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Psychological Stress in the Association between Media Exposure, BMI, and Menstrual Characteristics among Adolescent Girls

A Cross-Sectional Study

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ABSTRACT

Adolescence is a critical developmental period marked by biological, psychological, and social changes that influence reproductive health. Increasing digital media exposure has been linked to psychological stress and lifestyle changes that may affect body mass index (BMI) and menstrual health among adolescent girls. However, the pathways connecting media exposure to menstrual characteristics remain unclear, particularly the role of psychological stress. This study aimed to examine the mediating role of psychological stress in the relationship between media exposure, BMI, and menstrual characteristics among adolescent girls. A school-based cross-sectional analytical study was conducted among 150 adolescent girls aged 12–18 years. Media exposure was measured using a self-reported screen time questionnaire, psychological stress using the Perceived Stress Scale–10 (PSS-10), BMI from measured height and weight, and menstrual characteristics through a structured questionnaire. Data were analyzed using descriptive statistics, bivariate correlation, and structural equation modeling with bootstrapped mediation analysis. Results: The mean age was 15.2 ± 1.6 years, and the mean stress score was 19.4 ± 6.2. Media exposure was positively associated with psychological stress and BMI. Psychological stress was significantly associated with dysmenorrhea severity and menstrual cycle irregularity and partially mediated the relationship between media exposure and dysmenorrhea severity, both directly and sequentially through BMI. Psychological stress plays a key role in linking media exposure to menstrual characteristics, emphasizing the need

for stress management and healthy digital media use in adolescent reproductive health promotion.

Keywords
Adolescent Girls
Body Mass Index
Dysmenorrhea
Menstrual Characteristics
Psychological Stress

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Introduction

Adolescence is a crucial developmental stage marked by quick changes in biology, psychology, and society that have a big impact on reproductive health outcomes. Among adolescent girls, menstrual health is an essential indicator of overall well-being and endocrine function, reflecting the complex interplay between nutritional status, psychosocial factors, and lifestyle behaviors. Globally, menstrual irregularities such as cycle length variability, dysmenorrhea, and abnormal bleeding patterns are highly prevalent among adolescent girls, with reported rates ranging from 30% to 75%, depending on population characteristics and measurement criteria [1], [2].

Body mass index (BMI) is a well-established biological correlate of menstrual characteristics. Both undernutrition and overweight or obesity has been linked to disruptions in hypothalamic–pituitary–ovarian axis regulation, which may alter gonadotropin secretion and contribute to menstrual disturbances [3]. Importantly, BMI is also shaped by behavioral and psychosocial influences, including stress-related eating and reduced physical activity, which may be reinforced by contemporary digital media environments.

Psychological stress has therefore emerged as a potentially important mechanism within this nexus. Adolescents may experience heightened stress due to academic demands, peer relationships, and social comparison in online environments. Persistent activation of stress-related physiological systems, particularly the hypothalamic–pituitary–adrenal axis, has been associated with alterations in reproductive hormone regulation and menstrual irregularities [4], [5]. Despite this growing evidence base, psychological stress is still infrequently examined as a central explanatory mechanism linking media exposure, BMI, and menstrual characteristics in adolescent girls.

Concurrently, adolescents' daily routines are increasingly influenced by digital media. The widespread availability of smartphones, social networking platforms, and streaming services has contributed to rising screen time and media exposure among school-aged girls. Previous research has demonstrated a link between increased media exposure and sedentary behavior. poorer sleep quality, and increased psychosocial distress, factors that may plausibly influence menstrual function through neuroendocrine and metabolic pathways [6], [7].

However, the mechanisms through which media exposure may translate into menstrual health outcomes remain insufficiently characterized.

A growing body of research indicates that greater media exposure, particularly social an increasing amount of evidence suggests that increased media exposure, especially social media use, is linked to increased psychological distress in teenagers. Proposed mechanisms include social comparison, cyberbullying, fear of missing out, and body image dissatisfaction, which may intensify stress responses during a developmentally sensitive period [8], [9].The importance of digital environments as pertinent psychosocial stressors is supported by a systematic review by Keles et al. [8] that found consistent correlations between social media use and symptoms of depression, anxiety, and psychological distress. Longitudinal evidence further suggests that elevated screen time may precede increases in internalizing symptoms and distress, rather than simply reflecting pre-existing psychological vulnerability [10]. These findings strengthen the conceptualization of media exposure as an upstream factor with potential downstream implications for adolescent health.

