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THE RELATIONSHIP OF PHYSICAL ACTIVITY LEVEL AND LENGTH OF WORKING TIME TO THE MENSTRUAL CYCLE IN FEMALE WORKERS

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ABSTRACT

A women who enter adulthood will have a special characteristic which is menstruation. Menstrual cycles disorder can be influenced by several factors such as age, body weight, physical activity levels, stress levels, genetics and nutrition. Physical activity levels and length of working hours that trigger stress can affect the menstrual cycle. The purpose of this research knew the relationship between physical activity levels and length of working hours in menstrual cycle for female workers. This research design uses a cross sectional approach. The population is all female workers of childbearing age who work in Kenangan Village, Deli Serdang Regency. The total sample was 72 working female respondents of childbearing age who were taken using a purposive sampling technique. The results showed that the majority of physical activity level was moderate and has menstrual cycle disorders (36.11%), and length of working hours is more than 8 hours also has the most menstrual cycle disorders (40.27%). The chi-square test of physical activity level with menstrual cycle disorders was shown with p-value of 0.00059 (α < 0.05) *and the length of working hours with the menstrual cycle disorder resulted in p-value of 0.00057 (a < 0.05). There is a relationship between physical activity levels and length of working hours in menstrual cycle for female workers.*

Keywords: Menstrual cycles; Physical activity level; length of working hours.

INTRODUCTION

By gender, the percentage of women who have health complaints is higher than men. Women experience significant biological changes during their life cycle, including menstruation, pregnancy, and menopause. Each of these phases can carry specific health risks, including hormonal disorders, anemia, and reproductive health problems (Triani et al., 2024) . Menstruation is one of the hallmarks when a woman enters adulthood as well as as a marker of female fertility. Menstruation is regular bleeding in the uterus which is a sign that the female uterus has matured. This period can change women's behavior in several aspects, for example psychology, diet, and others. Menstruation with a normal cycle occurs for 27 days in 2235 days. Dirty blood and mucous membranes of the uterine cavity, which are themselves detached due to changes in levels of the hormones estrogen and progesterone, will come out of the uterus through the vagina. The loose mucous membrane will be converted by the substances contained in it into mucus. The blood vessels at the base will also peel off so that they open, and blood flows out. Menstrual irregularities affect 2-5% of women of childbearing age, a much higher number among women who are under constant stress during the cycle. A woman's menstrual cycle usually follows a 28-day cycle and ends with the release of the uterine lining that causes bleeding. A normal menstrual cycle indicates the proper functioning of hormones, having a normal menstrual cycle indicates a healthy hypothalamic-pituitary axis with a normal uterus. Irregularities in the menstrual cycle are affected by weight, physical activity, stress, diet, endocrine disorders, bleeding disorders, environmental exposure and working conditions. Stress is a nonspecific response of the body to the demands of a load which is a physiological, psychological and behavioral response of humans who try to adapt and regulate both internal and external pressures (stressors). Stressors can affect all parts of a person's life which can cause mental stress, behavioral changes, problems in interactions with others and other physical complaints, one of which is menstrual cycle disruption. WHO data in 2018 states that 80% of women in the world experience irregular periods. According to Basic Health Research Data, as many as 11.7% of adolescents in Indonesia experience irregular menstruation and as many as 14.9% in urban areas in Indonesia experience menstrual irregularities. Based on data obtained from BPS Deli Serdang Regency, the percentage of female workers in Deli Serdang Regency is 46.75% (Nasution et al., 2022) (Mona et al., 2017) (Tambun et al., 2021) (Sulistya & Richard, 2014) (Purwati & Muslikhah, 2021) (BPS, 2021).

According to previous research, excessive physical activity also results in menstrual cycle irregularities. Physical activity is a factor that can affect a person's menstruation. Physical activity is defined as body movements produced by skeletal muscles that require energy expenditure including activities performed while working, playing, traveling, and engaging in recreational activities. Excessive physical activity every day can have a bad impact on women's health. Where physical activity will cause physical and mental fatigue. Tired physical conditions and unstable emotions can affect the menstrual cycle, namely the occurrence of menstrual cycle disorders (Committee Countermeasures Cancer National, 2019) (Baadiah et al., 2021). Another study conducted in 1987 in California explained that 90% had a menstrual cycle length between 20 and 40. In the study, subjects who engaged in strenuous physical activity had shorter menstrual cycles (87.5%). Then in another study in 2002 in California and Utah, physical activity was associated with the length of the menstrual cycle. According to a 2011 study in Norway, the severity of physical activity levels has a strong relationship with irregular menstruation (Mahitala , 2015). Strenuous physical activity at work can result in physical fatigue. Fatigue can also occur as a result of a fairly long working duration every day. The duration of work is the length of time a person works in 24 hours. In Indonesia, the average working duration of a worker is 8 hours. Research by Rahmawati (2020) in Magelang Regency found a relationship between work fatigue and menstrual cycle in female workers who had a positive value with a one-way relationship and a low relationship level (p=0.001; r= 0.384). The purpose of this study is to analyze the relationship between the level of physical activity and the length of working time on the menstrual cycle in women of childbearing age who work in Kenangan Village, Deli Serdang Regency in 2024.(Rahmawati, 2020)

