Crossref

Menstrual Cycle Determinants

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Article Info	ABSTRACT
	Adolescence is a transition from childhood to adulthood accompanied by biological, psychological, and sociological changes. One of the biological changes in adolescent girls is menstruation. Menstruation is a sign of femininity for women, but menstruation often experiences disorders, one of which is menstrual cycle disorders that are influenced by several factors. This study aims to look at the determinants associated with the menstrual cycle. Factors to be investigated are stress, Body Mass Index (BMI), and physical activity. This research was conducted at Madrasah Aliyah Ar-Rahman Palembang with a cross-sectional approach. The sampling technique used in this study is total sampling with 102 respondents, conducted in March 2020. The statistical test of this study uses Chi-square and multiple logistic regression. Bivariate analysis results show that there is a relationship between stress (p-value 0.000, OR = 7.879, BMI (p-value 0.008, OR = 3.321), and physical activity (p-value 0.006, OR = 3.525) with menstrual cycle. Results of multivariate analysis of stress variables (p-value 0.000, Exp (B) = 6.960) and physical activity (p-value 0.033, Exp (B) = 2.805) with the menstrual cycle so that the determinant of this research factor is stress. *This is an open access article under the CC BY-SA license.*

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1. INTRODUCTION

Adolescence is a period of transition or change from childhood to adulthood, including biological, psychological, and social changes (Latifah & Sholihah, 2017) 1. The United States Census Agency (2018) 2 states that the number of adolescents aged 10-19 years is 1,221 million, while in Indonesia, based on the BPS (2018), there are 24.15% or 63.82 million people consisting of 50.58% males. And 49.42% were women. According to Riskesdas 3 (2018), in South Sumatra, adolescents aged 15-19 years are 43,649 people (Latifah & Sholihah, 2017) 1, with 52.88% being male and 47.12% female. Based on Palembang City Health Profile 4 (2018) data, it is known that there are 149,999 boys and 150,561 girls. One of the biological changes that occur in adolescents is marked by menstruation. Menstruation is a sign of femininity for a woman and a natural process that occurs in women, but this can be a serious problem if there is interference. The most common menstrual disorders include irregular menstrual cycles, prolonged or shortened menstruation, high or low menstrual blood volume, pain or dysmenorrhea, and premenstrual syndrome. According to Ratna (2015) in Astuti and Noranita 5 (2016), 70-90% of teenage women experience menstrual cycle irregularities, while research by Ayatullah 6 (2016) in Palembang stated that 66.3% of respondents experienced menstrual disorders. According to Andriana, Aldriana, & Andria 7 (2018), menstrual cycle disorders are influenced by age at menarche and Body Mass Index. The article's title should be the fewest possible words that accurately describe the paper's content. Omit all waste words such as "*A study of ...*", "*Investigations of ...*", "*Implementation of ...*", "*Observations on ...*", "*Effect of.....*", "*Analysis of ...*", "Design of…" etc. Indexing and abstracting services depend on the accuracy of the title, extracting from it keywords useful in cross-referencing and computer searching. An improperly titled paper may never reach the audience for which it was intended, nor be specific.

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According to Islamy and Farida 8 (2018), risk factors that cause menstrual cycle disorders are age, stress level, and nutritional status. Stress causes systemic changes in the body, especially in the nervous system in the hypothalamus. When stress occurs, the LH hormone will decrease due to a disturbance in the production of the hormone prolactin, which is directly related to basal cortisol activation. Setiawati 9 's research (2015) on the effect of stress on the menstrual cycle, it was found that there was an influence between stress on the menstrual cycle. Another study conducted by Sari and Pratiwi 10 (2016) obtained data that 37.5% of students who were not stressed experienced menstrual cycle disorders, with mild stress, 66.7% experienced menstrual cycle disorders, and 76.7% of students who were severely stressed had menstrual cycle disorders. In addition to the stress factor, the menstrual cycle can also be influenced by the Body Mass Index (BMI), which describes the person's nutritional status. While it has been known that the menstrual cycle is at risk of being disrupted in confinement women, menstrual cycle disorders also occur in women with a body mass index (BMI) of fat and obesity.

