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The Relations Between Anemia and Female Adolescent's Dysmenorrhea

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ABSTRACT

Dysmenorrhea described as painful cramps in the lower abdomen that occur during menstruation and the infection indications, pelvic disease moreover in the severe cases it caused fainted. The women who complained dysmenorrhea problems mostly are who experience menstruation at any age. That means there is no limits age and usually dysmenorrhea often occur with dizziness, cold sweating, even fainted. In some countries the dysmenorrhea problem happens quite high as happened in the United States found 60-91% while in Indonesia amounted to 64.25%. as many as 45-75% of female adolescent experienced dysmenorrhea with the chronic or severe pain that effected to their everyday activities The number of teenagers who experience dysmenorrhea is due to high cases of anemia, irregular exercise, and lack of knowledge of nutritional status. In the previous study there are 85% of female adolescent experience dysmenorrhea. The method of this study is a correlational method with cross sectional approach. The data collecting method examining Hb levels. The population and sample of this study was 40 female adolescent The result showed that the female adolescent who had dysmenorrhea with anemia was 26 (92.4%). From the calculation by Exact Fisher the correlation between anemia and dysmenorrhea cases among female adolescent $P < 0.05$ and $p = 0.003$, there was significant correlation between adolescent's dysmenorrhea. Based on the result of statistic analysis, it can be concluded that the anemia can be categorized as one of dysmenorrhea causes. Anemia is one of the constitutional factors that cause lack of endurance of the body to gainst.

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1. INTRODUCTION

Women has to go through a natural regular process namely menstruation. They experience it monthly, especially in the productive age. Usually, the menstrual cycle begins at the age of adolescents, i. e. 9-12. Menstruation has several cycles controlled by hormonal interactions (J Dobson, 2006). Hormone interactions will make the decay of the uterine wall removed through the vagina. During menstruation, women will feel tense and exruciating feelings. Many women in the productive age feel discomfort during menstruation, although menstruation comes regularly. The discomfort can be an emotional or pain disorder that often interferes with daily activities (N. Fajaryati, 2012).

Dysmenorrhea is often described as pain in lower abdominal that occurs before and during menstruation. Dysmenorrhea can be identified as a sign of infection or pelvic disease and may occur when it causes fainting in a more severe case. Teenagers often experience dysmenorrhea, which ranges in pain from mild to severe, starting from cramps in the middle of the womb to interfering with everyday activities, especially for adolescents with high physical activity at school. Dysmenorrhea problem can be experienced by women of any age. There is no age limit and dysmenorrhea is often

accompanied by aggravating condition. Almost all women experience dysmenorrhea with various levels, ranging from mild cramp to excruciating pain (Mardilah, 2014).

Primary dysmenorrhea is menstrual pain apparent without cause. It begins immediately after menarche and is not related to physical causes. Whereas, secondary dysmenorrhea is the result of various abnormal or pathological conditions such as in salpingitis, congenital uterine anomaly, endometritis, or congenital Müller duct disorder. Secondary dysmenorrhea is also called extrinsic dysmenorrhea which can occur in women who never experiences dysmenorrhea previously, either before or during menstruation (I. Novia, 2008).

Abdominal cramp pain occurs in primary dysmenorrhea and starts to occur in every woman within 2 hours before menstruation. It can occur for 24 to 36 hours. Cramp pain in dysmenorrhea is mainly felt in the lower abdomen and can spread to the back, as well as the inner surface of the thigh. In addition, dysmenorrhea can also be accompanied by nausea and vomiting, headache, diarrhea and irritability feeling (I. Novia, 2008). Dysmenorrhea usually occurs due to the excessive release of certain prostaglandin hormones from uterine endometrium cells that stimulate strong contractions of the myometrial smooth muscles and uterine blood vessels. As a result, it aggravates uterine hypoxia that normally occurs in menstruation. Consequently, severe pain arises (S. Prawiroharjo, 2012).

Many factors causing dysmenorrhea include endocrine, psychological state, constitutional state, allergy, cervical canal obstruction, endometriosis, adenomyosis and exercising. Besides, the high incidence of anemia in most young women may also lead to dysmenorrhea, exercise irregularities, and lack of knowledge about nutritional status. In addition, there are some conditions that can increase the risk of dysmenorrhea, including menarche at an earlier age, women who have never been pregnant and give birth, longer period of menstruation compared to normal one (7 days), and age (Mardilah, 2014).