RESEARCH METHODS

This study uses the *cross sectional*. The population used in this study was women of working childbearing age. Then for sampling, the purposive sampling technique is used, namely sampling based on the criteria that have been set. The data collection tool in this study uses a questionnaire given online through *Goggle form*, then analyzed descriptively in the form of frequency because the data is categorical. The data analysis used is *Chi-Square*, shown by a significance value of $\alpha < 0.05$ indicating a relationship between physical activity and work duration and regularity of menstrual cycles.

RESULTS AND DISCUSSION

1. Univariate Analysis

Table 1. Frequency Distribution of Respondents by Age

Age	f	%
20-25	8	11.1
26-30	26	36.1
30-35	21	29.2
36-40	11	15.27
40-45	6	8.33
Total	**72**	**100**

Based on table 1, respondents are dominated by working women aged 26-30 years, which is 26 respondents, with a percentage of 36.1%.

Table 2. Distribution of Respondent Frequencies by Physical Activity

Physical activity	f	%
Light	12	16.7
Keep	27	37.5
Heavy	33	45.8
Total	**72**	**100**

Based on table 2, the largest frequency of respondents was respondents who had a level of heavy physical activity of 33 respondents, with a percentage of 45.8%. For moderate activity level, 27 respondents with a percentage of 37.5%, and light physical activity level was 12 respondents with a percentage of 16.7%.

Table 3. Distribution of Respondent Frequency Based on Duration of Work

Working duration	f	%
< 8 hours	9	12.5
8 hours	26	36.1
> 8 hours	37	51.4
Total	**72**	**100**

Based on table 3, the most respondents were respondents with a working duration of more than 8 hours as many as 37 respondents (51.4%), while respondents with a working duration of 8 hours were 26 respondents (36.1%), and respondents with a working duration of less than 8 hours were 9 respondents (12.5%).

Table 4. Distribution of Respondent Frequency by Menstrual Cycle

Menstrual cycle	f	%
Orderly	28	38.9
Irregular	44	61.1
Total	**72**	**100**

Based on table 4, the frequency of respondents with irregular menstrual cycles was larger, namely 44 respondents (61.1%) while respondents with regular menstrual cycles were 28 respondents (38.9%).

2. Bivariate Analysis

Table 5. The Relationship of Physical Activity to the Menstrual Cycle

Physical activity	Menstrual cycle		*p-value*
	Orderly	Irregular	
Light	10	2	
Keep	9	18	0.00059
Heavy	7	26	

Based on table 5, the chi square test results show a *p-value* of 0.00059 (α < 0.05) which means that there is a relationship between the level of physical activity and menstrual cycle disruptions experienced by women of childbearing age who are working.

Table 6. The Relationship of Working Duration to Menstrual Cycle

Working duration	Menstrual cycle		*p-value*
	Orderly	Irregular	
< 8 hours	7	2	
8 hours	10	16	0.00057
> 8 hours	8	29	

Based on table 6, the results of the chi square test show a *p-value* of 0.00057 (α < 0.05) which means that there is a relationship between the duration of work and the disruption of the menstrual cycle experienced by women of childbearing age who work.

Based on the results of the study, it can be described that most of the respondents have a level of heavy physical activity and experience irregular menstrual cycles as many as 26 respondents. Based on the results of this study, it shows that the level of physical activity carried out by women of childbearing age who work in Kenangan Village, Deli Serdang Regency has an effect on the menstrual cycle.