BMI is very influential on menstrual disorders because if a person experiences specific hormonal changes, it will be indicated by changes in BMI. Riskesdas 3 (2018) data shows that the prevalence of overweight in adolescents aged 15-18 increased between 2007 and 2013. The percentage of obesity in 2007 was 18.8%, in 2013 was 26.6%, and in 2018 the rate reached 31. %, while in South Sumatra, the percentage of adolescents who are obese is 25%. Changes in Body Mass Index (BMI), in addition to being influenced by nutritional status, can also be influenced by physical activity. It can affect the menstrual cycle. Today, teenagers often do not exercise or do excessive physical activity as a trend and lifestyle. Excessive physical activity can affect the normal menstrual cycle. Heavy loads carried out will cause physical and mental fatigue. Tired physical condition and erratic emotions can affect the menstrual cycle, namely late menstruation. Strenuous physical activity stimulates GnRH inhibition and gonadotropin activity, lowering serum estrogen levels, which will affect the menstrual cycle.

Based on the report of Basic Health Research 3 (2018), the proportion of less physical activity has increased from 2013 from 26.1% to 33.5%. Based on the characteristics of the respondents nationally, it is known that the percentage of the 15-24 year age group who lacks physical activity is 52%, while adolescents in Palembang who do activities <150 minutes/week reach 37.2%. According to a study by Suciata 11 (2015) in Yogyakarta with 115 respondents, it was concluded that there is a relationship between physical activity and the menstrual cycle. Research in Magelang by Mahitala 12 (2015) also states an association between physical activity and the menstrual cycle.

Irregular menstrual cycles that occur for a long time can be at risk of causing various diseases of the reproductive system, such as infertility. Besides, irregular menstrual cycles can be a symptom of cervical and breast cancer. Adolescent girls are indeed an age that is very vulnerable to experiencing menstrual cycle problems, especially adolescents who are currently studying. According to Karout (2012) in Latifah and Sholiha 1 (2017), The consequences of menstrual irregularities in female students include absenteeism and lack of concentration in lessons. If this menstrual cycle disorder is not treated immediately, it can trigger anemia. Regular menstrual cycles indicate that the woman has good reproductive development and function. The interviews with five students of Madrasah Aliyah Ar-Rahman Palembang showed that three students experienced oligomenorrhea menstrual cycles, one student experienced oligomenorrhea, and one female had regular menstrual cycles. The teacher of Madrasah Aliyah Ar-Rahman Palembang explained that all students are required to participate in at least one extracurricular activity outside of compulsory school hours. Study hours at Madrasah Aliyah Ar-Rahman Palembang will also start at 07.00 and ends at 15.00 Western Indonesia Time (WIB), with holidays on Sundays and national holidays. Madrasah Aliyah Ar-Rahman Palembang also requires students to memorize at least one juz of the Qur'an. Specifically for the ITC class, students must learn one sheet per day. Based on this description, researchers are interested in researching the analysis of determinant factors related to the menstrual cycle in female students of Madrasah Aliyah Ar-Rahman Palembang.

2.   RESEARCH METHOD

This research is a descriptive-analytic study using a cross-sectional approach. The population in this study were all students of Madrasah Aliyah Ar-Rahman Palembang. Sampling in this study uses a total sampling technique. The number of samples in this study was 102 respondents.

This research was conducted in March 2020 at Madrasah Aliyah Ar-Rahman Palembang. The instruments used are questionnaires, height measuring instruments, and scales. The questionnaire used regarding the respondent's menstrual cycle data questionnaire, DASS 42 (about stress), and Baecke Quitioner (physical activity questionnaire). Statistical tests performed were the Chi-square test and multiple logistic regression. This research has received ethics from the Palembang Ministry of Health Poltekkes Ethics Committee with number 163/KEPK/ADM.2/8/2020.

3.   RESULTS AND ANALYSIS

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3.1. Univariate Analysis
a. Characteristics of Respondents

Table 5. 1
Characteristics of respondents based on age, age of *menarche*, and length of menstruation days

Characteristics	mean	median	Std. Deviation	Min	Max
Respondent Age	16.03	16	1.009	14	18
Menarche Age	12.3	12	1.099	10	15
Menstrual day length	6.36	7	1,806	2	16

Based on table 5.1, it is known that the average age of the respondents is 16.03 years, with the youngest age being 14 and the highest being 18 years. The average age at *menarche* of respondents was 12.3 years, with the youngest age being ten and the highest being 15 years. Respondents' average menstruation for 6.3 days, with the fastest menstruation at two days and the longest at 16 days

Table 5. 2
Characteristics of respondents based on complaints during menstruation, parental income, stress level, BMI, physical activity, and menstrual cycle

