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Relationship Between Menarche Age and Family History of Dysmenorrhea with the Incidence of Dysmenorrhea in Adolescent Girls at SMAN 2 Bengkulu City

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ABSTRACT

Background: dysmenorrhea or menstrual pain is a complaint that is often experienced by adolescent girls precisely in the lower abdomen. Dysmenorrhea has a major impact on a person's quality of life, namely physical, social, psychological and emotional disorders. One of the factors associated with dysmenorrhea in adolescent girls is the age of menarche and family history of dysmenorrhea.

Purpose: of this study was to determine the relationship between age of menarche and family history of menstruation with the incidence of dysmenorrhea in adolescent girls at SMAN 2 Bengkulu City.

Methods: used is quantitative, with a cross-sectional approach, the sampling technique uses purposive sampling technique, the population is class X and class XI students totaling 477 students, the sample is 110 students with the number of class X totaling 54 students and class XI totaling 56 students. Results showed that out of 110 students who experienced dysmenorrhea, 89 students experienced dysmenorrhea, menarche age (< 12 or > 15 years) as many as 34 students and 76 students had a family history of dysmenorrhea.

Results: showed that age of menarche (*p value* 0.596 > 0.05), length of menstruation (*p value* 0.003 < 0.05; OR = 0.199 < 1), family history of dysmenorrhea (*p value* 0.000 < 0.05; OR = 46.867 > 1).

Conclusion: this shows that the age of menarche does not have a significant relationship with the incidence of dysmenorrhea, but the history of dysmenorrhea in the family has a relationship with the incidence of dysmenorrhea in adolescent girls at SMAN 2 Bengkulu City.

Keywords: *Dysmenorrhea; Family History; Menarche Age*



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BACKGROUND

Dysmenorrhea is lower abdominal pain during menstruation, the pain or cramping spreads to the thighs or spine due to the production of prostaglandin substances. Dysmenorrhea pain often begins soon after the first menstrual period (menarche). And the pain decreases after menstruation, but in some women the pain usually continues to be experienced during the menstrual period. The cause of pain comes from the contracting and relaxing muscles of the uterus (Isir et al., 2023).

Dysmenorrhea has a major impact on a person's quality of life, namely physical, social, psychological and emotional disorders. The severity of symptoms and the impact of dysmenorrhea vary greatly between individuals, adolescents suffering from dysmenorrhea also experience comorbidities such as indigestion, headaches, fatigue, poor sleep, and depression/anxiety. Psychological disorders, such as depression/anxiety can affect one's social functioning and activities. Dysmenorrhea is also the most common cause of school absenteeism (Macgregor et al., 2023).

Adolescence is a period in which individuals experience changes in cognitive (knowledge), emotional (feelings), social (interaction), and moral (morals) aspects. Adolescence is also called a transitional period or a connecting period between childhood and adulthood (Suryana et al., 2022). Data from the World Health Organization (WHO) shows that the incidence of dysmenorrhea is quite high worldwide. The average incidence of dysmenorrhea in young women is between 16.8-81%. On average in European countries dysmenorrhea occurs in 45-97% of women, with the lowest prevalence in Bulgaria 8.8% and the highest reaching 94% in Finland. The prevalence of dysmenorrhea in Indonesia is 64.25% which occurs from 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea. Primary dysmenorrhea is experienced by 60-75% of adolescents, with three quarters of these adolescents experiencing mild to severe pain (WHO, 2021).

One of the factors associated with the incidence of dysmenorrhea in adolescent girls is the age of menarche and family history of dysmenorrhea. Menarche age Menarche is when menstruation comes for the first time that occurs in adolescent girls who are entering adulthood, and is a sign that women are able to become pregnant. The age of menarche that occurs at the age of <12 years is the age of menarche which is classified as early or fast, while the normal menarche is 12-15 years. Adolescents who experience premature menstruation are caused by internal factors due to congenital hormonal imbalances, this also correlates with external factors such as nutritional intake in the food consumed. The faster menstruation occurs causes continuous uterine contractions, causing the availability of blood to the uterus to stop temporarily so that dysmenorrhea occurs (Hamzah & B, 2021).



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Family history is a genetic factor where a person's condition will usually duplicate the traits of his parents. Family history is a risk factor for dysmenorrhea because anatomically and physiologically a person is generally the same as his descendants or parents (Wariyah et al., 2019). Women who have a family history of dysmenorrhea have a greater prevalence of dysmenorrhea. Some researchers predict that children of mothers who have unpleasant menstrual problems, this is a reason that can be linked to learned behavior from the mother. Children of mothers who have menstrual problems will experience unpleasant menstruation; this is a reason that can be attributed to learned behavior from the mother. The reason that family history is a risk factor for dysmenorrhea may be related to conditions such as endometriosis (Mouliza, 2020).

