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Factors Affecting Dymenorrhea in Adolescents

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ABSTRACT

Dysmenorrhea is one of the menstrual disorders that can cause physical discomfort for a woman, especially in adolescence. This literature review aims to analyze the factors that influence dysmenorrhea in adolescents. The literature search was conducted on five electronic databases (Garuda, Google Scholar, PubMed, ProQuest, and Science Direct) with a cross-sectional and case-control research design published within the last five years, and published in Indonesian and English. The search results of this review found 17 articles that met the inclusion criteria. Physical activity factor (n=11), fast food consumption factor (n=6), age of menarche factor (n=6), and nutritional status factor (n=4). The results of this review state that physical activity factors, consuming fast food, age of menarche, and nutritional status are factors that influence dysmenorrhea in adolescents.

Keyword: dysmenorrhea; factors; adolescents

INTRODUCTION

Adolescence is one of the stages in human life which is often referred to as puberty, which is a period of transition from children to adulthood. Adolescents will experience physical, emotional and social changes as a feature of puberty . This period is a period of individual life where there is psychological exploration to find self-identity in adolescents. Where the activities of teenagers should not be limited to exploring many things as a form of youth productivity itself. However, at this stage, young women will experience a condition called menstruation. Many menstrual disorders can cause physical discomfort for a woman that can interfere with their activities every month. Sal ah this one menstrual disorder is dysmenorrhea. (1)

According to WHO (World Health Organization), the incidence of dysmenorrhea in Indonesia is 55% among productive age, of which 15% complain of limited activity due to dysmenorrhea. (2) According to the Ministry of Health of the Republic of Indonesia in 2016, the prevalence of adolescent girls in Indonesia who experienced menstrual pain was around 58.4%. From the results of research in Indonesia, the incidence of dysmenorrhea is 64.25% consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea. (3)

The high incidence of dysmenorrhea in women has received less attention from themselves and the community, because women only accept the pain as a natural thing. Whereas dysmenorrhea can cause a person to become weak, weak, pale, lack of concentration, so that it has a negative impact on daily activities and is even one of the most common reasons for women not doing activities (school, work, etc.). The pain of dysmenorrhea has a negative impact on the patient's quality of life as well as the economic status of the patient and his family, disrupted daily activities, missed subjects or lectures, endometriosis, and even psychological disorders. (4)

Many factors can trigger dysmenorrhea such as physical activity, diet (often eating fast food), age at menarche, nutritional status, and others. According to research of Purwati et al. (5), there is a significant relationship between physical activity, stress, and consuming fast food with the incidence of dysmenorrhea in adolescent girls at the Nurul Huda Islamic Boarding School Bantarcaringin Ciharalang Ciamis in 2019. Adolescent girls who experience dysmenorrhea tend to have low levels of physical activity, high stress levels and frequent consumption of *fast food* than those who do not experience dysmenorrhea. Research conducted by

Syafriani [6] found that there was a significant relationship between nutritional status and age of menarche in adolescent girls at SMAN 2 Bangkinang Kota.

WHO in 2018 suggests that globally, women (84%) percentage of physical inactivity is higher than men (78%). This higher percentage of women is due to a lack of physical activity in their spare time and the application of a lazy lifestyle to move, both at home and at work. Women in Indonesia have a sedentary lifestyle or have low physical activity intensity. Lack of physical activity will reduce the distribution of oxygen in the systemic circulation, thereby increasing a person's perception of pain, including dysmenorrhea. Physically active women reported less dysmenorrhea and exercised at least once a week, reducing lower abdominal pain. [7]

METHODS

The protocol and evaluation of the literature review will use the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) and the JBI checklist to determine the selection of studies that have been found previously and adapted to the objectives of the literature review. The literature search was conducted on five electronic databases (Garuda, Google Scholar, PubMed, ProQuest, and Science Direct) with a cross-sectional and case-control research design published within the last five years, and published in Indonesian and English. The search results of this review found 17 articles that met the inclusion criteria. Physical activity factor (n=11), fast food consumption factor (n=6), age of menarche factor (n=6), and nutritional status factor (n=4).

RESULTS

This section describes the results and analysis of the e-review literature using databases with high, medium, and low quality criteria, namely PubMed, Science Direct, ProQuest, Garuda Journal , Google Scholar , as well as general characteristics in selecting literature review studies. The following are the results and analysis of the articles from the review:

Table 1. List of articles and search results

No	Title, author	Methods	Results	Database
	Factors Affecting the Occurrence of Dysmenorrhea in Young Women at SMAK Fides Quaerens Intellectum Kefamenanu in 2017 Jenni Lilis, S. Siagian Journal of Health Innovation, 2019, Volume 1, Number 1 [8]	Design: cross-sectional Sample: 32 people Variables: Independent: stress, heredity of cancer/tumor related to uterus, body mass index, and age of menarche Dependent: dysmenorrhea Instruments: questionnaire, digital weighing scale, microtoise Analysis: Chi-square and Spearman rank	There is a relationship between age at menarche (p-value = 0.02) and the occurrence of dysmenorrhea, and there is no relationship between heredity with cancer/tumor associated with the uterus (p-value = 0.078), Body Mass Index (p-value = 0.871) , and stress (p-value = 0.217) with the occurrence of dysmenorrhea. (α=0.05)	Garuda
	Relationship between Nutritional Status and Age of Menarche with the Incidence of Dysmenorrhea in Adolescent Girls at SMAN 2 Bangkinang City 2020 Syafriani Journal of Ners, 2021, Volume 5, Number 1 [6]	Design: sross-sectional Sample: 80 people Variables: Independent: nutritional status and age at menarche Dependent: dysmenorrhea Instrument: questionnaire Analysis: univariate and bivariate	There is a significant relationship between nutritional status (p-value = 0.01) and age at menarche (p-value = 0.02) with the incidence of dysmenorrhea. (α=0.05)	Google Scholar
	Lifestyle Factors Related to Dysmenorrhea among High School Students	Design: cross-sectional Sample: 1451 students (1451 students) Variables:	Based on research results, significant and direct relationship were observed between lifestyle (diet,	Google Scholar

No	Title, author	Methods	Results	Database
	Fatemeh Moghaddam Tabrizi, Samira Barjasteh, Elham Rezaei Journal Of Client-Centered Nursing Care, 2018, Volume 4, Number 1 (9)	Independent: lifestyle factors (diet, exercise, sleep status) Dependent: dysmenorrhea Instrument: questionnaire and Visual Analogue Scale (VAS) (Questionnaire and visual analog scale) Analysis: ANOVA, Chi-square, Pearson's contingency coefficient, Gamma	exercise, and sleep status) (p<0.001) with dysmenorrhea (Based on the results of the study, there was a significant relationship between lifestyle (diet, exercise, and sleep status) (p<0.001) and the incidence of dysmenorrhea.)	
	Modeling Risk Factors of Dysmenorrhea In Adolescent Efri Tri Ardianto, Alinea Dwi Elisanti Journal of Global Research in Public Health, 2019, Volume 4, Number 1 (10)	Design: cross-sectional Sample: 51 adolescent girls Variables: Independent: body mass index, anemia, physical activity, knowledge Dependent: dysmenorrhea Instruments: digital hemoglobin measuring devices, digital and microtoise scales, and questionnaire (digital hemoglobin measuring device, scale and microtoise, and questionnaire) Analysis: bivariat, multivariate, logistic regression (logistic regression test)	Based on research results, kn owledge (p-value=0.14), anemia (p-value=0.001), and physical activity (p-value=0.002) has a significant effect on the incidence of dysmenorrhea. But Body Mass Indext (p-value=0.311) did not affect on the incidence of dysmenorrhea. 5 =0.05) Based on the results of the study, knowledge (p-value = 0.14), anemia (p-value = 0.001), and physical activity (p-value = 0.002) had a significant influence on the incidence of dysmenorrhea. But body mass index (p -value = 0.311) has no effect on the incidence of dysmenorrhea). (α=0.05)	PubMed
	Dysmenorrhea among High-School Students and Its Associated Factors in Kuwait Sharefah Al-Matouq, Hessah Al-Mutairi, Ohood Al-Mutairi, Fatima Abdulaziz, Dana Al-Basri, Mona Al-Enzi, Abdullah Al-Taiar BMC Pediatrics, 2019 (11)	Design: cross-sectional Sample: 763 students Variables: Independent: age of menarche, regularity and flow of the menstrual period, drinking coffee Dependent: dysmenorrhea Instruments: questionnaire, visual analogue scale (VAS) Analysis: univariate, Chi-square, multiple logistic regression	Based on research result, there were significantly associated between Age of menarche (p-value=0.005), regularity and flow of the menstrual period (p-value=0.025), drinking coffee (p-value=0.004) with dysmenorrhea. (α=0.05) Based on the results of the study, there is a relationship between age at menarche (p-value=0.005), regularity of menstrual periods and menstrual flow (p-value=0.025), frequency of drinking coffee (p-value=0.004) and the incidence of dysmenorrhea.) (α=0.05)	ProQuest
	Factors Related to the Incidence of Dysmenorrhea in Young Women at MTS Negeri 3 Medan in 2019	Design: cross-sectional Sample: 57 people Variables: Independent: age of menarche, duration of menstruation, and family history of dysmenorrhea Dependent: dysmenorrhea	There is a relationship between family history (p-value = 0.009) with dysmenorrhea, age at menarche (p-value = 0.045), and duration of menstruation	Google Scholar

No	Title, author	Methods	Results	Database
	Nurul Mouliza Scientific Journal of Batanghari University Jambi, 2020, Volume 20, Number 2 (12)	Instrument: questionnaire Analysis: univariate, Chi-square	(p-value = 0.033) with the incidence of dysmenorrhea. (α=0.05)	
	Relationship between Sports Activities and Nutritional Intake with the Incidence of Dysmenorrhea in Seventh Grade Adolescent Girls at SMP Negeri 1 Rajapolah, Tasikmalaya Regency, West Java Province in 2017 Dita Cintiani, Ismail Sangadji Journal of Health Sciences, 2020, Volume 10, Number 2 (13)	Design: cross-sectional Sample: 90 people Variables: Independent: sports activities and nutritional intake Dependent: dysmenorrhea Instrument: questionnaire Analysis: univariate, bivariate (Chi-square test), Odds ratio	There is a significant relationship between sports activities (p-value = 0.000) and nutritional intake (p-value = 0.026) with the incidence of dysmenorrhea. (α=0.05)	Google Scholar
	Prevalence and Predictors of Dysmenorrhea among a Population of Adolescent's Schoolgirls (Morocco) Siham Lghoul, Mohamed Loukid, Mohamed Kamal Hilali Saudi Journal of Biological Sciences, 2020 (14)	Design: cross-sectional Sample: 364 post-menarchal girls Variables: Independent: gynecological age Dependent: dysmenorrhea Instruments: anonymous questionnaire, pictorial blood loss assessment chart (PBAC) quetionnaire, categorical rating scale Analysis: univariate (Chi-square test), Pearson correlation, logistic regression	Based on research results, there was a significant association exists between the gynecological age and girls experiencing dysmenorrhea. (p<0.001) Based on the results of the study, there was a significant relationship between gynecological age and girls experiencing dysmenorrhea. (p<0.001)	Science Direct
	The Effect of Physical Activity Patterns and Nutritional Status on the Incidence of Dysmenorrhea in Adolescent Girls Sri Mulyati, Ni Nyoman Sasnitiari Journal of Health Research Poltekkes Kemenkes Bandung, 2019, Volume 11, Number 1 (15)	Design: case-control Sample: 130 people Variables: Independent: pattern of physical activity and nutritional status Dependent: dysmenorrhea Instruments: interview guide, scales, microtoise, hb measuring instrument Analysis: Chi-square test, Odds ratio	Based on the results of the study showed a significant effect between activity patterns (p-value = 0.031) and nutritional status (p-value = 0.015) on the incidence of dysmenorrhea. (α=0.05)	Google Scholar
	Consumption of Fast Food as a Dominant Factor for the Occurrence of Dysmenorrhea in Adolescents	Design: cross sectional Sample: 108 students Variables: Independent: exercise habits, stress levels, consumption of fast food Dependent: dysmenorrhea	There is a significant relationship between exercise habits, stress level (p-value = 0.070), and consumption of fast food (p-value = 0.001) with the incidence of dysmenorrhea.	Google Scholar

No	Title, author	Methods	Results	Database
	Ida Kusumawati, Umi Aniroh Journal of Holistics and Health Sciences, 2020, Volume 2, Number 2 (16)	Instrument : questionnaire Analysis: Chi-square and Logistics regression	(α=0.05)	
	The Relationship between Age at First Menstruation (Menarche) and Family History with the Incidence of Dysmenorrhea in Adolescent Girls Class VIII at SMPN 1 Gadingrejo, Gadingrejo District, Kab. 2016 Pringsewu Linda Puspita, Psiari Kesuma Wardani Journal of Research and Development of Science and Technology Innovation in Pringsewu Regency, 2017, Volume 2, Number 1 (17)	Design: cross-sectional Sample: 62 students Variables: Independent: age of menarche and family history of dysmenorrhea Dependent: dysmenorrhea Instrument: questionnaire Analysis: univariate, Chi-square test	There was a significant relationship between age of menarche (p-value = 0.003) and family history (p-value = 0.001) with the incidence of dysmenorrhea. (α=0.05)	Google Scholar
	Anemia and Light Physical Activity Affect Risk Factors for Dysmenorrhea in Adolescent Girls Silvia Etika Sari, Martha Irene Kartasurya, Dina Rahayuning Pangestuti Journal of Public Health, 2018, Volume 6, Number 5 (18)	Design: cross sectional Sample: 80 young women Variables: Independent: anemia, calcium intake, magnesium intake, and physical activity Dependent: dysmenorrhea Instruments: questionnaires and interviews, numeric rating scale (NRS), hemoglobin measuring instrument, physical activity level (PAL), food frequency questionnaire (FFQ), nutrisurvey Analysis: Chi-square	There is a relationship between calcium intake (p-value = 0.0001), magnesium intake (p-value = 0.039), hemoglobin levels (p-value = 0.0001), and physical activity (p-value = 0.019) with the incidence of dysmenorrhea. (α=0.05)	Garuda Journal
	Factors Associated with Dysmenorrhea in Adolescents at SMA Pemuda Banjaran Bandung Sri Hayati, Selpy Agustin, Maidartati BSI Journal of Nursing, 2020, Volume 8, Number 1 (19)	Design: cross sectional Sample: 117 students Variables: Independent: nutritional status, menstrual pattern, family history of dysmenorrhea, history of exercise habits Dependent: primary dysmenorrhea Instrument: questionnaire Analysis: univariate, Chi-square test, Spearmant rank	There was a significant relationship between nutritional status (p-value = 0.01), family history of dysmenorrhea (p-value = 0.03), and history of exercise habits (p-value = 0.03) with the incidence of dysmenorrhea; and there was no significant relationship between menstrual patterns (p-value = 0.810) with the incidence of dysmenorrhea in adolescent girls. (α=0.05)	Google Scholar