Characteristics	Category	Amount	Percentage (%)
Complaints during menstruation	PMS	40	39.2
	dysmenorrhea	35	34.3
	Tension Feeling	4	3.9
	More complaints	16	15.7
	No complaints	7	6.9
Parents' Income	< 3,043,111	75	73.5
	> 3,043,111	27	26.5
Stress level	Normal	37	36.3
	Light	28	27.5
	Currently	27	26.5
	Heavy	10	9.8
	Very heavy	0	0
BMI	Thin	4	3.9
	Normal	52	51
	Fat	39	38.2
	Obesity	7	6.9
Physical Activity	Light	2	2
	Currently	32	31.4
	Heavy	68	66.7
Menstrual cycle	Normal	41	40.2
	Abnormal	61	59.8

Based on Table 5.2, it is known that almost half of the respondents experience PMS menstrual complaints, while for the income of the respondents' parents, it is known that half of the respondents' income is < 3,043,111. It is known that the stress level of the respondents is that almost half of the respondents have mild stress levels, and half

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of the respondents' Body Mass Index is in the fat BMI category. Most of the respondents have heavy physical activity and irregular menstrual cycles.

3.2. Bivariate Analysis

Table 5. 3

The Relationship of the Independent Variables (Stress, BMI, and Physical Activity) with the Menstrual Cycle in Madrasah Aliyah Ar-Rahman Palembang Students

Variable	Menstrual Cycle				Total		OR (95% CI)	P Value
	Normal		Abnormal					
	n	%	n	%	n	%		
Stress								
No stress	26	70.3	11	29.7	37	100	7,879	0.000
Stress	15	23.1	50	76.9	65	100	(3,168-19,593)	
BMI								
Normal	28	53.8	24	46.2	52	100	3,321	0.008
Abnormal	13	26	37	76.9	50	100	(1,441-7,650)	
Physical Activity							3,525	0.006
Currently	21	60	14	49	35	100	(1,499 -8,289)	
Heavy	20	29.9	47	70.1	67	100		

Based on table 5.3, the bivariate test results show a relationship between stress and the menstrual cycle with a p-*value* of 0.000, and respondents with abnormal stress levels are at risk of experiencing menstrual cycle disorders 7.8 times.

Table 5.3 concludes that there is a relationship between the Body Mass Index (BMI) of Madrasah Aliyah Ar-Rahman Palembang students with menstrual cycles with a p-*value* of 0.008 and respondents whose BMI is not normal at risk of 3.3 times experiencing irregular menstrual cycles.

Table 5.3 physical activity variables show a relationship between physical activity and the menstrual cycle with a *p*-value of 0.00 and OR = 3.52, which means that students of Madrasah Aliyah Ar-Rahman Palembang who have abnormal physical activity have a risk of experiencing an abnormal menstrual cycle of 3,52 times compared to those who have regular physical activity.

3.3. Multivariate Analysis

Table 5. 4
Multiple Logistics Regression Final Modeling

Independent Variable	B	Beta	Wald	P-*Value*	OR
Stress	1,940	0.418	16,579	0.000	6,960
Physical Activity	1.031	0.197	4,548	0.033	2.805

From table 5.4 as the final model, it can be seen that the independent variable that has the most significant influence or becomes a determining factor of the menstrual cycle is stress, where the value used to determine the dominant factor is the value in the Beta column, the greater the Beta value of the independent variable, the greater the relationship with the dependent variable.

3.3. Result

The age of the respondents in this study shows that the average age is 16.03 years, with an age range of 14-18 years. This age is the age of adolescence, where there will be physical and psychological changes. According to Andriana, Aldrianan, and Andria [7] (2018)(Kusumawaty et al., 2020), adolescence is a period of searching for identity or self-identity, so adolescents are easily influenced by the environment other than internal factors(Kusumawaty et al., 2021). In general, the physical maturation process at this age is faster than the

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psychological one. According to Harahap [13] (2016), the menstrual cycle will generally experience regularity when entering the age of 17-18 years or 3-5 years after *menarche*.

The average age of menarche in this study was 12.3 years, with a menarche age range of *10-15 years*. According to Haryono [14] (2016), generally, most women experience *menarche* at the age of 12-14 years. In the last 100 years, the age of *menarche* has shifted to a younger generation due to improvements in general health and nutrition. Currently, the age of *menarche* varies widely, is between 10-16 years, with an average of 12.5 years (Derina, 2011; Andriana, Aldrianan, and Andria, 2018)7. The age of *menarche* can be influenced by several factors such as ethnicity, genetics, social, economic, and others. In the UK, the average age of *menarche* is 13.1 years, while in Papua New Guinea, *menarche* is reached at 18.8 years (Proverawati & Misaroh, 2009) [15]. Within a year after *menarche,* menstrual cycle irregularities often occur. M*enarche disorders* are classified into 2, namely early *menarche* (occurring before the age of 10 years). This is due to early puberty, where gonadotropin hormones are produced before the age of 8 years. *Menarche* tarda (over 14 years) can be caused by several factors such as heredity, health problems, and malnutrition.