During menstruation there is an estrogen/ progesterone hormone imbalance. The hormone is decreased, resulting in tissue damage through ischemia which leads to the release of phospholipids, arachidonic acid and calcium ions, as well as the production of prostaglandins and vasopressin leading to dysmenorrhea. As a result, blood, along with the oxygen, cannot reach certain parts of organs and causes ischemia. If an ample amount oxygen is brought in the red blood cells, the supply of oxygen to various organs will be achieved, thus reducing the risk of ischemia (Bobak, 2004).

Hemoglobin, which has the function of binding oxygen (O₂), is present in the red blood cells. The normal value of a woman's hemoglobin level is 12-16gr / dl and if one's hemoglobin level is less than 12 grams%, then she is anemic. Anemia can be divided into 3 types, i. e. mild anemia (hemoglobin level of 10 grams%), moderate anemia (hemoglobin level of 7-9 grams%) and hemoglobin anemia (hemoglobin level of less than 6 grams%). The incidence of dysmenorrhea occurring in some countries is quite high. In Indonesia, for example, the number of dysmenorrhea is 64.25%. As many as 45-75% of young women have dysmenorrhea with severe pain which results in temporary paralysis activity (Erlina, 2014). In the preliminary study conducted by researchers, 85% of adolescents experienced dysmenorrhea. Therefore, the researchers are interested to know the correlation between anemia and dysmenorrhea in young women.

2. RESEARCH METHOD

This research use analytical design with cross-sectional method. This study aims to find out the relationship between constitutional factors (anemia) with dysmenorrhea in young women. The population in this study was adolescent girls aged 18-20 with a sample of as many as 40 female teenagers. The sample in this study was obtained through simple random sampling.

The operational definition of independent variables, which was anemia, was done by measuring hemoglobin levels in non-anemic female adolescents (hemoglobin level of ≥ 120 gr/ dl) and anemic female adolescents (hemoglobin level <12 g/ dl). The hemoglobin level was measured with Hb Sahli method. The Hb level was then examined classified by criteria. Meanwhile, the data about the dependent variable (dysmenorrhea, the pain felt at the time of menstruation) was obtained through questionnaire. There were two criteria for analyzing dysmenorrhea case in this research: dysmenorrhea (experiencing pain during menstruation) and non-dysmenorrhea (never experiencing pain during menstruation). The dysmenorrhea data were collected by using questionnaires by distributing questionnaires to young women and then analyzing the answers after classifying those with dysmenorrhea and those without dysmenorrhea.

This study used closed questionnaires as the data collection instrument. On the other hand, the hemoglobin level was analyzed using Hb Sahli made by Harenz. The data used in this study were in the form of primary data that were obtain by distributing questionnaires about dysmenorrhea and examining hemoglobin levels of young women.

Sequentially, the data collected was processed manually before being analyzed. The data were analyzed using Chi Square test method and presented using frequency table and cross table. It had a confidence level of 95% ($\alpha = 0.05$) and was presented in cross tabulation with the following criterion of assessment: if $\chi^2 \text{ count} > \chi^2 \text{ table}$, then H_0 (null hypothesis) was rejected, meaning that there was a relationship between anemia and dysmenorrhea. If the expectation frequency table did not meet the requirement, where cells with expected frequency of < 5 were more than 20% of the total cells, the data would be calculated with Exact Fisher test.

3. RESULTS AND ANALYSIS

Data from 40 young women which had been collected was then processed and grouped with the following results:

3.1 Anemia in Young Women

Table 3.1. Anemia distribution among female adolescents

Anemia	Total	Percentage
Non-anemic	12	30 %
Anemic	28	70%
Total	40	100%

Table 3.1 shows that most of the adolescent girls experience anemia, with a total of 28 girls (70%).

3.2 Anemia Classification of Anemia Degrees on Young Women

Table 3.2. Distribution of classification of anemia degree in female adolescents

Classification of Anemia Degrees	Total	Percentage
Mild	13	46.5 %
Moderate	14	50 %
Severe	1	3.5 %
Total	28	100 %

Table 3.2 shows that half of girls are moderately anemic with a total of 14 girls (50%) and nearly half of the girls have mild anemia with a total of 13 (46.5%) and a small proportion of 1 adolescent has severe anemia (3.5%).

