

The Relationship between Fast Food Consumption Patterns and Physical Activity with the Incidence of Primary Dysmenorrhea in Adolescent Girls in Classes X and XI at SMK Lab Business School Tangerang

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ABSTRACT

Background: Adolescence is a crucial stage of growth marked by physical and hormonal changes, including the onset of menstruation. The consumption of fast food, which is high in fat and free radicals, can increase the production of prostaglandins—compounds that trigger menstrual pain. Meanwhile, a lack of physical activity may reduce blood flow to the uterus, worsening dysmenorrhea. **Objective:** To determine the relationship between fast food consumption patterns and physical activity with the incidence of primary dysmenorrhea among female adolescents. **Methods:** This is a quantitative study with a cross-sectional design. The sample consisted of 135 10th and 11th-grade female students selected using total sampling. Data were collected using questionnaires and analyzed using univariate and bivariate methods (Chi-square test). **Results:** A total of 59.3% of respondents had a high frequency of fast food consumption, and 38.5% engaged in high-intensity physical activity. The Chi-square test showed a significant relationship between fast food consumption ($p=0.002$) and physical activity ($p=0.001$) with the incidence of primary dysmenorrhea. **Conclusion:** There is a significant relationship between fast food consumption patterns and physical activity with the incidence of primary dysmenorrhea among 10th and 11th-grade female students at SMK Lab Business School Tangerang.

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Introduction

Adolescence is an important part of life's transition between childhood and adulthood. At this stage, the individual experiences a significant acceleration of growth, which can be seen from the physical, psychological, and mature changes of the reproductive organs. This phase is known as puberty, one of the signs of which is the onset of menstruation in adolescent girls (Artawan et al., 2022).

The Ministry of Health of the Republic of Indonesia in 2021 recorded that the incidence of *dysmenorrhea* in Indonesia reached 72.89%, with 54% of cases experienced by adolescent girls (Djailani et al., 2023). According to a report on the results of the collaboration between the Banten Provincial Health Office and BPS in 2021, as many as 60.19% of the 10,000 adolescents surveyed experienced *dysmenorrhea*. The most cases were found in adolescents aged 14 to 24 years, with a prevalence of *primary dysmenorrhea* of 52.61% and *secondary dysmenorrhea* of 7.58%. The severity of the pain experienced was divided into 47% mild, 38% moderate, and 15% severe (Banten Provincial Health Office, 2021). A study in Tangerang City showed results that as many as 66.7% of adolescents experienced *dysmenorrhea* (Thania et al., 2023).

One of the causes of *dysmenorrhea* is the instability of the chemical compounds *prostaglandins*. *Prostaglandins* play an important role in regulating various bodily functions such as bowel activity, uterine contractions, and changes in blood vessels. Risk factors that can trigger *dysmenorrhea* in adolescent girls include lifestyle, especially diet such as fast food habits, and low physical activity.

Fast food contains free radicals that have the potential to damage the body's cell membranes. Damage to the cell membrane will affect phospholipids, which have an important role in providing arachidonic acid for the production of *prostaglandins*. If *prostaglandins* accumulate due to excessive *consumption of fast food*, this can trigger pain during menstruation (Lestarina et al., 2023).

Lack of physical activity is one of the causes of the increased risk of *primary dysmenorrhea* in adolescent girls. Physical activity can stimulate the release of *endorphins* that play a role in reducing pain during menstruation. The results of studies by (Made et al., 2023) and (Dwiasrini et al., 2023) show that adolescents with low levels of physical activity are more prone to *dysmenorrhea*.

A preliminary study conducted on April 28, 2025, at SMK Lab Business School revealed that out of 15 randomly interviewed ASKEP grade XI students, 10 reported experiencing *dysmenorrhea*, characterized by pain in the lower belly, waist, hips, and lower back. All respondents frequently consume fast food items, including fried chicken, French fries, pizza, hamburgers, and soft beverages. The educational environment is predominantly influenced by local fast food businesses. Eleven students suffered from *dysmenorrhea* attributable to insufficient physical activity, whereas merely four students engaged in regular exercise. UKS data indicated an average of 12 female students each month reporting menstruation discomfort. These findings served as the foundation for a study examining the correlation between fast

food consumption patterns, physical activity, and the prevalence of primary dysmenorrhea in adolescent girls at SMK Lab Business School Tangerang.