The average length of the respondent's menstrual day in the study was 6.3, with a day range of 2-16 days. According to Haryono (2016), [14] days of menstruation are 2-8 days with an average of 3-5 days. Complaints during menstruation are known that almost half of respondents (39.2%) experience PMS during menstruation. PMS or premenstrual tension usually occurs a few days before menstruation takes place. PMS is often associated with the ups and downs of estrogen and progesterone levels that occur during the menstrual cycle. PMS occurs in 70-90% of women of childbearing age (Haryono, 2016) [14]. Half of the respondents' income is < 3,043,111. This income can be used as a reference in determining the economic status of students. This economic status shows how the ability to fulfill their nutritional and health status can relate to irregular menstrual cycles.

The research results on the independent variable stress level with the menstrual cycle before the dummy were found to have a p-*value of* 0.000, and after the dummy, the p-*value* was 0.000. This means no difference in the p-*value* on the stress level before and after the dummy is performed. This study's results align with research conducted by Islamy and Farida (2018) [about] the factors that affect the menstrual cycle. It can be seen that stress levels have the most significant influence on the menstrual cycle, with univariate results experiencing stress as many as 23 respondents (57.5 %) and two respondents (22.2%) who experienced irregular menstrual cycles. The results of statistical tests using the *Chi-Square test* in a bivariate analysis obtained a p-*value* of 0.015 which means that there is a relationship between stress levels and menstrual cycles in level III adolescent girls. Stress is a condition related to the level of emotion, the flow of thought, and a person's inner state. Individuals need stressors as a form of adaptation to their psychological defenses. Normal stress levels and mild stress are required by a person so that the individual can adapt to any problems that arise, but if someone is already at moderate, severe, and very heavy stress levels, then someone needs to do something coping mechanisms so that the stress they experience is not prolonged and causes health problems. According to Kusmiati and Desminiarti (1990) in Sunaryo (2004), stress is classified into physical, chemical, microbiological, physiological, growth, and psychological/emotional stress. Stress can arise due to several factors (stressors), namely frustration, conflict, pressure, and crisis. Stress causes systemic changes in the body, especially in the nervous system in the hypothalamus. When stress occurs, the LH hormone will decrease, which is caused by a disturbance in the production of the hormone prolactin, which is directly related to basal cortisol activation. Stress is a nervous system stimulant transmitted to the central nervous system, namely the *limbic system,* through *nerve transmission,* then through *the autonomic nerves. It is* passed on to the hormonal (endocrine) glands to secrete *secretions* (fluid), neurohormones to the pituitary secrete *gonadotropins* in the form of *Follicle Stimulating Hormones* (Follicle Stimulating Hormones). FSH) and *Luteinizing Hormone* (LH). The production of these two hormones is influenced by *Realizing Hormone* (RH), which is channeled from the hypothalamus to the pituitary, where the release of RH is strongly influenced by the estrogen feedback mechanism so that it can affect the menstrual cycle.

Sari and Pratiwi carried out another similar study (2016) [10,] which, based on the results of univariate analysis, found that the most respondents were respondents with very severe stress levels, namely 40% or as many as 30 respondents from 75 samples. The most frequent menstrual cycle disorders were *polyminorrhea* as many as 19 respondents or 41.3%. Bivariate results in this study indicate a relationship between stress levels and menstrual cycle disorders in Diploma IV midwifery students at the final level of education at the University of 'Aisyiyah Yogyakarta with a *p*-value of 0.028 or <0.05. The stress factor is a significant factor in the irregularity of the menstrual cycle. However, this study is not in line with research conducted by Hayati, Utami, and Sasmini (2017), which discusses the relationship between stress levels and changes in the menstrual cycle in female students at SMAN 1 Tebas Sabas, West Kalimantan, which in univariate results it is known that the respondents amounted to 96 respondents. Seventy-one respondents, or 74%, had normal stress levels, while for the menstrual cycle, 87

