

The Relationship Between Fast Food Consumption Frequency and Menstrual Physical Symptoms Among Adolescent Girls

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ABSTRACT

Physical discomfort during menstruation is a reproductive health issue frequently experienced by adolescent girls and can disrupt both daily and academic activities. High consumption of fast food, which is rich in saturated fats and low in fiber, is theoretically understood to trigger an increase in prostaglandin levels, thereby exacerbating physical discomfort during menstruation. This study aimed to determine the relationship between fast food consumption frequency and physical discomfort levels during menstruation among female adolescents. This quantitative study with a correlational design involved fifty eleventh-grade female students selected through a quota sampling technique. The results of this study showed that there was no statistically significant relationship between fast food consumption frequency and physical discomfort levels during menstruation among female adolescents open parenthesis p equals zero point two three eight semicolon r equals zero point one six six close parenthesis. The originality and value of this study lie in Indonesia, challenging the common generalization that fast food is a direct primary trigger for menstrual physical complaints, thereby emphasizing the need to consider broader multi-factorial lifestyle elements. Practically, healthcare providers and school nurses should adopt a broader health education approach that encompasses holistic lifestyle habits, stress management, and comprehensive nutritional awareness when counseling adolescent girls experiencing menstrual discomfort.

Keywords: Adolescents Girls, Fast Food Consumption, Menstrual Physical Discomfort, Reproductive Health

1. INTRODUCTION

Adolescence represents a transitional phase from childhood to adulthood, ranging from ages 10 to 20 years, characterized by distinct physical and psychological changes. Menstruation is one of the physiological changes occurring in females, normally happening naturally once a month, which indicates the maturation of the female reproductive organs (Ratnawati, 2023). Menstruation is defined as the periodic shedding of blood from the inner lining of the uterus through the vagina. A menstrual cycle is considered normal if it lasts no less than 21 days and no more than 35 days (Suryatno et al., 2023). Menstruation in women is often accompanied by clinical manifestations in the form of physical complaints, such as dysmenorrhea, abdominal cramping, and general discomfort during daily activities (April et al., 2023). Various factors can trigger menstrual cycle irregularities and physical symptoms, including nutritional status, dietary patterns, stress levels, smoking habits, hormonal medication usage, and endocrine system disorders (Widyasari et al., 2025).

Physical discomfort during menstruation can be triggered, among other factors, by frequent consumption of fast food. Fast food typically contains high levels of saturated fat, sodium, and sugar, while being low in dietary fiber and essential vitamins. Common examples of fast food items frequently consumed include burgers, french fries, and fried chicken. The composition of nutrients in fast food is generally unbalanced. According to findings by syakilla et al. (2022), frequent fast food consumption habits can increase the risk of menstrual cycle disturbances by up to 5.6 times, primarily driven by high fat intake that inhibits progesterone metabolism (Widyasari et al., 2025). Fatty acids contained in fast food can impair progesterone metabolism during the luteal phase. This condition stimulates an increased production of prostaglandins in the body, which induces excessive uterine contractions and leads to abdominal cramping and physical pain during menstruation (Syakila et al., 2022).

Global data from the World Health Organization (2023) indicates that approximately 70% of adolescents worldwide consume fast food at least twice a week, with 20% of adolescent girls reporting irregular menstrual cycles due to dietary habits rich in fats and sugars. Nationally, Riskesdas (2024) reported that 52.3% of Indonesian adolescents aged 15 to 20 years consume fast food more than once a week, and 36.7% of adolescent girls suffer from menstrual irregularities (Baco et al., 2026). Given these background factors and the potential health impacts, this study aims to examine the relationship between fast food consumption frequency and physical discomfort levels during menstruation among female adolescents.

2. LITERATURE REVIEW / THEORETICAL FRAMEWORK

2.1 Adolescent Development and Characteristics

Human development progresses continuously through distinct stages, spanning infancy, childhood, adolescence, adulthood, and older age. According to the World Health Organization (WHO), adolescence represents the age range between 10 and 19 years. Santrock asserts that adolescence is a critical transitional phase between childhood and adulthood that encompasses biological, cognitive, and socio-emotional development. The primary characteristic of adolescence is marked by significant physiological changes leading to sexual development and puberty. This development process unfolds through major stages, starting from pre-puberty (the transitional period during the last one to two years of childhood), puberty (the period of reproductive maturation), to adolescence, derived from the Latin term *adolescere*, meaning “to grow into adulthood.” As a transitional period, adolescence serves as a continuous foundation where past physiological experiences and behavioral patterns shape present and future health trajectories (Wisudahningsih et al., 2025). Upon entering adolescence, female adolescents specifically undergo a reproductive system maturation process marked by the onset of first menstruation (menarche), which typically occurs between the ages of 12 and 13. This natural physiological process reflects the biological readiness of the reproductive organs and plays a vital role in maintaining their physical balance and overall health (Zahra et al., 2025).