Objective

This study aims to ascertain the correlation between fast food consumption habits, physical activity, and the prevalence of primary dysmenorrhea in adolescent females. This study aimed to determine the proportion of adolescent girls in grades X and XI at SMK Lab Business School Tangerang who have fast food consumption habits and varying levels of physical activity, and to examine the relationship between these factors and the level of menstrual pain they experience. This study examined 135 respondents by complete sampling and utilized accurate questionnaires to assess the frequency of fast food eating, levels of physical activity (mild, moderate, severe), and menstrual pain intensity as measured by the Numeric Rating Scale (NRS). This study employs the chi-square test to examine the statistically significant relationship between fast food consumption patterns and physical activity levels concerning the incidence of primary dysmenorrhea, serving as a foundation for promoting and preventing healthy lifestyles among adolescent girls.

Method

This research employs a quantitative methodology utilizing a correlational descriptive design and a cross-sectional approach. The design was employed to examine the correlation between independent and dependent variables, which was the primary objective of this study. The objective is to ascertain the correlation between fast food eating habits and physical activity levels with the prevalence of primary dysmenorrhea among teenage females in grades X and XI at SMK Lab Business School Tangerang. The sampling method employs entire sampling.

1. Inclusion criteria

1. Young women in grades XI and XI who attend SMK Lab Business School Tangerang
2. Young women who are willing to be respondents and have signed the *informed consent sheet*.
3. Young women who have had their periods
4. Physically healthy young women
5. Young women who can understand and are able to do questionnaires

2. Exclusion criteria

1. Adolescent girls who have reproductive disorders: cysts, endometriosis, myomas, etc.

The instruments used in this study included questionnaires on fast food consumption, physical activity, and dysmenorrhea levels. The fast food consumption questionnaire adapts FFQ from Rizka (2024) with 10 questions and 6 categories of consumption frequency. The validity test using *Pearson Product Moment* with a result of r calculation 0.459–0.891 ($> r$ table 0.361), was declared valid. A physical activity questionnaire using GPAQ from WHO has been used by Pradiasa et al. (2023) with 16 questions. The results of the validity test showed that r count 0.484–0.733 ($> r$ table 0.362), was declared valid. The level of dysmenorrhea was measured using the Numeric Rating Scale (NRS) 0–10 from Pradiasa (2023). The validity test showed r

count 1.000 ($> r$ table 0.361), declared valid. This research has obtained an ethics license from Yatsi Madani University with No. 244/LPM-UYM/VI/2025.

Results

This research was carried out on July 14-16, 2025 at SMK Lab Business School Tangerang with a total of 135 female respondents and obtained the following results:

TABLE 1. Frequency Distribution of Fast Food Consumption Patterns (n=135)

Fast Food Consumption Patterns	Frequency (f)	Presentase (%)
Non-Consumptive	55	40,7%
Consumerist	80	59,3%
Total	135	100.0%

Based on the data analysts in table 1, it is known that out of a total of 135 female students, the majority of respondents as many as 80 respondents (59.3%) are classified as consumptive, while 55 respondents (40.7%) are classified as non-consumptive. This shows that the majority of young women at SMK Lab Business School Tangerang have consumptive behavior towards fast food.

TABLE 2. Distribution of Frequency of Physical Activity (n=135)

Physical Activity Level	Frequency (f)	Presentase (%)
Light Physical Activity	45	33,3%
Moderate Physical Activity	38	28,1%
Strenuous Physical Activity	52	38,5%
Total	135	100.0%

Based on the results of data analysis in table 2, it was found that the majority of respondents as many as 52 respondents (38.5%) had a level of heavy physical activity, 45 respondents (33.3%) had light physical activity, and 38 respondents (28.1%) had moderate physical activity. It can be concluded that most of the young women of SMK Lab Business School Tangerang tend to do strenuous physical activity. This shows that most respondents have a fairly good level of activity, so they have a lower risk of developing dysmenorrhea.

