



Relationship Between Age of Menarche and Regularity of Menstrual Cycle in Female Students At Mts Hasyim Asy'ari Lamongan

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ABSTRACT

Menarche marks the onset of reproductive hormonal maturation in adolescent girls. It plays an important role in regulating the menstrual cycle. This study analyzes the relationship between age at menarche and menstrual cycle regularity in female students. This study was conducted at MTs Hasyim Asy'ari, Kembangbahu District, Lamongan. The sample consisted of 38 female students who had experienced menarche, selected using simple random sampling. Data analysis used the Chi-Square test, with $\alpha=0.05$. Most respondents (63.1%) had an ideal age at menarche (12-13 years), a small number (21%) had a younger age at menarche (less than 11 years old), and a small number (15.8%) were older (more than 13 years old). In addition, most had regular menstrual cycles (84.2%), and a small proportion had irregular cycles (15.8%). The results of the Chi-Square test showed a p-value of 0.005 ($p<0.05$), indicating a significant relationship between age at menarche and menstrual cycle regularity. Thus, age at menarche correlates with menstrual cycle regularity in adolescent girls. It indicates that the ideal age of menarche tends to have a positive effect on the menstrual cycle regularity.

INTRODUCTION

Menarche is the first menstrual period that all women naturally experience and marks the beginning of puberty (Prastiwi, 2024). It is a significant event in a woman's life, marking the beginning of the menstrual cycle and reproductive capacity. It generally occurs between the ages of 10 and 16, during early adolescence, before entering the reproductive years. The age of menarche can vary between individuals, and several studies have shown that it can affect menstrual cycle regularity. The age of menarche among adolescent girls in Indonesia decreased from 13 years in 2010 to 12.4 years in 2018 (Hartati, Farapti, and Isaura, 2022).

The menstrual cycle describes the interval between the first day of menstruation and the first day of the next. A menstrual cycle is considered normal if it lasts no less than 21 days and no more than 35 days. According to research conducted by several experts, a younger or older age at menarche than average can increase the risk of menstrual cycle disorders (Prastiwi, 2024). Irregular menstrual cycles can indicate hormonal disorders or other health problems, so it is important to understand the relationship between menarche and menstrual cycle regularity (Utami, 2022). Adolescent girls' knowledge and attitudes about menarche can influence their readiness to face their first menstruation (Prastiwi, 2024). Appropriate reproductive health education can help adolescent girls prepare for Menarche (Utami, 2022).

Age at menarche can affect the menstrual cycle. Hartati's study (2022) showed that women who experienced menarche at a younger or older age than average might have a higher risk of experiencing

menstrual cycle disorders. In addition, Utami's study (2022) indicated that women who experience menarche at a younger age might have shorter menstrual cycles. Meanwhile, an investigation by Prastiwi (2024) found that women who experienced menarche at an average normal age would have more regular menstrual cycles. Furthermore, menstrual cycle intensity can be influenced by age at menarche. Indra's literature review (2025) showed that women who experienced menarche at an older age potentially had heavier menstrual cycles.

Therefore, understanding the relationship between menarche and menstrual cycle regularity can help improve women's reproductive health. This study analyzes the relationship between age at menarche and menstrual cycle regularity in female students. The Authors also discuss the factors that may influence this relationship and the implications of this research to improve women's reproductive health.

METHOD

The research design used a cross-sectional approach. This study was conducted at MTs Hasyim Asy'ari, Kembangbahu District, Lamongan. The population was all ninth-grade female students at MTs Hasyim Asy'ari, Kembangbahu District, Lamongan. The sample consisted of 38 female students who had experienced menarche, selected using simple random sampling. The independent variable was age at menarche, and the dependent variable was menstrual cycle regularity. Data on menarche and menstrual cycles were collected through questionnaires and interviews. Crosstabulation was then performed to determine the relationship between the independent and dependent variables. Data analysis using the Chi-Square test revealed the *p*-value used to determine the significance of the relationship between variables, with $\alpha=0.05$ (Nursalam, 2016, 2017).

RESULT

Table 1 shows that most respondents are 15 years old (60.5%) and a small number are 13 years old (5.3%). In addition, 26.3% of respondents are 14 years old, and 7.9% are 16 years old.

Table 1. Respondent characteristics by age group

Respondent's age	Frequency	Percentage (%)
13 years old	2	5,3
14 years old	10	26,3
15 years old	23	60,5
16 years old	3	7,9
Total	38	100

Most respondents (63.1%) had an ideal age at menarche (12-13 years), a small number (21%) had a younger age at menarche (less than 11 years old), and a small number (15.8%) were older (more than 13 years old). In addition, most had regular menstrual cycles (32 people, 84.2%), and a small proportion had irregular cycles (6 people, 15.8%) (Table 2).