2.2 Physiological Concept of Menstruation

Menstruation is defined as a periodic physiological event indicating the functional operation of the female reproductive system, characterized by the shedding of the endometrial lining due to regular hormonal menstrual bleeding in females lasts between 3 and 6 days, with an average lost blood volume ranging from 30 to 100 ml, which may increase up to two or three times under certain physiological conditions. Physiologically, the ideal menstrual cycle recurs every 28 days, although the clinically normal cycle length varies between 21 and 35 days (Fita et al., 2025).

The menstrual cycle is strictly regulated by a complex feedback mechanism within the hypothalamic-pituitary-gonadal (HPG) axis. The release of Gonadotropin-Releasing Hormone (GnRH) from the hypothalamus stimulates the pituitary gland to regularly secrete Luteinizing Hormone (LH) and Follicle-Stimulating Hormone (FSH). The secretion of estrogen and progesterone as the two primary ovarian steroids.

Conceptually, the menstrual cycle is divided into two major phases: the follicular phase, characterized by rising estrogen concentrations and the luteal phase, marked by peak progesterone secretion. If fertilization does not occur, progesterone production by the corpus luteum declines sharply approximately three days prior to the onset of menstrual bleeding. This withdrawal of steroid hormones (progesterone and estradiol) triggers the activation of lytic enzymes within cytoplasmic lysosomes to digest cellular tissue and release prostaglandins. This biochemical pathway induces a complex inflammatory, vascular, and endocrine reaction leading to endometrial desquamation and menstrual bleeding (Susila et al., 2026).

2.3 Menstrual Physical Symptoms and Discomfort

Menstruation is a normal physiological process in women; however, it is frequently accompanied by various physical symptoms and discomforts, commonly referred to as dysmenorrhea. Menstrual pain and physical discomfort are highly prevalent globally, affecting an estimated 45% to 90% of women in the United States and up to 92% among adolescents, while in Indonesia, the prevalence of menstrual pain reaches approximately 55% to 64.25%.

Physiologically, menstrual pain is primarily triggered by the release of prostaglandins from the uterine lining, which stimulate excessive myometrial contractions and reduce localized blood flow and oxygen circulation to the reproductive organs. Dysmenorrhea is generally classified into primary dysmenorrhea-pain occurring during menstruation without underlying pelvic pathology-and secondary dysmenorrhea, which stems from gynecological disorders such as endometriosis or adenomyosis.

The physical impact of menstrual discomfort extends beyond localized lower abdominal cramps that radiate to the lower back; it frequently manifests as systemic symptoms including nausea, vomiting, dizziness, diarrhea, fatigue, and headaches. Consequently, these physical symptoms severely disrupt daily routines, sleep patterns, appetite, and concentration, resulting in high rates of absenteeism (ranging from 60% to 85% among adolescents) and a marked decline in academic performance and motivation at school. While many adolescents traditionally rely on pharmacological treatments or rest to manage symptoms, concerns regarding potential side effects and drug dependence have driven the need for safe, long-term, non-pharmacological management strategies, such as physical exercise and cutaneous massage therapy (Afifah et al., 2025).

2.4 Fast Food Consumption and Adolescent Dietary Patterns

Dietary patterns and food consumption habits play a crucial role in determining the nutritional status and overall health of adolescents. Dietary patterns encompass a child's eating behavior evaluated from the frequency, type, timing, and variety of foods consumed daily. During adolescence, individuals undergo rapid physical, mental, and social transitions that are

frequently accompanied by significant shifts in lifestyle and dietary habits. In contemporary society, fast food consumption has become a pervasive trend among adolescents, driven by various behavioral and environmental factors such as delicious taste, practical packaging, affordable prices, peer influence, and extensive exposure to food marketing. Fast food is characterized by high contents of calories, saturated fats, sodium, and refined sugars, alongside a significant deficiency in dietary fiber and essential micronutrients. Consequently, frequent or habitual fast food intake heavily contributes to energy imbalances, where caloric intake exceeds the body's metabolic requirements, directly elevating the Body Mass Index (BMI) and increasing the prevalence of abnormal nutritional statuses, such as overnutrition and obesity among adolescents (Nabila et al., 2026).