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respondents (91%) had normal menstrual cycles, and nine respondents (9%) had abnormal menstrual cycles. The results of statistical tests using *Spearmen Rank* got a p-*value* of 0.085 or > 0.05. The value obtained from this statistical test means no relationship exists between stress and the menstrual cycle in female students of SMAN 1 Tebas Sabas. With the results of this study, the researchers drew the assumption that there was a relationship between stress and the menstrual cycle in students of Madrasah Aliyah Ar-Rahman Palembang, this was because apart from studying in formal schools, the students also learned the Qur'an starting from the Koran, memorizing, and some activities at Pondok Ar-Rahman are outside the activities of Madrasah Aliyah. Therefore the burden on the minds of Madrasah Aliyah Ar-Rahman students is heavier, so it can cause stress. According to Roswendi (2011)⋅ this is because when stressed, the stress hormone cortisol, which is the result of *adrenal cortex glucocorticoids synthesized in the fasciculata* zone, will affect the production of the amount of the hormone progesterone, which has an impact on the menstrual cycle. Haryono (2016)[14] also states that when a person is stressed, the adrenal glands secrete the hormone cortisol, which has a direct impact on several hormones involved in menstruation, such as estrogen and progesterone.

The results of the independent variable BMI with the menstrual cycle in this study were 0.008. This study is in line with the research of Adriana, Aldriana, and Andria (2018)[7] about the factors that affect the menstrual cycle in female students at Pasir Pengairan University, where one of the variables is BMI were from 53 respondents to 35 respondents (66%) had a normal BMI, respondents who have an abnormal menstrual cycle based on BMI are 19 respondents. The bivariate analysis was carried out using the *Chi-square test* between BMI and the menstrual cycle. The p-*value* was 0.030, meaning there is a relationship between BMI and the menstrual cycle in Pasir Pengairan University students. This study is in line with the research of Kumalasari (2018)[17,] where it was concluded that there is a correlation between BMI and the menstrual cycle by looking at the p-*value* < 0.05 (0.030) using the Chi-square test. BMI is very influential on menstrual disorders because if a person experiences specific hormonal changes, it will be indicated by changes in BMI. In thin women, steroid hormones will change where the serum testosterone level increases while the levels of endosterone and epiandesterone decrease, affecting the menstrual cycle. When gonadotropin levels decrease, the secretion of *Follicle Stimulating Hormone* (FSH), as well as the hormones estrogen and progesterone, also decreases, so it does not produce mature eggs. Obese women (BMI > 27.0 kg/m^2) will undoubtedly increase the body's metabolism as a form of hemodialysis (the body's ability to neutralize it in its original state) to expel the excess. This will impact the function of the hormonal system in the body in the form of an increase or decrease in progesterone, estrogen, LH (Luetezing Hormone), and FSH, causing oligomenorrhea and even amenorrhea. Women's diet will also affect the menstrual cycle because when the diet changes steroid hormone levels, which are vital in regulating the menstrual cycle. Based on the p-*value* of the results of this study, it is assumed that there is a relationship between BMI and the menstrual cycle in Madrasah Aliyah Ar-Rahman Palembang students. This can be caused by changes in nutritional status that can be seen based on BMI values and can impact the reproductive hormonal cycle. According to Dieny (2014) in Fitriningtyas, Redjeki, and Kurniawan (2016)[18,] it is known that the percentage of body fat will affect the menstrual cycle, where the ratio of body fat needed is around 22%. Meanwhile, based on interviews with students, it is known that the available diet and menu cannot be said to be a balanced menu. According to Noviana (2018),[19] nutritionally deficient women who experience anorexia nervosa will experience a decrease in serum gonadotropin levels which can cause changes in the ovulation cycle. Extreme weight gain can also be related to menstrual cycle irregularities because, in this condition, the brain cannot trigger the right hormones for the follicles needed to make estrogen (Haryono, 2016)[14].

The research results on the independent variable of physical activity with the menstrual cycle obtained a *p*-value of 0.006 which means that there is a relationship between physical activity and the menstrual cycle in female students of Madrasah Aliyah Ar-Rahman Palembang. This shows a relationship between physical activity and the menstrual cycle. This study is in line with Macheasy, Yana, and Pawestri (2017)[20] regarding the relationship between the length of the menstrual cycle in adolescents who follow Pencak silat. From the univariate results of this study, it was found that 66 (52.4%) of 126 respondents had normal menstrual cycles. In comparison, respondents who participated in Pencak silat at most participated in training twice a week with 61.1% (77 respondents). Bivariate analysis in this study using a simple logistic regression test obtained a p-*value* of 0.000 which means that in this study, there is a relationship between the frequency of Pencak silat training with the length of the menstrual cycle in the group of adolescents who follow Pencak silat. The results of this study are in line with Mahitala's research (2015)[12,] where from univariate results regarding physical activity variables, 33 respondents (64.7%) of 51 respondents had heavy physical activity, and 31 respondents had menstrual cycle disorders (60.8%).