3.3 Description of Dysmenorrhea in Young Women

Table 3. Distribution of dysmenorrhea in young women

Dysmenorrhea Occurrence	Total	Percentage
Experiencing dysmenorrhea	35	87.5 %
Not experiencing dysmenorrhea	5	12.5 %
Total	40	100

Table 3.3 shows that almost all teenage girls experience dysmenorrhea with as many as 35 girls (87.5%)

3.4 Cross-tabulation of the Relationship between Anemia and Dysmenorrhea in Young Women

Anemia	Dysmenorrhea		Total	Fisher Exact test (1-sided)	
	Experiencing	Not experiencing			
	N	%	N	%	
Non-Anemic	8	66,7 %	4	33,3 %	12 (100%)
Anemic	26	92,8 %	2	7,2 %	28 (100%)
Total	35	87,5 %	5	12,5%	40 (100%)

From the data above, it can be concluded that almost all teenage girls experienced dysmenorrhea with a total number of 26 (92.8%), compared to female teenagers who were not anemic with a total number of 8 (66.7%). Meanwhile, the number of teenage girls who did not experience dysmenorrhea without anemia was twice as many as those with anemia with a total of 4 (33.3%), compared to those without anemia with a total number of 2 (7.2%).

The analysis on the relation of anemia and dysmenorrhea in adolescent female by using Exact Fisher test resulted in a P value of <0.05 whereas $P = 0.003$. Thus, H_0 is rejected which means that there is a relationship between anemia and dysmenorrhea in adolescent girls. Therefore, based on the results, it can be concluded that anemia is one of the factors that can lead to dysmenorrhea. This is in accordance with the existing theory that one of the factors causing decreased endurance in feeling pain is anemia. As a result, at the time of menstruation, it may cause dysmenorrhea. Anemia is a condition of insufficient blood hemoglobin level in the body. The function of hemoglobin is to bind oxygen which is then circulated throughout the body. If the hemoglobin level in the blood is less than the oxygen level, the oxygen cannot be channeled to the blood vessels in the reproductive organs which then will undergo vasoconstriction resulting in pain. Conversely, if the hemoglobin level that binds and carries oxygen in red blood cells is high, the tissue needs will be met. In addition, the exclusion of phospholipids, arachidonic acids, calcium, prostaglandin ions and vasopressin are caused by ischemia, where prostaglandins and vasopressin can cause spiral artery vasoconstriction and can lead to upper endometrial ischemia that can release many phospholipids, leading to more prostaglandin expenditure that eventually will result in dysmenorrhea.

Every month, young women experience menstruation. As a result, every woman needs iron which iron can be one of the things that can cause dysmenorrhea. Iron deficiency or the so-called anemia can affect daily activities and can lead to decreased concentration of learning. Anemic patients have greater potential to experience decreased memory and low problem solving skills which will result in bad learning achievement. The results of this study are in accordance with research conducted by Endang Wahyuningsih on "The relationship of hemoglobin levels with the incidence of dysmenorrhea in high school students of SMA Negeri 1 Wonosari Klaten" which showed that anemia was one of the factors causing dysmenorrhea (Wahyuningsih, 2015).

The results of the study showed that adolescents who were not anemic have mild or moderate dysmenorrhea. Meanwhile, those who had anemia had different degrees of mild, moderate and severe of dysmenorrhea. This is possible because there are still many factors that cause dysmenorrhea other than anemia. Among those are psychological factors, sports factors, nutritional status factors, and endocrine factors. The possible psychological factors are emotional instability and unpreparedness of development and growth that occurs to her. In terms of sports, moderate exercise is recommended to reduce dysmenorrhea as it is one of the relaxation techniques to reduce pain. This is because at the time of exercise, the body will produce endorphin hormone which is a natural sedative produced by the brain so it can cause a sense of comfort.

Beside these factors, there is also pain factor that can affect dysmenorrhea. Pain is a form of sensory discomfort that is subjective with an unpleasant emotional experience and has varied level depending on one's pain threshold. Pain is also a mixed physical, emotions and behavior reactions of a person associated with actual tissue damage. Tolerance and pain responses differ from one person to another.

Based on the results of the study, half of the girls or as many as 14 people from 40 young women have moderate anemia. The level of hemoglobin in girls is influenced by many factors, including blood loss from menstruation, chronic illness, the lack of iron in the food consumed, the imbalance between nutritional intake, their activities, and the changing lifestyle. Lack of hemoglobin prevents body's metabolism and nerve cells from working optimally, disrupting the dopamine receptor system which causes a decreasing pattern of nerve impulse impingement.

4. CONCLUSION

Based on the analysis of Exact Fisher test data, it can be concluded that there is a correlation between anemia and dysmenorrhea in young women so that anemia is one factor that causes dysmenorrhea. There are several other factors that cause dysmenorrhea. Thus, further research can investigate these factors.

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