3. RESEARCH METHOD

This study employed a quantitative observational research design with a cross-sectional approach to examine the correlation between fast food consumption frequency and the level of menstrual physical discomfort. The target population comprised all 138 eleventh-grade female students, with the individual student serving as the unit of analysis. The inclusion criteria required female students aged 16-18 years who had attained menarche and provided signed informed consent, while those absent or ill during data collection were excluded. A non-probability quota sampling method was utilized to recruit a total sample of 50 respondents based on accessibility and availability. The research instruments utilized two validated tools: a non-quantitative Food Frequency Questionnaire (FFQ) adapted from Yulianti (2025) to measure fast food intake across 16 items, and a 10 item dichotomous questionnaire modified from Ananda (2025) to assess dysmenorrhea-related physical and systemic symptoms. For the measurement approach, fast food consumption frequency was rated on a 6-point scale and categorized into "Rare" and "Frequent" groups, whereas menstrual physical discomfort was scored from 0 to 10 and classified into three ordinal levels: no discomfort, mild discomfort, and severe discomfort. Univariate analysis was performed to compute frequencies and percentages, while bivariate inferential analyses employed Kendall's Tau-b correlation test to assess the association between variables and the Mann-Whitney U test to evaluate group differences, with statistical significance established at $p < 0.05$.

4. RESULTS

4.1 Respondent Characteristic and Variable Distribution

Base on the univariate analysis of 50 respondents ($N = 50$, 100%), all participants were female, with the majority aged 16 years ($n = 44$, 88%) and the remaining 12% aged 17 years ($n = 6$). The distribution of fast food consumption frequency revealed that most respondents fell into the "rare" category ($n = 30$, 60%), while 40% ($n = 20$) were classified in the "frequent" category. Regarding menstrual physical discomfort levels, the majority of respondents experienced severe discomfort ($n = 28$, 56%), followed by mild discomfort ($n = 2$, 4%).

Table 1 Distribution of Respondent Characteristics, Fast Food Consumption Frequency, and Menstrual Physical Discomfort Levels ($N = 50$)

Variable / Category	Frequency (n)	Percentage (%)
Age		
16 years old	44	88.0
17 years old	6	12.0
Fast Food Consumption Frequency		
Rare	30	60.0
Frequent	20	40.0
Menstrual Physical Discomfort Level		

No discomfort	2	4.0
Mild discomfort	20	40.0
Severe discomfort	28	56.0

Note. Data were gathered from eleventh-grade female students using validated questionnaires.

4.2 Correlation Between Fast Food Consumption Frequency and Menstrual Discomfort

Bivariate correlation analysis using Kendall's Tau-b was conducted to test the hypothesis concerning the relationship between the two variables. As shown in Table 2, the analysis yielded a correlation coefficient of $r = 0.166$ with a p -value of 0.238 ($p > 0.05$). This indicates that there is no statistically significant correlation between fast food consumption frequency and the severity of menstrual physical discomfort, with the association showing a very weak strength.

Table 2 Kendall's Tau-b Correlation Analysis Between Fast Food Consumption and Menstrual Physical Discomfort

Variable / Category	Kendall's Tau-b	p -value
Fast Food Consumption Frequency vs. Menstrual Physical Discomfort	0.166	0.238

Note. Statistical significance was established at $\alpha = 0.05$.

4.3 Comparative Analysis of Menstrual Discomfort Across Fast Food Intake Groups

A comparative analysis using the Mann-Whitney U test was performed to evaluate differences in menstrual discomfort ranks between respondents with rare versus frequent fast food intake. The results yielded a test statistic $U = 229$ with a p -value of 0.157 ($p > 0.05$) and an effect size of 0.237. This confirms that there are no statistically significant differences in menstrual physical discomfort levels between the two consumption groups.

Table 3 Mann-Whitney U Test Comparing Menstrual Physical Discomfort Across Fast Food Consumption Groups

Variable / Category	Group	N
Menstrual Physical Discomfort	Rare intake	30
	Frequent intake	20

Note. Evaluated using the non-parametric Mann-Whitney U test via Jamovi.