Psychological stress has been consistently linked to changes in eating behavior and metabolic regulation that may influence BMI. Stress-related neuroendocrine responses, particularly prolonged cortisol exposure, have been associated with appetite dysregulation, increased consumption of energy-dense foods, and adiposity [11]. Among adolescents, stress has been associated with both higher BMI and maladaptive eating behaviors, highlighting a complex and potentially bidirectional relationship between psychological stress and weight status [12].

Evidence supporting the association between psychological stress and menstrual characteristics has increased in recent years. Stress-related disruption of gonadotropin-releasing hormone pulsatility may impair ovulatory function and alter menstrual cyclicity, potentially leading to irregular cycles and heightened symptom burden [4]. Population-based and clinical studies among adolescents and young women have demonstrated significant associations between perceived stress and dysmenorrhea severity, menstrual irregularity, and premenstrual symptoms [5], [13].

Even though earlier research has documented associations between media exposure and psychological stress, BMI and menstrual characteristics, and stress and menstrual health, these relationships are often examined in isolation. Consequently, psychosocial, behavioral, and biological pathways are rarely integrated within a single analytical framework [2], [3]. Moreover, menstrual health research has traditionally focused on biological determinants, with less attention to psychosocial stressors that are increasingly salient in the digital era. Few studies have conceptualized psychological stress as a potential mechanism linking media exposure to menstrual characteristics, particularly among school-aged adolescent girls.

Previous studies have primarily examined media exposure and menstrual outcomes as separate phenomena or treated psychological stress merely as a confounding or control variable rather than investigating its potential mediating role in this relationship [8], [9]. Moreover, existing research has rarely integrated media exposure, body mass index (BMI), psychological stress, and menstrual characteristics within a single analytical framework, limiting understanding of the interconnected pathways influencing adolescent reproductive health. Evidence from low- and middle-income countries reproductive health of teenagers. Evidence from nations with low and moderate incomes is also limited despite rapid growth in digital media use and distinct sociocultural contexts. Addressing these gaps may contribute to the development of more comprehensive and theory-informed models of adolescent menstrual health.

Material and Methods

A. Research Design

This study used a cross-sectional, school-based analytical methodology to investigate how media exposure, body mass index (BMI), and menstrual features are related to psychological stress in teenage females. A framework of biopsychosocial guided the study, conceptualizing psychological stress as a potential mechanism linking behavioral (media exposure), biological (BMI), and reproductive health outcomes (menstrual characteristics).

B. Participants and Sample

The study population consisted of school-aged adolescent girls enrolled in public junior and senior high schools. Participants required to be between the ages of 12 and 18, have undergone menarche at least six months before data collection, and be able to fill out self-administered questions in Bahasa Indonesia. Adolescents were excluded if they reported a diagnosed endocrine disorder (e.g., polycystic ovary syndrome, thyroid disease), chronic medical conditions affecting menstruation, current pregnancy, or use of hormonal contraception within the previous six months, as these conditions may independently influence menstrual patterns [3].

G*Power version 3.1 was used to calculate the sample size for mediation analysis in a multiple regression framework. The minimum necessary sample size was 129 individuals, assuming a medium effect size ($f^2 = 0.15$), an α level of 0.05, statistical power of 0.80, and four primary predictors (media exposure, psychological stress, BMI, and covariates). The ultimate target sample was 150 teenage females after a 15% attrition margin was introduced to allow for possible missing replies or data loss. This method is in line with suggestions made by Faul et al. [14] for psychosocial mediation analyzes in studies on adolescent health. A multistage cluster sampling technique was applied. Schools were first selected using simple random sampling from the list of eligible schools provided by the local education authority. Within

selected schools, eligible students were identified and invited to participate through classroom-based recruitment. This approach was chosen to minimize selection bias and enhance feasibility in school settings.

C. