



Activity Patterns Become a Main Factor in Adolescent Menstrual Cycle Changes

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Abstract. Background: One of the important things in menstruation is about the menstrual cycle. The menstrual cycle in every woman is not always regular. Changes in the menstrual cycle are quite common problems with a 75% prevalence in adolescents. In addition, in a study in adolescents that is about 65% of those who experience menstrual cycle changes. Objectives: Knowledge of factors that is associated with the menstrual cycle. Method: This research used descriptive analytic research type. The approach used in this research was cross sectional research design. Samples were 99 with random sampling technique. The bivariate analysis method used was chi square and multivariate analysis with logistic regression. Results: The factors shown to be associated with menstrual cycle changes were nutritional status, activity pattern, and psychological status. The result of bivariate analysis showed that nutritional status of p value ($0,007 < 0,05$), activity pattern p value ($0,000 < 0,05$), psychological status p ($0,025 < 0,05$). The result of multivariate analysis showed that the activity pattern had the closest relationship among other factors. This was evidenced by the value Exp (B) p: 0,000; OR: 8,096 which meant student with abnormal activity pattern at risk 8 times has irregular menstrual cycle. Conclusion and Suggestion: There is correlation between nutritional status, activity pattern, and psychological status with menstrual cycle change. This research expects to increase knowledge insight to female.

Keywords: menstrual cycle · activity pattern

1 Introduction

Adolescence is a period of human development which is a period of change or transition from childhood to adulthood which includes biological changes, psychological changes, and social changes. Adolescence generally begins at the age of 10–13 years and ends at the age of 18–22 years. At this time it is estimated that the number of adolescents worldwide is around 1.2 billion and more than 27% of the population occupies the age of 10–15 years which of course has an important role in the development of reproductive health [1].

From Mukherjee, 20220 [2] in the development of a teenager there is one biological change which indicates that all reproductive organs have begun to mature which is

marked by the presence of menstruation. Menstruation is an important physiological thing experienced by every adolescent woman aged 12–13 years which indicates that the reproductive organs have matured which have an important role for physical and psychological well-being in their reproductive health.

Menstruation begins with menarche which indicates that a woman's reproductive system is functioning. In general, normal menstruation will take place every 21–32 days for approximately 5–7 days. The duration of bleeding is about 3–5 days, some are 1–2 days followed by a little blood and no pain. The amount of blood lost is about 30–40 cc. The peak is on the 2nd or 3rd day with the use of round 2–3 sanitary napkins [3].

Changes in the menstrual cycle is a condition of the menstrual cycle that is different from the previous one, which is measured starting from the normal menstrual cycle, with menarche as the starting point, which can range from less than the normal limit of around 21–32 days [3].

According to [3], changes in the menstrual cycle are divided into three, namely short cycles called polymenorrhea, long cycles called oligomenorrhea, and cycles that do not come in three consecutive months or called amenorrhoea.

Based on the Government Regulation of the Republic of Indonesia Number 61 of 2014 concerning Reproductive Health in article 11 it is explained that the government implements adolescent reproductive health services that aim to prepare adolescents to lead a healthy and responsible reproductive life. In this case, the government seeks to improve the quality of Adolescent Care.

Reproductive health education programs for adolescents are very important that must be considered. This is because the government's efforts to provide additional knowledge of adolescents about reproductive health. In a study, it was shown that 84% of participants said that adolescents needed reproductive health training. Meanwhile, only about 48.3% of them have received the training. Therefore, the government should continue to strive to promote reproductive health education programs that can be carried out in schools with trusted sources [1].

2 Method

This study used a descriptive analytic research design with a cross sectional approach. The total population of 143 female students with a sample of 99 female respondents was calculated by the Slovin formula and the sampling technique used was random sampling. The univariate analysis was carried out to determine the distribution of each research variable, the bivariate analysis used Chi Square, and the multivariate analysis used logistic regression. The tool used is a questionnaire.

2.1 Univariate Analysis

(See Table 1).