5. DISCUSSION

Bivariate analysis in this study showed no statistically significant correlation ($\tau = 0.166$, $p = 0.238$) and no significant difference ($p = 0.157$) in the severity of physical menstrual complaints between adolescent girls who rarely and frequently consume fast food. These findings indicate that fast food consumption frequency alone is not a sole determinant directly influencing the intensity of physical menstrual symptoms in adolescent girls. This absence of statistical significance aligns with a quantitative study by Tasmara and Estri (2026), which demonstrated that association between fast food dietary habits and menstrual complaint (such as dysmenorrhea) did not reach statistical significance. This outcome is likely attributed to the fact that physical menstrual complaints represent a manifestation of complex, multifactorial lifestyle dynamics. Within adolescent populations, other key factors including psychological stress, academic burden, physical activity levels, and sleep quality often exert a considerably more dominant influence on hormonal imbalances and the synthesis of pain inducing

prostaglandins. Furthermore, the homogeneity of dietary habits among adolescents, where fast food consumption is widespread across the cohort, narrows the data variation, making it difficult for bivariate analysis to isolate the specific impact of nutrition (Issue et al., 2026).

From a theoretical standpoint, fast food is characterized by high contents of saturated fats, trans fats, and refined sugars, alongside a deficiency in essential dietary fibers and micronutrients. Mechanistically, excessive intake of saturated fatty acids can interfere with normal progesterone metabolism during the luteal phase of the menstrual cycle, potentially promoting an overproduction of inflammatory mediators such as prostaglandins, which induce hypercontractility of the uterine myometrium and subsequent dysmenorrhea. However, the absence of a linear statistical relationship in this study suggests that biochemical pathways linked to dietary intake do not always manifest in a uniform manner across different individuals or small cohorts. The threshold of dietary exposure, individual metabolic variations, and the complex regulation of the hypothalamic-pituitary-gonadal (HPG) axis mean that single dietary components alone may be insufficient to override robust physiological homeostatic mechanisms or trigger acute clinical symptoms without concurrent synergistic stressors.

From a theoretical perspective, these findings indicate that moderate or occasional fast food intake patterns among high school students may not immediately cross the biochemical threshold required to provoke severe acute prostaglandin-mediated myometrial hypercontractility, unless compounded by chronic nutritional deficiencies or severe systemic stressors. Practically, the high overall prevalence of menstrual physical discomfort (96% of respondents experiencing mild to severe symptoms) underscores that school nursing initiatives and reproductive health programs must look beyond single-factor dietary restrictions. Instead, interventions should adopt a holistic framework focusing on comprehensive reproductive health literacy, coping mechanisms for academic stress, and balanced nutrition.

Several plausible alternative explanations account for the non-significant statistical relationship observed in this cohort. First, adolescent menstrual pain is inherently multifactorial; variables such as baseline physical activity, sleep hygiene, genetic predisposition, and acute psychological stress from school environments frequently exert a far more dominant influence on pain perception than dietary intake alone. As highlighted by Tasmara and Estri (2026), academic pressure and organizational burdens in high school settings act as potent triggers for stress-induced endocrine alterations that impact menstrual health far more substantially than nutritional factors from fast food. Second, the non-quantitative Food Frequency Questionnaire (FFQ) measures general frequency rather than exact portion sizes or precise biochemical compositions, which limits exposure measurement precision. Future research should employ longitudinal designs and comprehensive tracking of psychosocial stressors to capture the complex etiology of adolescent menstrual discomfort more accurately.

6. CONCLUSION

This study concludes that there is no statistically significant correlation between fast food consumption frequency and the severity of menstrual physical discomfort (Primary dysmenorrhea) among female adolescents ($\tau = 0.166$, $p = 0.238$). Furthermore, no significant difference in physical symptom severity was observed between students with rare and frequent fast food intake ($p = 0.157$). These findings demonstrate that fast food consumption frequency alone is not a sole or primary determinant directly driving the severity of menstrual complaints in adolescent girls.

The high overall prevalence of menstrual physical discomfort observed in this cohort (96%) underscores that adolescent dysmenorrhea is a complex, multifactorial phenomenon influenced by synergistic physical, psychological, and lifestyle factors, such as academic stress, physical activity levels, and sleep hygiene-rather than isolated dietary habits. Consequently, school nursing services and adolescent reproductive health programs should adopt a holistic healthcare framework that combines balanced nutritional education with stress management and lifestyle modification. Future research should employ longitudinal study designs and quantitative dietary assessment tools while controlling

for psychosocial stressors to further clarify the multifaceted etiology of adolescent menstrual discomfort.

The conclusion should synthesize the main findings and answer the research objective or question directly. The principal contribution, practical relevance, limitations, and directions for future research should be stated concisely without introducing new results.

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CONFLICT OF INTEREST

Any potential conflict of interest should be disclosed. If no conflict exists, an appropriate declaration may be provided.

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