00

### Relationship between stress levels and menstrual cycle disorders

Based on table 4, it is known that of the 22 respondents in the category of experiencing stress and not experiencing menstrual cycle disorders, there are 16 respondents (72.7%), and those who experience menstrual cycle disorders are 6 respondents (27.3%), while from 16 respondents with the category of 4 respondents (25%) did not experience stress and did not experience menstrual cycle disorders and 12

respondents (75%). Obtained p value 0.010 ( $\alpha < 0.05$ ). So that there is a relationship between stress levels and menstrual cycle disorders in adolescent girls in the Kota Dalam Public Health Center, Pesawaran Regency in 2021. The results of the analysis obtained the OR value: 8,000. This means that young women who experience stress have an 8 times risk of experiencing stress menstrual cycle disorders compared with respondents who did not experience stress.

**Table 4**  
Analysis of the Relationship Between Stress Levels and Menstrual Cycle Disorders

Stres	Menstrual Cycle Disorders				Total		p-value	OR (95% CI)
	No Menstrual Cycle Disorders		Menstrual Cycle Disorders					
	n	%	n	%	n	%		
Stres	16	72,7	6	27,3	22	100	0,010	8,000 (1.839-34,793)
No Stres	4	25,0	12	75,0	16	100		
Total	20	52,60	18	47,40	38	100		

## DISCUSSION

### Menstrual cycle disorders

Based on the results of data processing, it can be seen that menstrual cycle disorders in young women in the working area of the Kota Dalam Public Health Center Pesawaran Regency in 2021, with the category of experiencing menstrual cycle disorders as many as 18 respondents (47.40%), while the category of not experiencing

menstrual cycle disorders was as many as 20 respondents (52.60%). From the results of the questionnaire recapitulation, it is known that most of the young women experience menstrual cycle disorders < 21 days (Polymenorrhea). This is in accordance with the theory which states that polymenorrhea is a menstrual cycle that is shorter than usual, which is less than 21 days, while the amount of bleeding is relatively the same or more than normal menstruation. This is caused by hormonal disorders that

result in ovulation disorders, or a shortened luteal period (Setiyaningrum, 2015).

Menstruation is bleeding due to the shedding of the inner wall of the uterus (endometrium). The endometrial lining is prepared to accept implantation of the embryo. If implantation of the embryo does not occur, this layer will be shed. This bleeding occurs periodically, the interval between menstruation is known as one menstrual cycle (Purwoastuti & Walyani, 2015). The results of this study are supported by research conducted by Herwandar., Russiska., Fakhruddin (2020) Regarding the relationship between stress levels and menstrual cycles in midwifery students at STIKES Kuningan. The results showed that from 41 respondents with irregular menstrual cycles, there were 25 (61%) respondents.

Based on the above, the researcher argues that menstrual cycle disorders are influenced by factors of weight, physical activity, stress, diet, social and environmental interactions, and endocrine disorders. An irregular menstrual cycle is a menstrual disorder that occurs outside the normal menstrual cycle interval. Where normal menstrual intervals are 21-35 days, while abnormal ones such as menstrual cycle disorders are too frequent for 3 consecutive months or more with intervals <21 days is called polymenorrhea, menstrual cycle disorders are too more with intervals >35 days called oligomenorrhea, not Menstruation for 3 months or more is called amenorrhea. Reproductive health is physical, mental and social well-being as a whole in all matters relating to the reproductive system and function, as well as the reproductive process and not just a condition that is free from disease and disability. Adolescence is part of the process of growth and development, namely the transition period from child to adult. At this stage, children experience accelerated growth, changes both physically and psychologically, adolescents are very vulnerable to experiencing psychosocial problems, namely psychological or psychological problems that arise as a result of social changes (Rahayu, 2017). The results of this study are in accordance with Priyoto's theory (2014). Stating that stress is a physical and psychological reaction to any demands that cause tension and disrupt the stability of daily life (Priyoto, 2014).

### ***Stress Level***

Based on the results of data processing, it can be seen that the level of stress in young women in the work area of the Kota Dalam Public Health Center Pesawaran Regency in 2021, with the category of experiencing stress as many as 22 respondents (57.9%), while in the category of not experiencing stress as many as 16 respondents (42.1%). From the results of the research questionnaire, it is known that the stress that is often experienced by young women is easily agitated and afraid of being 'blocked' by trivial tasks that they are not used to doing. This is in accordance with the theory which states that the forms of psychological disorders that are often seen are irritability, weak memory, difficulty concentrating, unable to complete tasks, impulsive behavior, overreaction to trivial things and uncontrollable emotions (Priyoto, 2014).

According to Rahayu (2017). Stress affects the irregularity of the menstrual cycle, both moderate stress to severe stress. This happens because stress affects the production of the hormone prolactin which is directly related to increased levels of the hormone cortisol and decreased hormone LH (Leuteinizing Hormone) which affects the menstrual cycle. The results of this study are supported by research conducted by Herwandar., Russiska., Fakhruddin (2020)

Regarding the relationship between stress levels and menstrual cycles in midwifery students at STIKES Kuningan. The results showed, from 41 respondents there were 18 (44%) respondents who experienced moderate stress.

According to the researcher's assumption, stress is the inability to cope with the threats faced by mental, physical, emotional, and spiritual human beings. Where all that can affect physical health for people with stress and stress affects the irregularity of the menstrual cycle. This happens because stress affects the production of the hormone prolactin which is directly related to increased levels of the hormone cortisol and decreased hormone LH (Leuteinizing Hormone) which affects the menstrual cycle.