According to Omidvar *et al.,* (2019) there is a relationship between physical activity and menstrual function. The menstrual function in question is related to menstrual patterns such as cycle length, menstrual regularity, duration of bleeding, and the like. The results of (Omidvar et al., 2019) *the chi square test* analysis concluded that there was a relationship between the level of physical activity and the incidence of menstrual cycle disorders in women of childbearing age who worked with p value = 0.00059 < 0.05, then it was said to be related because H0 was rejected and Ha was accepted. Another factor that has a relationship with the occurrence of menstrual cycle algae is the duration of work. The results of the study showed that respondents who worked more than 8 hours were the ones who had a lot of irregular menstrual cycles as many as 29 respondents. A long work duration will greatly affect a person because when the duration of work every day is very long, the workload will also be heavier, and the physical will feel more tired, besides that the level of stress can also increase. According to Sari, (2016) menstruation is closely related to the hormonal system regulated in the brain, precisely in the pituitary gland. This hormonal system regulates signals to the ovaries to produce eggs, so that if this hormonal system is disrupted, the menstrual cycle is automatically disrupted. When a person experiences stress due to work, one of the factors is due to the long duration of work, it will obviously affect the hormonal system and have an impact on menstrual cycle disorders. (Sari, 2016)

CONCLUSION

Based on the results of this study, it can be concluded that there is a relationship between the level of physical activity and length of working time with the incidence of menstrual cycle disorders in women of childbearing age who work in Kenangan Village, Deli Serdang Regency. The level of physical activity that is getting heavier will increase physical and psychological stressors that can aggravate menstrual cycle disruptions, as well as the length of working time that will cause menstrual cycle disruptions that are increasing.

BIBLIOGRAPHY

Baadiah, M., Winarni, S., Mawarni, A., & Purnami, C. T. (2021). THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND ANXIETY LEVELS WITH MENSTRUAL CYCLE DISORDERS IN FEMALE STUDENTS. *Journal of Public Health (e-Journal).*

BPS. (2021). *Percentage of Women Workers in Deli Serdang Regency*.

National Committee on Cancer Control. (2019). *Guidelines for Action Steps to Increase Physical Activity*. National Committee on Cancer Control.

Mahitala, A. (2015). THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND MENSTRUAL DISORDERS OF WOMEN OF CHILDBEARING AGE IN TEMANGGUNG VILLAGE, KALIANGKRIK DISTRICT, MAGELANG REGENCY IN 2015. *JOURNAL OF PUBLIC HEALTH (e-Journal), 3* (April).

Mona, L., Januar Sitorus, R., & Etrawati, F. (2017). PREDICTION MODEL OF PRIMARY DYSMENORRHEA IN FEMALE STUDENTS OF PUBLIC SENIOR HIGH SCHOOL IN PALEMBANG. *Journal of Public Health Sciences*, *8*(1), 10–18. https://doi.org/10.26553/jikm.2017.8.1.10-18

Nasution, A. S., Jayanti, R., Munir, R., & Ariandini, S. (2022). Determinants of Dysmenorrhea Incidence in Female Students. *Journal of Vocational Health*, *7*(2), 79. https://doi.org/10.22146/jkesvo.72218

Omidvar, S., Nasiri Amiri, F., Firouzbakht, M., Bakhtiari, A., & Begum, K. (2019). Association Between Physical Activity, Menstrual Cycle Characteristics, and Body Weight in Young South Indian Females. *International Journal of Women's Health and Reproduction Sciences*, *7*(3), 281–286. https://doi.org/10.15296/ijwhr.2019.47

Purwati, Y., & Muslikhah, A. (2021). Menstrual Cycle Disruption Due to Physical Activity and Anxiety. *Journal of Midwifery and Nursing Aisyiyah*, *16*(2), 217–228. https://doi.org/10.31101/jkk.1691

Rahmawati, D. A. (2020). THE RELATIONSHIP BETWEEN WORK FATIGUE AND MENSTRUAL CYCLE IN WOMEN WORKERS IN THE FORMAL SECTOR IN MAGELANG REGENCY IN 2020. *University of Muhammadiyah Magelang*, 4–11.

Sari, I. M. (2016). *The Relationship between Stress Level and Menstrual Cycle Disorders in Diploma IV Midwife Educator Students at the University of "Aisyiyah Yogyakarta"*.

Sulistya, M. D., & Richard, S. D. (2014). FACTORS THAT PLAY A ROLE IN MENSTRUAL CYCLE DISORDERS BASED ON WEIGHT, STRESS AND DIET IN FEMALE STUDENTS. *Journal of STIKes Bakti Kediri Hospital*.

Tambun, M., Batubara, Z., & Sinaga, M. (2021). THE RELATIONSHIP BETWEEN STRESS LEVELS AND MENSTRUAL DISORDERS IN ADOLESCENT GIRLS AT SMK N 8 PADANG BULAN IN 2021. *Ubudiyah University of Indonesia*.

Triani, D., Hastuti, N., Novianti, N., Rhafdiani, D. M., & Marzuarini, I. (2024). *THE EFFECT OF CONSUMPTION OF RED GUAVA JUICE AND BLOOD SUPPLEMENT TABLETS ON INCREASING HEMOGLOBIN LEVELS IN PREGNANT WOMEN* (Vol. 4, Issue 3).