Based on data from the Department of Education and Culture of Bengkulu Province in 2022, the largest number of students in SMA Negeri 2 Kota Bengkulu with a total of 720 students (BPS Bengkulu, 2022). Based on the basic education data of SMAN 2 Kota Bengkulu, the number of students in class X is 234 people, class XI is 243 people, and class XII is 243 people. The initial survey conducted by the author of 10 respondents who experienced primary dysmenorrhea consisting of class X and XI, obtained from 10 respondents whose age of menarche was not normal as many as 3 people (30%) and had a history of dysmenorrhea in the family of 3 people (30%).

OBJECTIVE

This study aims to determine the factors associated with the incidence of dysmenorrhea in adolescent girls at SMAN 2 Bengkulu City.

METHODS

The research method used is quantitative, with a cross-sectional approach, the sampling technique uses purposive sampling technique, the population is class X and class XI students totaling 477 students, how to calculate the sample using the Slovin formula, the sample amounted to 110 students with a total of class X totaling 54 students and class XI totaling 56 students. Determination of research respondents by setting inclusion and exclusion criteria, inclusion criteria are healthy students, class X and XI students, students aged 14-17 years, willing to be respondents, and willing to fill out questionnaires. The research was conducted by collecting all respondents divided into 2 rooms, room 1 containing class X and room 2 containing class XI. This research was conducted at SMAN 2 Bengkulu City which is located at Jalan Mahoni No.14, RT.003/RW.06, Padang Jati, Kec. Ratu Samban, Bengkulu City. The results of the study will be carried out univariate analysis that is to see the description of the dependent and independent variables, bivariate analysis using the Chi-Square test, this test is used to determine the relationship between variables that have categorical data.



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The instrument used in this study was a questionnaire sheet. The questionnaire used has been tested for validity and reliability from previous research, namely Salamah's research (2021). The data analysis process is carried out after obtaining the answers from the collected questionnaires, then data processing is carried out using univariate analysis and bivariate analysis. Ethical clearance from the Poltekkes Kemenkes Bengkulu NO.KEPK.K/028/01/2022

RESULTS

Table 1. Cross Tabulation Between the Relationship between Age of Menarche and History of Dysmenorrhea in the Family with the Incidence of Dysmenorrhea at SMAN 2 Bengkulu City

Table 1. Cross Tabulation of Menarche Age and Family History of Dysmenorrhea with Dysmenorrhea Incidence at SMAN 2 Bengkulu

Variabel	Dysmenore				Amount		<i>p -value</i>	OR
	Yes		No		F	%		
	F	%	F	%				
Menarche age								
< 12 or > 15 years	26	23,6	8	7,3	34	30,9	0,596	0,671
12 - 15 years	63	57,3	13	11,8	76	69,1		
Family History								
Yes	74	67,3	2	1,8	76	69,1	*0,000	46,867
No	15	13,6	19	17,3	34	30,9		

Notes: * p value <0.005 means significant

Based on table 1, it can be seen that out of 110 adolescent girls at SMAN 2 Bengkulu City, in the age group of menarche < 12 or > 15 years who experienced dysmenorrhea as many as 26 people (23.6%), and there were 8 people (7.3%) who did not experience dysmenorrhea. The presence of a history of dysmenorrhea in the family was found to have the most dysmenorrhea, namely 74 people (67.3%) while there was no history of dysmenorrhea in the family experiencing dysmenorrhea as many as 15 people (13.6%).

DISCUSSION

Relationship between Menarche Age and the Incidence of Dysmenorrhea in Adolescent Girls at SMAN 2 Bengkulu City

The results showed that a small proportion of adolescent girls who experienced dysmenorrhea with menarche age < 12 years or > 15 years were 26 students (23.6%) and most of the adolescent girls who experienced dysmenorrhea with menarche age 12 - 15



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years were 63 students (57.3%). The results of statistical tests $p\text{-value} = 0.596 > 0.05$ can be concluded that there is no relationship between menarche age and the incidence of dysmenorrhea in adolescent girls at SMAN 2 Bengkulu City. This is because in this study it was found that respondents with risky and non-risky menarche age all almost experienced complaints of dysmenorrhea. The results also showed that out of 63 female students with menarche age (12 - 15 years), 57.3% experienced dysmenorrhea. This happens because several factors can influence such as the length of menstruation is more than normal, there is a history of dysmenorrhea in the family, stress, lack of exercise, consuming coffee and not paying attention to healthy nutritional intake can increase the risk of dysmenorrhea.

Menarche at an earlier age causes the reproductive organs to not function optimally and are not ready to experience changes so that pain occurs during menstruation. The reproductive organs must function properly, but if menarche occurs at an earlier age than normal where the reproductive organs are not ready to undergo changes and there is still a narrowing of the cervix, it causes dysmenorrhea (Indarna, 2021).