No	Title, author	Methods	Results	Database
	Analysis of Causing Factors Primary Dysmenorrhea Student STIKES Jombang Regency Anis Satus Syarifah, Siti Indah Nurhavivah Journal of Nursing, 2017, Volume 10, Number 2 (20)	Design: cross sectional Sample: 104 female students Variables: Independent: sports habits , age at menarche, duration of menstruation, other injuries/diseases, and age Dependent: primary dysmenorrhea Instruments: exercise index questionnaire, menstrual symptoms questionnaire (MSQ) Analysis: Logistics regression	There is a relationship between exercise habits (p-value = 0.000) and other injuries/ diseases (p-value = 0.02) with the incidence of primary dysmenorrhea, and there is no relationship between age at menarche (p-value = 0.268), duration of menstruation (p - value =1,000), and age (p-value =0.769) with the incidence of primary dysmenorrhea. (α=0.05)	Google Scholar
	Lifestyle Relationship with Primary Dysmenorrhea in Young Adult Women Nada Ismalia, TA Larasati, Efrida Warganegara J Agromedicine, 2019, Volume 6, Number 1 (21)	Design: cross sectional Sample: 129 female students Variables: Independent: lifestyle (level of physical activity, stress level, frequency of fast food consumption, and passive smoking) Dependent: primary dysmenorrhea Instrument: questionnaire numeric rating scale (NRS), the global physical activity questionnaire, a questionnaire kessler psychological distress scale, food frequency questionnaire (FFQ), questionnaires passive smokers Analysis: univariate, Chi-square	There is a significant relationship between the level of physical activity (p-value = 0.012), the frequency of fast food consumption (p-value = 0.048) and the incidence of primary dysmenorrhea. And there is no significant relationship between stress levels (p-value = 0.347) and passive smoking (p-value = 0.077) with the incidence of primary dysmenorrhea. (α=0.05)	Google Scholar
	Lifestyle and the incidence of dysmenorrhea in young women at the Nurul Huda Islamic Boarding School Bantarcaringin Cihalarang, Ciamis Regency Ayu Endang Purwati, Yanti Srinayanti, Rosmiati, Lusi Siti Arofatul Badriah Shoots of Health Research, 2020, Volume 10, Number 1 (5)	Design: cross sectional Sample : 48 people Variables: Independent: lifestyle (physical activity, stress level, and consumption of fast food) Dependent: dysmenorrhea Instrument: questionnaire Analysis: Chi-square	There is a relationship between lifestyle (physical activity (p-value = 0.001), stress (p-value = 0.032), and consumption of fast food (p-value = 0.014) with the incidence of dysmenorrhea in adolescent girls. (α=0.05)	Google Scholar
	The Relationship between Eating Fast Food and the Incidence of Dysmenorrhea in Adolescent Girls at SMPN 1 Ponorogo Ayu Nur Indahwati, Elmie Muftiana, Dian Laila Purwaningroom Indonesian Journal for Health Sciences, 2017, Volume 1, Number 2 (22)	Design: case-control Sample: 63 students Variables: Independent: consuming fast food Dependent: dysmenorrhea Instruments: menstrual symptoms questionnaire (MSQ), food frequency questionnaire (FFQ) Analysis: Chi-square	There is a significant relationship between consuming fast food (p-value = 0.025) with the incidence of dysmenorrhea. (α=0.05)	Google Scholar

Based on table 1, there are articles that discuss the factors that influence dysmenorrhea in adolescents that have been studied, namely physical activity, consuming fast food, age at menarche, nutritional status, menstrual pattern, family history of dysmenorrhea, anemia, stress level, body mass index, status sleep, knowledge, gynecological age, secondhand smoke, and heredity of other diseases related to the uterus. While overall, most of the research results stated that physical activity, consuming fast food, age at menarche, and nutritional status were the most influencing factors for dysmenorrhea in adolescents.

DISCUSSION

Based on the results of a review of 17 articles, there were articles that discussed factors of physical activity in 11 articles, factors in consuming fast food in 6 articles, age at menarche in 6 articles, and nutritional status in 4 articles. In this case the researcher will discuss 4 factors from several articles that have been reviewed.

Physical Activity that Affect Dysmenorrhea in Adolescents

Physical activity is any body movement that increases energy expenditure and energy burning. Physical activity is categorized as sufficient if a person does physical exercise or sports for 30 minutes every day or at least 3-5 days a week. Physical activity is classified into 3, namely light physical activity, moderate physical activity, and heavy physical activity. Teenagers need physical activity because it benefits them for the growth process and for a long time during their lives. One of the benefits is that it improves blood circulation. To get maximum results from physical activity, it is recommended to do it with the BBTT principle, namely good, true, measurable, and regular. Good is doing physical activity according to his ability, right is activity that is carried out gradually starting from warming up and ending with cooling or stretching, measurable is physical activity that is measured in intensity and time, and the last is physical activity that is carried out regularly as much as 3- 5 times a week. [23]