### ***Relationship between stress levels and menstrual cycle disorders***

In this study, there is a relationship between stress levels and menstrual cycle disorders in adolescent girls in the work area of the Kota Dalam Public Health Center, Pesawaran Regency in 2021. The results of the analysis are p value = 0.010 ( $\alpha < 0.05$ ) with an OR of 8,000. This means that young women who experience stress have an 8 times risk of experiencing menstrual cycle disorders compared to respondents who do not experience stress. This is in line with the theory that menstrual cycle abnormalities are an important cause of infertility. Ovulation dysfunction accounts for 10-25% of female infertility cases. Severe nutritional disturbances, weight loss and strenuous activity are associated with impaired ovulation. Obesity is also accompanied by anovulatory cycles due to increased tonic levels of estrogen, while severe stress causes anovulation and amenorrhea (Purwoastuti & Walyani, 2015).

This agrees with Rahma's statement (2021). Under conditions of stress, the amygdala in the limbic system is activated. This system stimulates the hypothalamus to release a hormone called Corticotrophic Realizing Hormone (CRH). Increased levels of CRH stimulate the release of endorphins and corticotropin hormones into the blood. These hormones directly cause a decrease in GnRH levels, and stress can cause menstrual cycle disturbances. Stress is a factor that affects the menstrual cycle, in conditions of stress caused by stressors the HPA axis is activated, causing the hypothalamus to secrete CRH (Corticotrophic Releasing Hormone). This CRH has a negative effect, namely inhibiting the secretion of hypothalamic GnRH from its production site in the arcuate nucleus, the effect on suppressing female reproductive function during stress. This CRH secretion will stimulate the release of ACTH (Adenocorticotrophic Hormone) by the anterior pituitary which in turn will stimulate the adrenal glands to secrete cortisol. Cortisol plays a role in inhibiting LH secretion by the brain activity center by inhibiting the anterior pituitary response to GnRH (Rahma, 2021).

The results of this study are in line with research conducted by Hutapea (2021) regarding the relationship between stress levels and the regularity of the menstrual cycle in class XII adolescents of SMAN 3 BINJAI. The results of the data analysis showed a p value <0.05, which was 0.000 which showed a significant value meaning that there was a relationship between stress levels and the regularity of the menstrual cycle. The results of the cross tabulation showed that from the 22 respondents in the category of experiencing stress and not experiencing menstrual cycle disorders, there were 16 respondents (72.7%), this was influenced by good nutritional factors. Meanwhile, in adolescents with malnutrition, GnRH levels decrease which are secreted by LH

and FSH so that estrogen levels decrease which can affect the menstrual cycle and ovulation. In adolescents with more nutrition, levels of the hormone estrogen increase so that the secretion of GnRH (Gonadotropin Releasing Hormone) is disrupted and inhibits the secretion of FSH (Follicle Stimulating Hormone). This is what causes the menstrual cycle to be long (oligomenorrhea).

Meanwhile, out of 16 respondents in the category of not experiencing stress and experiencing menstrual cycle disorders, 12 respondents (75%). This is influenced by factors of physical activity related to academics at school and sleep duration, the results of interviews with young women said that although learning through online, there were a lot of school assignments that caused teenagers to sleep late at night. This is also supported by the theory of Rahayu (2017). Sleep duration affects menstrual cycle irregularities because poor sleep duration can inhibit the synthesis of the hormone melatonin which affects the production and synthesis of the hormone estrogen. Based on this, according to the researcher, stress is not a direct cause of adolescent girls experiencing menstrual cycle disorders, but stress has a positive relationship with adolescent girls experiencing menstrual cycle disorders. Stress will trigger the release of the hormone cortisol where the hormone cortisol is used as a benchmark to see a person's level of stress. The hormone cortisol is regulated by the hypothalamus of the brain and pituitary gland, with the start of hypothalamic activity, the pituitary secretes FSH and the ovarian stimulus process will produce estrogen.

## CONCLUSION AND SUGGESTION

Distribution of the frequency of menstrual cycle disorders in adolescent girls in the work area of the Kota Dalam Public Health Center, Pesawaran Regency in 2021, with the category of experiencing menstrual cycle disorders as many as 18 respondents (47.40%). The distribution of stress frequency among adolescent girls in the work area of the Kota Dalam Public Health Center, Pesawaran Regency in 2021, with the category of experiencing stress as many as 22 respondents (57.9%). There is a relationship between stress levels and menstrual cycle disorders in adolescent girls in the work area of Kota Dalam Public Health Center, Pesawaran Regency in 2021. The results of the analysis were obtained ( $p$ -value  $0.010 < 0.05$ ). OR: 8,000.

For Young Women. It is suggested that young women can increase their knowledge about menstrual cycle disorders through electronic media or by conducting examinations on health services to avoid complications in menstruation. Teenage girls who experience stress can be overcome by adequate rest, relaxation, regular exercise, recreation, and body massage. This can also be done such as changes in lifestyle, activities, routines, as well as changes in atmosphere and work.

City Health Center in Pesawaran Regency. It is recommended that midwives provide counseling or counseling to adolescents and increase promotive efforts for students through health education which aims to convey information about reproductive health, especially menstrual cycle disorders. Providing information media such as leaflets, posters, etc., so that all levels of society can be touched with information about menstrual cycle disorders.

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