

Research Article

Does Lifestyle Affect Dysmenorrhea Intensity? A Cross-Sectional Study

Apakah Gaya Hidup Mempengaruhi Intensitas Dismenore? Sebuah Studi Cross-Sectional

Annisa D. P. Hernanto¹, Arie A. Polim², Vetinly³

¹Faculty of Medicine and Health Sciences

²Department of Obstetrics and Gynecology

³Department of Public Health and Nutrition

Faculty of Medicine and Health Sciences

Universitas Katolik Atma Jaya

Jakarta

Abstract

Objective: To determine whether or not there is a relationship between lifestyle and dysmenorrhea intensity in FKIK Atma Jaya students.

Methods: This research is a cross sectional analytic descriptive study with a minimum sample size of 196 students of the FKIK Atma Jaya class 2017-2019. The degree of pain was assessed using the Verbal Multidimensional Scoring System pain scale. Frequency of fast food consumption were assessed with Food Frequency Questionnaire. Frequency of physical activity were assessed with International Physical Activity Questionnaire. The data were analyzed using the Kolmogorov-Smirnov normality test, the Mann-Whitney U test, and the Kruskal-Wallis test.

Result: The highest percentage of menstrual pain was at grade 1 (painful menstruation; rarely disturbed activity; no systemic symptoms; rarely required analgesics) for the VMSS scale (46.3%). The percentage of fast food consumption in this study was 86.1%. The highest percentage of physical activity in the category of moderate physical activity was 56.2%. The results of this study indicates a significant relationship between consumption of fast food and the intensity of dysmenorrhea with $p = 0.017$. There were no significant relationship between physical activity and the intensity of dysmenorrhea with $p = 0.225$.

Conclusion: Consumption of fast food were related to the intensity of dysmenorrhea, whereas physical activity was not related with the intensity of dysmenorrhea.

Keywords: dysmenorrhea, fast food consumption, lifestyle, physical activity.

Abstrak

Tujuan: Untuk mengetahui ada tidaknya hubungan gaya hidup dengan intensitas dismenore pada mahasiswa FKIK Atma Jaya.

Metode: Penelitian ini merupakan penelitian deskriptif analitik cross sectional dengan jumlah sampel minimal 196 mahasiswa FKIK Atma Jaya angkatan 2017-2019. Derajat nyeri dinilai dengan menggunakan skala nyeri Verbal Multidimensional Scoring System. Frekuensi konsumsi makanan cepat saji dinilai dengan Food Frequency Questionnaire. Frekuensi aktivitas fisik dinilai dengan International Physical Activity Questionnaire. Data dianalisis menggunakan uji normalitas Kolmogorov-Smirnov, uji Mann-Whitney U, dan uji Kruskal-Wallis.

Hasil: Persentase nyeri haid tertinggi pada derajat 1 (nyeri haid; aktivitas jarang terganggu; tidak ada gejala sistemik; jarang memerlukan analgesik) untuk skala VMSS (46,3%). Persentase konsumsi fast food dalam penelitian ini adalah 86,1%. Persentase aktivitas fisik tertinggi pada kategori aktivitas fisik sedang adalah 56,2%. Hasil penelitian ini menunjukkan adanya hubungan yang signifikan antara konsumsi fast food dengan intensitas dismenore dengan $p = 0,017$. Tidak ada hubungan yang bermakna antara aktivitas fisik dengan intensitas dismenore dengan $p=0,225$.

Kesimpulan: Konsumsi fast food berhubungan dengan intensitas dismenore, sedangkan aktivitas fisik tidak berhubungan dengan intensitas dismenore.

Kata kunci: aktivitas fisik, dismenore, gaya hidup, konsumsi fast food.

Correspondence author. Annisa D.P. Hermanto. Faculty of Medicine and Health Sciences
Universitas Katolik Atma Jaya. Jakarta
Email; annisahermanto@gmail.com

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INTRODUCTION

Dysmenorrhea is a gynecologic complaint found in daily clinical practice. Dysmenorrhea itself is defined as menstrual pain that is common among adolescents and young women.¹ According to the World Health Organization, the global prevalence of dysmenorrhea ranges from 1.7% to 97%, with a higher prevalence in adolescents.² The prevalence of dysmenorrhea among adolescents in Indonesia is around 64.25%, consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea.³ The high incidence of dysmenorrhea can have an impact on daily life and interfere with one's activities. As many as 10-15% of women experience a severe dysmenorrhea intensity every month so that their activities such as work, school, or chores are halt. Several factors affect dysmenorrhea, one of which is lifestyle.⁴

With advances in technology, there are changes in lifestyle one of which is towards the consumption of fast food. A retrospective observational study using data from the Indonesian Family Survey discovered that up to 65% of adults consumed deep-fried food for an average of 4 days and routinely consumed fast food or carbonated drinks.⁵ The increased consumption of fast food is because fast food has an affordable price, quick serving and convenient. A research by Ayu et al. found that 42.9% of her samples consumed fast food and experienced dysmenorrhea during their menstruation, this shows that these two are correlated. Fast food has a high composition of trans fat that could increase the level of prostaglandin in the body, therefore causing uterine contraction during menstruation and initiate pain.⁶

Physical activity can become another parameter that reflects one's lifestyle. Several studies have shown that physical activity affects menstruation on many aspects including inducing amenorrhea on athletes and decreasing the pre-menstruation symptoms and dysmenorrhea.⁷ A randomized controlled trial of 68 Shiraz University students with dysmenorrhea was conducted to discover the effect of eight-week isometric exercises on dysmenorrhea, the result was a reduced intensity and duration of pain caused by dysmenorrhea, less drug consumption, and a reduced duration of bleeding.⁸ There is a positive correlation between the reduced risk from dysmenorrhea with doing regular and healthy physical activity. A hormone called endorphin is produced during a physical

activity that can reduce premenstrual symptoms such as pain, depression, and anxiety.⁹ Based on the high percentage of dysmenorrhea in adolescents, the high consumption of fast food, and the positive effect of physical activity towards prevention of dysmenorrhea, this research aims to determine whether or not there is a relationship between lifestyle and dysmenorrhea intensity.

METHODS

This research was a cross-sectional analytic descriptive study and was conducted on the faculty of medicine and health sciences of Atma Jaya Catholic University of Indonesia on July - August 2020. The sample for this research was preclinical students class of 2017-2019 and was taken by systematic random sampling.

The inclusion criteria for this research were students of the medicine program at the faculty of medicine and health sciences of Atma Jaya. The exclusion criteria for this research were students who were not willing to participate in this research, students who could not communicate well, and students who did not fill out the questionnaires after being warned three times.

The selected respondents were then given a dysmenorrhea history questionnaire which aims to find respondents who were suspected of having dysmenorrhea. After filling out the history taking questionnaire, the respondents also filled out the Verbal Multidimensional Scoring System questionnaire to assess the intensity of dysmenorrhea, the Food Frequency Questionnaire to assess the frequency of fast food consumption, and the International Physical Activity Questionnaire to assess the physical activity of the respondents. The data were analyzed using the Kolmogorov-Smirnov normality test, the Mann-Whitney U test, and the Kruskal-Wallis test.

RESULTS

Based on the data, a sample of 330 respondents was obtained and after adjusting with the inclusion and exclusion criteria, 201 respondents were chosen. The demographic characteristics of the respondents indicate that the average age was 19.5 years old with a range of 17 - 22 years old, the average menarche age of respondents is 12 years old with a range of 9 - 16 years old, and the average body mass index of the respondents was 21 kg/m² with a range of 16 - 34 kg/m².

The distribution results of respondents based on the dysmenorrhea intensity using the Verbal Multidimensional Scoring System showed grade 0 or no pain (N=51; 25.4%), grade 1 or mild pain (N=113; 56.2%), grade 2 or moderate pain (N=35; 17.4%), grade 3 or severe pain (N=2; 1.0%).

The distribution results of respondents based on the fast-food consumption using the Food Frequency Questionnaire showed frequent consumption of fast food (N=173; 86.1%) and no consumption of fast food (N=28; 13.9%). The distribution results of respondents based on the level of physical activity using the International Physical Activity Questionnaire showed mild physical activity (N=77; 38.3%), moderate physical activity (N=93; 46.3%), vigorous physical activity (N=31; 15.4%).

The result of the normality test using Kolmogorov-Smirnov on dysmenorrhea intensity and consumption of fast food and dysmenorrhea intensity and physical activity showed that the distribution of the data were abnormal ($p=0.000$; $\alpha=0.05$; $p<\alpha$). The results from the Mann-Whitney U test found a significant relationship between dysmenorrhea intensity and consumption of fast food with the value of $p=0,017$. The results from the Kruskal-Wallis test found a significant relationship between dysmenorrhea intensity physical activity with the value of $p=0.225$.

DISCUSSIONS

The average of respondents in this research was 19.5 years old with a range of 17 - 22 years old. Respondents aged 20 years old were the most respondent in this research with a total of 63 people (31.3%). This age distribution is similar to a, where the mean age was 20.8 ± 1.8 with a range of 17-23 years old.¹⁰

The average menarche age of respondents in this research was 12 years old with a range of 9 - 16 years old. Analysis of 2010 basic health research data from the Ministry of Health of the Republic of Indonesia (RISKESDAS) found that the average age of menarche in Indonesia was 12.96 years old, this is interchangeable with the age of menarche in this research.¹¹ The average age of menarche was 13.8 ± 1.6 with a range of 9 - 19 years old. 4 This data is equivalent to the characteristics of the respondents from this research.

The average of body mass index from this research was 21 kg/mm^2 that indicates the average BMI were within the normal limits. BMI can be

classified to underweight ($<18.0 \text{ kg/mm}^2$), normal ($18.0-24.9 \text{ kg/mm}^2$), overweight/pre obese ($25.0-29.9 \text{ kg/mm}^2$), and obese ($\geq 30.0 \text{ kg/mm}^2$).¹⁰

The dysmenorrhea intensity of respondents were assessed using VMSS and the highest data obtained were grade 1 or mild pain as much as 56.2% with physical activity that is seldom inhibited, analgesics are seldom required. In the second place, grade 0 or no pain as much as 25.4% with unaffected daily activity and not required analgesics. Third place, grade 2 or moderate pain as much as 17.4% with affected daily activity, analgesics are required and gave a relief so that absence from school is unusual. Last, grade 3 or severe pain as much as 1.0% with a clearly inhibited activity, poor effect of analgesics, and systemic symptoms such as headache, fatigue, vomiting, diarrhea, constipation.

This research is parallel to a research on medical students in Egypt who were assessed using VMSS, it was found that grade 1 or mild pain were the largest percentage as much as 27.9%, grade 2 or moderate pain for 23.3%, and grade 3 or severe pain for 14.1%.¹²

Within this research the majority of respondents were reported having dysmenorrhea with mild intensity. Several risk factors of dysmenorrhea are women aged <30 years old, menarche age <12 years old, and nulliparity.¹³⁻¹⁸ Those risk factors are consistent with the characteristics of respondents in this research. The high intensity and incidence of dysmenorrhea is associated with young age. A study that has been carried out before confirmed that the intensity of dysmenorrhea will gradually decrease with age. An early menarche age also disrupts the hormonal balance and causing dysmenorrhea.¹⁹ Other risk factors of dysmenorrhea including maternal dysmenorrhea history, smoking history, alcohol consumption history, and caffeine consumption history poses a great risk on increasing the intensity of dysmenorrhea.²⁰ These other factors mentioned wasn't examined in this study and were only used as a question to diagnose dysmenorrhea.

The majority of the respondents in this research were recorded frequently consuming fast food (86.1%). The type of fast food which frequently consumed are fried chicken (75.1%) and iced coffee (63.2%). The frequent intensity on fast food consumption in this research corresponds with a study from Indonesian Family Life Survey that stated Indonesian people consume fast food every day. Consuming fast food has become a habit, ritual, and comfort for adolescence. Fast

food is a form of food that is easy to carry, buy and consume.²¹ The high consumption of fast food within the age of 20s can be attributed to the specific qualities desired from this type of food such as food that is quick-serving, convenient, and relatively inexpensive. Other factors that can influence the high consumption of fast food including the delicious taste, easy access, and a greater variety of fast food compared to homemade food.²²

The classification of physical activity in this research are divided into mild, moderate, and vigorous. Moderate physical activity dominated this research with a percentage of 46.3%, followed by mild physical activity (38.3%), and vigorous (15.4%). Moderate physical activity carried out regularly can provide many health benefits such as reducing the risk of death from cardiovascular disease, improving quality of life, reducing the risk of Alzheimer's disease, obesity, and osteoporosis. Several studies have shown contrasting results between medical students' knowledge of physical activity and its application in everyday life. Medical students have a low level of vigorous physical activity due to high workloads and little free time. The pattern of physical activity in this study is similar to a study conducted on medical students in Poland whereas the category of moderate physical activity dominates by 52%, followed by mild physical activity (26%), and vigorous physical activity (22%).²³

This research found a significant relationship between consumption of fast food and the intensity of dysmenorrhea. These results were obtained through the Mann-Whitney U non-parametric statistical test with a value of $p = 0.017$ ($\alpha = 0.05$; $p < \alpha$). A group with high fast food consumption had a high incidence of dysmenorrhea significantly. The increase of fast food consumption is considered influenced with the history of skipping breakfast that intensifies the frequency of fast food consumption. The VMSS were used to assess dysmenorrhea intensity and also obtained weekly frequency of fast food consumption.²⁴ This research also used VMSS as a tool to assess dysmenorrhea intensity, the difference is that food frequency questionnaire were used to obtain specific type and frequency of fast food consumption.

The significant relationship between consumption of fast food and the intensity of dysmenorrhea founded in this research presumably because fast food contains a high saturation of fatty acid and it affects the

metabolism of progesterone in menstrual cycle and the response is the increase amount of prostaglandin.²³⁻²⁵ Phospholipids is one of the components of cell membrane that play a big role in the synthesis of prostaglandin. Prostaglandin helps the uterus to contract and shed the lining of endometrium during the menstrual period. A build-up of prostaglandin were found in women who experience menstrual pain or dysmenorrhea.⁶ The resulting prostaglandins cause myometrial hypercontractility resulting in ischemia and hypoxia of the uterine muscles which can cause pain or dysmenorrhea.^{26,27} Inadequate micronutrient content in fast food can also become a trigger for dysmenorrhea.²⁸

Women with dysmenorrhea have contracted abdominal ligaments and by doing physical activity such as stretching may reduce pain and symptoms of dysmenorrhea.²⁹ Based on the positive effects of physical activity for dysmenorrhea from various studies and researches, it was hoped that there were a relationship between physical activity and the intensity of dysmenorrhea.

The data analysis showed that there were no significant relationship between physical activity and dysmenorrhea intensity. These results were obtained through the Kruskal-Wallis non-parametric statistical test with a value of $p=0.225$ ($\alpha=0.05$; $p>\alpha$). A similar studies also found that there were no significant relationship between physical activity and dysmenorrhea intensity.²⁹⁻³¹ A research on medical students in Cairo and discovered that there were also no significant relationship between physical activity and dysmenorrhea ($p=0.064$).³² There are several possibilities that influenced the outcome of this study. The different method used in this research may be one of the possibilities, physical activity obtained in this research were only a weekly physical activity history and were not differentiated between exercise and non-exercise through the International Physical Activity Questionnaire (IPAQ) that might give rise to recall bias. The studies that are significant were more likely to carry out interventions methods or by doing exercise such as stretching exercises. The IPAQ incorporates daily activities such as mopping, washing, walking as physical activities and did not explore aspects of a certain exercise or sports that were routinely carried out. In studies using interventions, the type, duration, and impact of physical activity can be seen first-hand. Respondents in this study were only the

students of the Atma Jaya faculty of medicine class of 2017-2019, the lack of sample variation in this study may also be one of the factors that contributes to the outcome possibilities of this research. This research was coincidentally conducted during the COVID-19 pandemic under lockdown conditions which severely limited ones activity outside the home and majorly exposed with activities that are dominated by an online system. This pandemic and system have a high probability of reducing ones physical activity. The absence of the relationship between the level of physical activity and the intensity of dysmenorrhea in this study may not be very representative.

In contrast to the experimental study of abdominal strain on 96 samples which consisted of 48 intervention samples and 48 control samples, it was found that there were a decrease in menstrual pain or dysmenorrhea on the sample given the intervention ($p = 0.001$).³³ The type of physical activity that has successfully played a role in reducing the intensity of dysmenorrhea is exercise. A routine exercise is fathomed to act as a non-specific analgesic by improving circulation of the pelvic blood vessels and stimulating the release of beta-endorphins which play a role in blocking pain transmission. In addition, prevention and regression of dysmenorrhea can be achieved through stress reducing and mood improvements during exercise.³⁴

CONCLUSIONS

The results of this study indicates that consumption of fast food is associated with the intensity of dysmenorrhea ($p = 0.017$), whereas physical activity is not associated with the intensity of dysmenorrhea ($p = 0.225$).

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