The results of previous research conducted by Fatmawati & Aliyah, (2020) analyzing the relationship between menarche and the incidence of dysmenorrhea from 40 female students who experienced dysmenorrhea, there were 18 female students (45%) included in early menarche (< 12 years), while from female students who did not experience dysmenorrhea there were (5%) who included early menarche (< 12 years). Statistical test results $p\text{-value} = 0.165 > 0.05$ means that there is no significant relationship between menarche and the incidence of dysmenorrhea. The results of the study found that the age of menarche was not associated with dysmenorrhea because the age of menarche was not a trigger for pain but the length of following the ovulation cycle. In the first years after menarche, ovulation has not occurred, because prostaglandins that trigger pain are produced more during ovulation, menstrual pain tends to increase several years after menarche rather than directly at menarche.

Relationship between Family History of Dysmenorrhea and the Incidence of Dysmenorrhea in Adolescent Girls at SMAN 2 Bengkulu City

The results of this study showed that out of 74 female students who experienced dysmenorrhea with a history of dysmenorrhea in the family experienced dysmenorrhea (67.3%). The results of statistical tests $p\text{-value} = 0.000 < 0.05$ can be concluded that there is a relationship between family history of dysmenorrhea with the incidence of dysmenorrhea in adolescent girls at SMAN 2 Bengkulu City with an OR value = 46.867 > 1 means that adolescent girls who have a family history of dysmenorrhea are 46.867 times more likely to experience dysmenorrhea when compared to adolescent girls who do not have a family history of dysmenorrhea. This is because specific genetic



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polymorphisms of many SNPs in genes such as MIF, TNF- α , ESR1, CYP2D6, GSTM1, and NGF play a role in inflammation, prostaglandin regulation, uterine nerve sensitivity, and hormone/drug metabolism. These variations are inherited from parents, so girls with mothers or sisters who have dysmenorrhea are more likely to have it too.

The history of dysmenorrhea in the family has more potential for dysmenorrhea because it is related to genetic factors that pass on traits to offspring and siblings. In addition to these factors, Wariyah et al., (2019), states family history is a risk factor for dysmenorrhea because anatomically and physiologically a person is generally the same as his descendants or parents. Physiologically, metabolic genes affect pharmacodynamics and toxicity, the mechanism of changes in estrogen metabolism and inflammatory substances causes the accumulation of pain mediators or minimizes the elimination of prostaglandins, so that the level of pain increases.

The results of this study also showed that of the 15 adolescent girls with no family history of dysmenorrhea, a small proportion (13.6%) experienced dysmenorrhea. According to the researchers' assumptions, this occurs due to several factors that can increase the risk of dysmenorrhea, namely stress, early menarche, longer-than-normal menstrual periods, and unhealthy lifestyles.

The results of this study are in line with research conducted by Nurfadillah et al., (2021) the results of bivariate analysis using the chi-square test obtained a value of p -value = 0.000 and OR = 25.364 which indicates that there is a significant relationship between family history and the incidence of primary dysmenorrhea. This study is also in line with Sari et al., (2023) based on the chi-square test obtained p -value = 0.003 <0.05, this shows that there is a significant relationship between family history and the incidence of dysmenorrhea. Studies on factors affecting primary dysmenorrhea in schoolgirls state that family history of dysmenorrhea, early age at menarche, irregular menstrual cycles, drinking cold drinks, high caffeine intake, stress, and special diseases are risk factors (Liu et al., 2024).

Another study that is in line is research conducted by Hamzah & B, (2021) on factors related to the incidence of dysmenorrhea in female students of SMAN 1 Lolak with the results of statistical tests obtained a value of p -value = 0.039 <0.05 so that there is a relationship between family history and the incidence of dysmenorrhea. This study is in line with the research of Nurfadillah et al., (2021), the results of bivariate analysis using the chi-square test obtained a value of p -value = 0.000 and OR = 25.364 which indicates that there is a significant relationship between family history and the incidence of dysmenorrhea.

The limitation in this study is that it only uses one school so that it cannot be generalized to a wide population, suggestions for future researchers to be able to use a wider population and sample.



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CONCLUSION

From the research conducted at SMAN 2 Bengkulu City, it was found that there was no relationship between menarche age and the incidence of dysmenorrhea (p -value = $0.596 > 0.05$) and there was a relationship between family history of dysmenorrhea with the incidence of dysmenorrhea (p -value = $0.000 < 0.05$) with an OR value = $46.867 > 1$, meaning that adolescent girls who have a history of dysmenorrhea in the family are 46.867 times more likely to experience dysmenorrhea when compared to adolescent girls who do not have a family history of dysmenorrhea.

The results of this study are expected to provide scientific information and can add references, especially about dysmenorrhea and for the community, especially adolescent girls, can explore knowledge about what factors affect the incidence of dysmenorrhea. The results of this study recommend that schools can provide special toilets that maintain privacy, provide soap, clean water, and garbage disposal. Schools can include training on menstruation, stigma, and menstrual psychology in teacher training to improve knowledge, attitudes and support for female students.

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