TABLE 3. Distribution of Primary Dysmenorrhea Incidence Frequency (n=135)

Dysmenorrhea Pain Level Categories	Frequency (f)	Presentase (%)
No Pain	14	12,6%
Mild Pain	48	35,6%
moderate pain	55	40,7%
Severe Pain	15	11,1%
Total	135	100.0%

Based on the results of data analysis in table 4.3 obtained from a total of 135 adolescent girls of SMK Lab Business School Tangerang, it was found that the majority

of adolescent girls as many as 55 respondents (40.7%) experienced moderate pain, 48 respondents (35.6%) experienced mild pain, and 15 respondents (11.1%) experienced severe pain. 14 respondents (12.6%) did not experience pain during menstruation. It can be concluded that the majority of adolescent girls at SMK Lab Business School Tangerang tend to experience menstrual pain at a moderate level.

1. The Relationship between Fast Food Consumption Patterns and the Incidence of Primary Dysmenorrhea in Adolescent Girls

In this study, the researcher used *the chi-square test to determine the relationship between the variable of Fast Food Consumption Pattern (Fast food) and the incidence of primary dysmenorrhea in adolescent girls. The results of the test are as follows:*

TABLE 4. Relationship between Fast Food Consumption Patterns and Primary Dysmenorrhea Incidence

Fast Food Consumption Pattern Categories	Dysmenorrhea Pain Level Categories				Total %	P-Value
	No Pain %	Light %	Keep %	Heavy %		
Non-Consumptive	14 (25.5%)	18 (32.7%)	17 (22.4%)	8 (10.9%)	55 (100.0%)	0.002
Consumerist	3 (3.8%)	30 (37.5%)	38 (47.5%)	9 (11.3%)	80 (100.0%)	
Total	17 (12,6%)	48 (35.6%)	55 (40.7%)	15 (11.1%)	135 (100.0%)	

Based on Table 4, out of a total of 135 respondents, the majority of respondents had a consumptive *fast food* consumption pattern, namely 80 respondents (100.0%). Of this group, most of them experienced moderate dysmenorrhea, namely 38 respondents (47.5%). Meanwhile, in the group of respondents who were not consumptive to *fast food*, the majority experienced mild dysmenorrhea, namely 18 respondents (32.7%). The results of the statistical test using *the chi-square test* show that the p-value = 0.002, which is smaller than 0.05. This shows that there is a significant relationship between fast food consumption patterns and physical activity levels with the incidence of primary dysmenorrhea in adolescent girls in grades X and XI at SMK Lab Business School Tangerang.

TABLE 2. Relationship of Physical Activity with Primary Dysmenorrhea Incidence (n=135)

Physical Activity Categories	No Pain %	Light %	Keep %	Heavy %	Total %	P-Value
Light	11 (24.4%)	8 (17.8%)	16 (35.6%)	10 (22.2%)	45 (100.0%)	0.001
Keep	3 (7.9%)	16 (42.1%)	17 (44.7%)	2 (5.3%)	38 (100.0%)	
Heavy	3 (5.8%)	24 (46.2%)	22 (42.3%)	3 (5.8%)	52 (100.0%)	
Total	17 (12,6%)	48 (35.6%)	55 (40.7%)	15 (11.1%)	135 (100.0%)	

Based on Table 5, of the 135 respondents studied, the distribution of physical activity was divided into three categories: light, moderate, and severe. Data analysis showed that the majority of respondents had a level of heavy physical activity, which was as many as 52 people (100.0%). In the heavy physical activity group, the majority of respondents experienced mild dysmenorrhea, which was 24 people (46.2%). Meanwhile, respondents with moderate physical activity mostly experienced moderate dysmenorrhea, namely 17 people (44.7%), and respondents with moderate physical activity experienced the most moderate dysmenorrhea as many as 16 people (35.6%). Overall, the majority of the total respondents (40.7%) experienced moderate levels of pain. The results of the statistical test using *chi-square* produced a p -value = 0.001, which means it is smaller than 0.05. Thus, H_0 was rejected, and it can be concluded that there is a significant relationship between physical activity and the incidence of primary dysmenorrhea in girls in grades X and XI at SMK Lab Business School Tangerang.