Complaints of dysmenorrhea will increase, along with a lack of physical activity. The impact on the uterus is reduced blood flow and oxygen circulation, causing pain. Menstrual pain occurs due to increased uterine muscle contracti innervated by the sympathetic nervous system. S tres increases sympathetic activity will trigger an increase in the degree of dysmenorrhoea by increasing the intensity of uterine contractions. Regular physical activity, such as exercise, will reduce stress by decreasing sympathetic activity, which in turn reduces the intensity of dysmenorrhea and other symptoms. Another mechanism is that physical activity will trigger the secretion of endorphins, which are protein molecules produced by beta-lipotropin found in the pituitary gland, which will increase the pain threshold, thereby reducing sensitivity to pain. In accordance with the endorphin-enkephalin theory regarding understanding the mechanism of pain, namely the discovery of opiate receptors in the synaptic membrane and the dorsal horn of the spinal cord. There are three main groups of endogenous opioid peptides, namely enkephalins, beta-endorphins, and dynorphins. Beta-endorphins released during exercise are very effective in reducing pain. In addition to inducing the release of endogenous opiates such as beta endorphins, physical activity will also cause vasodilation, suppression of PG, and reduce stress and mood changes. Doing physical exercise causes receptors in the hypothalamus and limbic system that function to regulate emotions to capture the hormone -endorphin that can be produced after someone does physical activity. An increase in -endorphins has been shown to be closely related to reducing pain, improving memory, improving appetite, sexual ability, blood pressure and breathing. [7] Exercise is a non-pharmacological management that is safer to use because it uses physiological processes. Regular physical activity can increase the number and size of blood vessels that distribute blood throughout the body, including the reproductive organs, so that blood flow becomes smoother and this can reduce the symptoms of dysmenorrhea. An increase in the volume of blood flowing throughout the body, including the reproductive organs, will launch the supply of oxygen to blood vessels that are experiencing vasoconstriction, so that dysmenorrhea can be reduced. [7]

Reviewers argue that during adolescence there is a process of maturation of the reproductive organ system. So that the oxygen supply must also be met. Lack of physical activity will reduce the distribution of oxygen in the systemic circulation, thereby increasing a person's perception of pain, including dysmenorrhea. Adolescents with low levels of physical activity tend to be more at risk for more severe dysmenorrhea. On the other hand, adolescents who do regular physical activity can improve the working system of blood vessels so that they can reduce pain complaints and increase physical fitness. Based on this, it can be seen that the more routine a person does physical activity, the more likely it is to prevent or minimize the occurrence of dysmenorrhea. Exercise is a non-pharmacological management that is safer to use because it uses physiological processes.

Consuming Fast Food that Affects Dysmenorrhea in Adolescents

Based on the results of a review of 17 articles, 6 articles were found that said that the factor of consuming fast food affects the incidence of dysmenorrhea in adolescents. The results of research conducted by Indahwati et

al. [22], it is known that of all research subjects almost half (42.9%) or a number of 27 respondents who often consume fast food experience dysmenorrhea, while a small portion (12.7%) or a number of 8 respondents did not have dysmenorrhea.

Consumption of fast food or fast food has become part of the lifestyle of Indonesian people, especially teenagers. Fast food often refers to food in the United States that contains french fries, burgers , soft drinks , and others. The habit of eating fast food or fast food can affect lifestyle and can create gynecological disorders such as dysmenorrhea and irregular menstruation . Fast food contains trans fatty acids obtained from the cooking technique. [24] Fast food contains trans fatty acids which are free radicals. One of the effects of free radicals is damage to cell membranes. The cell membrane has several components, one of which is a phospholipid. One of the functions of phospholipids is as a provider of arachidonic acid which will be synthesized into prostaglandins. Prostaglandins help the uterus contract and expel the uterine lining during the menstrual period. So, in women who experience menstrual pain or dysmenorrhea because there is a buildup of prostaglandins in too many quantities, causing dysmenorrhea. [22] Consumption of fast food is one of the risk factors for primary dysmenorrhea because of its high content of saturated fatty acids and omega-6 unsaturated fatty acids, low omega-3 fatty acids, and too much sodium. Omega-6 fatty acids are the start of the prostaglandin release cascade, which is a hormone associated with dysmenorrhea. Fast food has an unbalanced nutritional content, which is high in calories, high in fat, high in sugar, and low in fiber. The fatty acid content in fast food interferes with progesterone metabolism in the luteal phase of the menstrual cycle. As a result, there is an increase in prostaglandin levels which will cause the pain of dysmenorrhea. [16]