Table 2. Respondent characteristics based on age at menarche

Characteristics	Frequency	Percentage (%)
Age at Menarche		
Younger (< 11 years old)	8	21,1
Ideal (12-13 years old)	24	63,1
Older (> 13 years old)	6	15,8
Menstrual Cycle Regularity		
Regular	32	84.2
Irregular	6	15.8
Total	38	100

Respondents with an ideal age at menarche (12-13 years) had regular menstrual cycles, with 21 respondents (55.2%). A small number of respondents with an older age of menarche (more than 13 years) had irregular menstrual cycles, with 1 respondent (2.6%). Furthermore, the results of the Chi-Square test showed a p -value of 0.005 ($p < 0.05$). Therefore, it can be concluded that H_0 is rejected, indicating a significant relationship between age at menarche and menstrual cycle regularity. Thus, age at menarche was correlated with menstrual cycle regularity (Table 3).

Table 3. Crosstabulation of age at menarche with menstrual cycle regularity and statistical analysis

Age at Menarche	Menstrual cycle regularity				Total		Chi-Square test
	Regular		Irregular				
	f	%	f	%	f	%	
Younger (< 11 years old)	6	15.8	2	5.3	8	21.1	<i>p</i> =0.005
Ideal (12-13 years old)	21	55.2	3	7.9	24	63.1	
Older (> 13 years old)	5	13.2	1	2.6	6	15.8	
Total	32	84.2	6	15.8	38	100	

DISCUSSION

Of 38 respondents, 24 had an ideal age of menarche of 12-13 years old (Table 2). The ideal age of menarche can vary depending on factors such as genetics, environment, and lifestyle. A prior study found significant relationships between macronutrient intake, physical activity, and nutritional status to age at menarche in adolescent girls aged 9-15 years. Age of Menarche can influence the menstrual cycle in adolescent girls, as hormonal changes at menarche can affect its regularity (Hartati, Farapti, and Isaura, 2022). However, in general, the age of menarche considered normal is between 11 and 15 years old. Given the varied age of menarche, adolescent girls must have sufficient knowledge and preparation for it. In addition, most respondents (84.2%) had regular menstrual cycles (Table 2). A regular menstrual cycle is crucial for women's reproductive health. A regular menstrual cycle indicates good hormonal balance in the body (Patricio and Sergio, 2019). A regular menstrual cycle can help women understand when they are most fertile, allowing them to plan their pregnancies better (Fehring, 2002). Irregular menstrual cycles can increase health risks, such as polycystic ovary syndrome (PCOS), endometriosis, and endometrial cancer. PCOS is a hormonal condition that can cause irregular menstrual cycles and increase the risk of infertility (Stener-Victorin *et al.*, 2024). A regular menstrual cycle is defined as a menstrual period with a

relatively stable interval between cycles, with variation of only about 3 days, within the individual's average cycle for at least 3 consecutive cycles. Irregular menstrual cycles often occur in adolescents due to the immaturity of the hormonal system. During the early years after menarche (first menstruation), the hypothalamic-pituitary-ovarian (HPO) axis is not yet fully functional, so many adolescents experience irregular menstrual cycles, including the possibility of anovulation (when the ovaries do not release an egg). Most adolescents have menstrual cycles within the normal range, which is between 21 and 45 days. However, some adolescents may experience shorter cycles (less than 20 days) or longer (more than 45 days). This irregularity usually improves over time as the hormonal system matures. Menstrual cycles can vary greatly from person to person, and factors such as stress, weight changes, or certain medical conditions can also affect their regularity. Individuals with irregular menstrual cycles should consult a doctor or healthcare professional (Gultom, Fitriangga, and Ilmiawan, 2021).

Most respondents (55.2%) who experienced menarche at the ideal age (12-13 years) had regular menstrual cycles. A Chi-Square Test also showed $p=0.005$ ($p<0.05$), indicating a significant relationship between age at menarche and menstrual cycle regularity. Thus, age at menarche was correlated with menstrual cycle regularity (Table 3). This study aligns with a prior study that found a significant relationship between age at menarche and menstrual cycle length in adolescent girls. In addition, it showed that menstrual cycles in adolescent girls were often irregular, especially in the first few years after menarche. It is due to the hormonal system's immaturity (Prastiwi, 2024).

Estrogen plays a crucial role in regulating the menstrual cycle, and changes in estrogen levels can affect it. Progesterone also plays a crucial role in regulating the menstrual cycle (Indra *et al.*, 2025). Adolescent girls' knowledge and attitudes about menarche and the menstrual cycle can influence their preparedness for menarche and menstrual cycle management (Utami, 2022). The relationship between age at menarche and menstrual cycle regularity is intriguing and important to understand. The ideal age at menarche (around 12-13 years) appears to have a positive impact on menstrual cycle regularity, as this research finding demonstrates. A study found that an earlier age of menarche was associated with an increased risk of menstrual cycle disorders. The study also found that an ideal age of menarche was associated with more regular menstrual cycles (Mishra, Cooper, and Kuh, 2010). Factors such as stress, nutritional status, and physical activity can influence the relationship between menarche and menstrual cycles in adolescent girls (Indra *et al.*, 2025). Each individual has unique characteristics and experiences, so the relationship between age of menarche and menstrual cycle regularity can vary depending on hormonal, genetic, and environmental factors.

CONCLUSION

Age at menarche correlates with menstrual cycle regularity in adolescent girls. It indicates that the ideal age of menarche tends to have a positive effect on the menstrual cycle regularity.

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