Discussion

1. The Relationship between Fast Food Consumption Patterns and the Incidence of Primary Dysmenorrhea in Adolescent Girls

Results from Table 4 of the bivariate analysis indicate that adolescent girls exhibiting consumptive fast food eating patterns are more likely to develop dysmenorrhea, particularly at moderate pain levels. The chi-square test yielded a p -value of 0.002, indicating a statistically significant relationship between fast food consumption patterns and the incidence of primary dysmenorrhea among adolescent girls in grades X and XI at SMK Lab Business School Tangerang.

Fast food is typically heavy in calories, saturated fats, and sodium, while being deficient in fiber and important micronutrients. Excessive fast food consumption adversely affects nutritional status and may also induce reproductive issues, including dysmenorrhea. This aligns with the findings of Aulya et al. (2021), which indicate that trans fatty acids in fast food can provoke excessive prostaglandin production, hence intensifying uterine contractions and resulting in menstruation pain.

The results of this study are in line with the research of Dara et al. (2023), which showed that there was a significant relationship between fast food consumption patterns and the incidence of dysmenorrhea in adolescent girls, with a p -value of 0.025 (<0.05). A similar study by Nurpratiwi et al. (2025) also showed significant results (p -value 0.016), where female students who often eat *fast food* are more prone to dysmenorrhea than those who rarely consume it.

From these findings, it can be concluded that high consumption of fast food may contribute to an increased risk of dysmenorrhea. Therefore, it is very important for adolescents to start to realize the importance of limiting fast food consumption and replacing it with a balanced nutritious diet. The role of health workers as educators is needed to provide understanding and form healthy eating habits among adolescents.

2. The Relationship of Physical Activity with the Incidence of Primary Dysmenorrhea in Adolescent Girls

Table 5 of the results of bivariate analysis is found that adolescent girls with physical activity that are classified as mild and moderate tend to experience dysmenorrhea with moderate levels of pain more often, while those with heavy physical activity tend

to experience dysmenorrhea with mild pain.

Physical activity is a form of body exercise that occurs due to the movement of skeletal muscles, which causes an increase in the need or use of calories in the body in excess of the amount of energy needed when the body is at rest (Purwanto & Winarno, 2023). This is in line with the research (Dini, 2025) entitled "The Relationship between Physical Activity and the Incidence of Dysminore in Adolescent Girls at SMAN 5 Padangsidempuan City in 2024." Of the 87 respondents, most of them did moderate physical activity (34.5%) with moderate pain complaints (23.0%). The majority of respondents with strenuous physical activity experienced mild pain (17.2%), while those who did light physical activity tended to experience severe pain (12.6%). The results of the Fisher Exact Test showed a value of $p = 0.002$ (<0.05), which means that there is a significant relationship between physical activity and dysmenorrhea. Research (Nanda, 2025) in Ramayana Jambi City also showed that 89.7% of respondents with light activity experienced dysmenorrhea, while 51.9% of respondents with moderate activity did not experience dysmenorrhea. The *Chi-Square test* yielded a p -value = 0.01 (<0.05), indicating a significant relationship between physical activity and the incidence of dysmenorrhea in workers.

Therefore, it can be concluded that adolescents need to regularly do physical activity as an effort to reduce dysmenorrhea complaints. Physical activity helps to improve blood flow and oxygen to the uterus and stimulates the release of beta-endorphins which function as natural pain relievers. In addition to relieving menstrual pain, physical activity also provides additional benefits such as improving mood, increasing immunity, and maintaining overall physical and mental health.

Conclusion

Based on the results of research conducted by researchers with 135 adolescent girls in grades X and XI at SMK Lab Business School Tangerang. Showing the results, there was a combination of Fast Food Consumption Patterns and Physical Activity with the incidence of Primary Dysmenorrhea in adolescent girls at SMK Lab Business School Tangerang.

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