Reviewers argue that teenagers are easily influenced by the times such as fashion and trends that are developing in society, especially in terms of modern food. Teenagers tend to choose their preferred food, namely fast food . The craze for fast food is due to the fact that it doesn't take a long time to process, it's easy to get, the price is cheap and affordable. So that many teenagers prefer to consume fast food compared to other nutritious food. Teens who frequently eat fast food or f ast food tends to be more at risk of dysmenorrhea. This is because the fatty acid content in fast food interferes with progesterone metabolism in the luteal phase of the menstrual cycle. As a result, there is an increase in prostaglandin levels which will cause the pain of dysmenorrhea. On the other hand, teenagers who rarely consume fast food can prevent or minimize the occurrence of dysmenorrhea. We recommend that during this growth period, teenagers pay more attention to their diet and eat lots of food with balanced nutrition to support their physical growth.

Age of Menarche that Affect Dysmenorrhea in Adolescents

Based on the results of a review of 17 articles, there were 5 articles which said that the age factor of menarche affects the incidence of dysmenorrhea in adolescents. Meanwhile, another journal said that the age factor of menarche did not affect the incidence of dysmenorrhea in adolescents.

Menarche is the first menstruation that usually occurs in the age range of 10-16 years or in early adolescence in the middle of puberty before entering the reproductive period. Menarche is an early sign of other changes such as breast growth, pubic and axillary hair growth, and fat distribution in the hip area. [12] The age at which girls start menstruating varies greatly. Currently, children tend to get their first menstruation at a young age, which is <12 years. Age to reach the phase of menarche is influenced by many factors , including: nutrition, social, economic, and so on. Women who experience early menstruation are caused by internal and external factors. Internal factors due to a congenital hormonal imbalance. This is also correlated with external factors such as nutritional intake in the food consumed. [25] There is a relationship between the age of menarche and the incidence of dysmenorrhea because when menarche occurs earlier than normal, the reproductive organs are not ready to undergo changes so that there is a narrowing of the cervix and then pain will occur during menstruation. Women who have menarche age at risk (<12 years) need to pay more attention to their health, especially the incidence of dysmenorrhea. The age of menarche that is too early (<12 years) has a short-term effect, namely the occurrence of dysmenorrhea, while for long-term effects it can trigger cervical cancer, breast cancer and myoma. [26] Basically, the age of menarche <12 years causes the gonadotropin hormone to be produced prematurely. The maturation of the reproductive organs is the hypothalamus, pituitary, and ovary axis. From the pituitary gland secretes the hormones LH and FSH and is influenced by releasing hormone (RH). RH responds to the production of gonadotropins containing estrogen and progesterone. These hormones can affect the growing endometrium. [1] The absence of fertilization causes regression of the corpus luteum, a decrease in the hormone progesterone and an increase in prostaglandins that stimulate the myometrium resulting in ischemia and decreased blood flow to the uterus causing pain. To reduce dysmenorrhea due to the age factor of menarche 12 years, it can be done by reducing stress, because stress can increase uterine contractions so as to increase pain during menstruation. Sports or gymnastics is one of the relaxation techniques that can be used to reduce pain during menstruation. This is because when doing sports / gymnastics the body will produce endorphins that are produced in the brain and spinal cord. This hormone can function as a natural sedative produced by the brain so that it makes you feel comfortable. [27]