Bivariate analysis of this study using the *Chi-square test* with the Yate correction approach obtained a p-*value* of 0.008 which means that there is a relationship between physical activity and menstrual cycle disorders in women of childbearing age. The most physical activity was the abnormal physical activity obtained through questionnaire calculations with the interview method. Based on statistical tests, it was known that there was a relationship between

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physical activity and the menstrual cycle in Madrasah Aliyah Ar-Rahman Palembang students, considering that most of the students lived in dormitories so that the time they rest less and more activities they participate in from morning to night. According to Mahitala (2015), strenuous physical activity can stimulate *Gonadotrophin Releasing Hormone* (GnRH) inhibition and *gonadotrophin activity*, thereby reducing serum estrogen levels. Where the serum estrogen is down or not as needed will affect the menstrual cycle. Physical activity is any body movement produced by skeletal muscles that require energy expenditure and is carried out for at least 10 minutes without stopping. According to the Health Promotion Center of the Ministry of Health (2006) in Savitri (2015), physical activity has three main types: endurance, flexibility, and strength. The activities of daily physical activities carried out usually cause physical fatigue. Work fatigue due to excessive activity can cause hypothalamic dysfunction, which causes disturbances in GnRH secretion. This causes menstrual cycle disorders. The main factor causing female GnRH suppression is excessive energy use that exceeds energy intake. Energy imbalance is related to decreased estrogen levels, metabolic disorders, and the occurrence of amenorrhea or oligomenorrhea. Excessive physical activity can also affect the normal menstrual cycle. Heavy loads carried out will cause physical and mental fatigue. Tired physical condition and erratic emotions can affect the menstrual cycle, namely late menstruation.

From the multivariate analysis carried out, it was concluded that the stress variable had the most dominant influence on the menstrual cycle of Madrasah Aliyah Ar-Rahman students, with a Beta value of 0.416, and students who were at abnormal stress levels were at risk of experiencing irregular menstrual cycles as much as 6.9 times. Compared to students with normal stress levels. This study's results align with research conducted by Islamy and Farida (2018) about the factors that affect the menstrual cycle in level III adolescent girls. Were the results of multivariate analysis using multiple logistic regression concluded that the most influential is the level of stress with RP = 4,7 (95% CI 1.1-20.0) and p-*value of* 0.015, then the second factor was the nutritional status with a p-*value of* 0.026 and RP=2.8 (95% CI 1.6-4.8). From the results of this test, it is also known that the two variables can describe the menstrual cycle by 40.2%, while the other 50.8% is explained by factors not examined in this study. This is not in line with the research conducted by Latifah and Sholihah (2017), where the multivariate results in the study led concluded that physical activity is the most closely related factor among other factors, as evidenced by the Exp value (B), where the p-*value is* 0.000 and OR = 8.096 which means that students with abnormal activity patterns are at risk of 8 times having irregular menstrual cycles.

4. CONCLUSION

Based on the analysis of the determinant factors related to the menstrual cycle in Madrasah Aliyah Ar-Rahman Palembang students, it was concluded that the average age of the respondents was 16.03 years, with the youngest age being 14 and the highest being 18 years. The average age at *menarche* of respondents was 12.3 years, with the youngest age being ten and the highest being 15 years. Respondents average. Menstruation for 6.3 days, with the fastest menstruation two days and the longest 16 days. Almost half of the respondents experienced PMS menstrual complaints, while for the income of the respondents' parents, it was known that half of the respondents' income was < 3,043,111. It is known that the stress level of the respondents is that almost half of the respondents have mild stress levels, and half of the respondents' Body Mass Index is in the fat BMI category. Most of the respondents have heavy physical activity and irregular menstrual cycles. There is a relationship between stress and the menstrual cycle (p-*value* 0.000), there is a relationship between BMI and the menstrual cycle in Madrasah Aliyah Ar-Rahman Palembang students (p-*value* 0.008), there is a relationship between physical activity and menstrual cycles in Madrasah Aliyah Ar-Rahman students Palembang (p-*value* 0.006), and stress is a factor related to the menstrual cycle in female students of Madrasah Aliyah Ar-Rahman Palembang. Students whose stress levels are not normal 6.9 times are at risk of experiencing irregular menstrual cycles.

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