2.2 Bivariate Analysis

(See Tables 2, 3 and 4)

Table 1. Distribution of Each Research Variable

Characteristics of Respondents	F	%
Menstrual Cycle		
a. Regular	70	70,7
b. Irregular	29	29,3
Nutritional status		
a. Normal	82	82,8
b. Abnormal	17	17,2
Activity Pattern		
a. Normal	61	61,6
b. Abnormal	38	38,4
Psychological Status		
a. Normal	51	51,5
b. Abnormal	48	48,5
Total	99	100

Table 2. Relationship Between Nutritional Status and Menstrual Cycle in Female

Menstrual Cycle Changes							
Nutritional status	Regular		Irregular		Total	All Total	<i>P Value</i>
	Amount	%	Amount	%			
Normal	63	76,8	19	23,2	82	99	0,007
Abnormal	7	41,2	10	58,8	17		
Total	70		29		99	100%	

Table 3. The Relationship of Activity Patterns with Menstrual Cycles in Female

Menstrual Cycle Changes								
Activity Patterns	Regular			Irregular		Total	All Total	<i>P Value</i>
	Amount	%		Amount	%			
Normal	51	83,6		10	16,4	61	99	0,000
Abnormal	19	50,0		19	50,0	38		
Total	70			29		99	100%	

Table 4. Relationship of Psychological Status with Menstrual Cycle

Menstrual Cycle Changes							
<i>Psychological Status</i>	<i>Regular</i>		<i>Irregular</i>		<i>Total</i>	<i>All Total</i>	<i>P Value</i>
	<i>Amount</i>	<i>%</i>	<i>Amount</i>	<i>%</i>			
Normal	31	44,3	20	69	51	99	0,025
Abnormal	39	55,7	9	31	48		
Total	70		29		99	100%	

Table 5. Multivariate Analysis of Research Variables

No	Variable	Sign	Connection	Exp(B)
1.	Nutritional status	0.010	Related	5,553
2.	Activity Pattern	0.000	Related	8,096
3.	Psychological Status	0.013	Related	0,250
	Constant	0.000		0,206

3 Discussion

One of the most related independent variables in this research is activity pattern. This is based on Table 5 regarding the results of the logistic regression test which shows the highest OR value (Exp B) is 8.096, which means that female students who have an activity pattern do not experience changes in their menstrual cycle by 8 times higher than female students who have a normal activity pattern., after controlling for nutritional status variables, and psychological status variables.

Feedback insufficiency of estrogen and progesterone and imbalance of endogenous opioids and catecholamine activity mediated by aminobutyric acid (GABA), corticotrophin-releasing hormone, insulin, such as growth factors lead to impaired GnRH pulsation. Several studies also mention a relationship between strenuous physical activity that induces menstrual cycle irregularities with changes in steroid metabolism, especially increased activity of catecholestrogens resulting in intracerebral noreadrenaline (norpinephrine) levels that affect the release or release of gonadotropins [4].

Hypothalamic dysfunction associated with strenuous exercise and disturbances in GnRH pulses can lead to delayed menarche and menstrual cycle disturbances. The pattern of strenuous activity can induce amenorrhea associated with hypoestrogenism, but recent studies suggest that the pattern of strenuous activity can have an impact on women's nutritional fulfillment. These nutritional factors are responsible for the occurrence of amenorrhea [5].

Women with strenuous activity patterns will have an impact on changes in unhealthy eating patterns. This is influenced by the presence of the hormones leptin and ghrelin as a hormone to increase a person's appetite. These two hormones play a role in giving

a message to the brain that a person is hungry as a result of a strenuous activity pattern so that a person becomes sleep deprived. The increase in these two hormones makes a person's appetite increase which can affect excess body weight [6].

Women with strenuous activity patterns will also have an impact on increasing the hormone cortisol, decreasing the hormone estrogen, and decreasing the thyroid hormone which is responsible for triggering stress. Excessive stress will have an impact on irregular eating patterns with a high.

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