Reviewers argue that there are some young women in the normal menarche age group but experience dysmenorrhea due to unhealthy lifestyles such as frequently consuming fast food , smoking, never exercising, and others that can trigger increased pain during menstruation. Meanwhile, some young women in the age group of abnormal menarche who experience dysmenorrhea because the age of menarche is too early causing the reproductive organs to be not ready to undergo changes, resulting in pain during menstruation. And the normal menarche age group that does not experience dysmenorrhea because the age of menarche >12 years is the normal age of menarche in experiencing reproductive changes so that there is no pain during menstruation. Meanwhile, the menarche age group is not normal but does not experience dysmenorrhea because they have a healthy lifestyle that can reduce pain during menstruation . At this time, teenagers should get used to having a healthy lifestyle such as doing physical activity/sports regularly, eating a balanced diet, not smoking and drinking alcoholic beverages, and so on to prevent or minimize the incidence of dysmenorrhea.

Nutritional Status that Affects Dysmenorrhea in Adolescents

Based on the results of a review of 17 articles, there were 4 articles which said that nutritional status factors influenced the incidence of dysmenorrhea in adolescents.

Nutrition is food that can fulfill health. Nutrients are elements found in food and can affect health. Nutrition is a process of organisms using the transportation, storage, metabolism and excretion of substances that are not used to maintain life, growth and normal function of organs and produce energy. Lack of or limited nutrition in addition to affecting growth and organ function, will also disrupt reproductive function. This can have an impact on menstrual disorders, but will improve if the nutritional intake is good. (13) Nutritional status is one of the causes of dysmenorrhea. Nutritional status can be divided into three groups: normal nutrition and undernutrition and then overnutrition. Nutritional status is categorized based on the results of the calculation of Body Mass Index (BMI) which is calculated by dividing body weight (in kilograms) with height squared (in meters), so that body weight is measured using a bathroom scale and height measurements using microtoise. Categorization of nutritional status based on BMI using Asia Pacific criteria. Adolescents with poor nutritional status (underweight) will get the impact of disruption of reproductive function. This is because lack of nutrients and iron can affect the activity of reproductive hormones in these adolescents, so that resistance to pain is reduced. This is what has an impact on dysmenorrhea disorders. (28) While overweight status can also cause dysmenorrhea because there is excessive fat tissue which can lead to hyperplasia of blood vessels or pressure on blood vessels by fatty tissue in the female reproductive organs, so that blood that should flow during the menstrual process is disrupted and causes pain during menstruation.

Reviewers argue that adolescents need adequate nutritional intake to deal with the changes they experience, related to their reproductive system. Nutritional status affects the reproductive system and has an impact on menstrual disorders. Adolescents need to maintain good nutritional status by consuming a balanced diet . Good nutritional intake will affect the formation of hormones involved in menstruation, namely the hormone FSH (Follicle-Stimulating Hormone), LH (Luteinizing Hormone), estrogen and progesterone. The hormones FSH, LH and estrogen together will be involved in the menstrual cycle, while the hormone progesterone affects the uterus, which can reduce contractions during the menstrual cycle. With a balanced nutritional intake, the growth and functions of the reproductive organs become more optimal, which has an effect on menstruation so as to minimize pain (dysmenorrhea) during menstruation. It is known that adolescent girls with abnormal nutritional status have a greater chance of experiencing dysmenorrhea than adolescent girls with normal nutritional status .

CONCLUSIONS

The factors that influence dysmenorrhea in adolescents, it can be concluded that:

1. There are 11 articles that have been reviewed discussing the factors of physical activity that affect dysmenorrhea in adolescents , and from all these articles it is stated that there is a significant relationship between physical activity and the incidence of dysmenorrhea in adolescents.
2. There are 6 articles have been conducted review discusses the factors to consume fast food which affect dysmenorrhea in adolescents , and of the whole article states that there is significant correlation between con sumsi fast food with the incidence of dysmenorrhea in adolescents.
3. There are 6 articles that have reviewed the age factor of menarche , 5 articles stated that there was a significant relationship and 1 article stated that there was no significant relationship between the age of menarche and the incidence of dysmenorrhea in adolescents.
4. There are 4 articles have been conducted review discusses the factors that affect the nutritional status of dysmenorrhea in adolescents, and overall article stated that there is significant correlation between the status nutrition with the incidence of dysmenorrhea in adolescents.

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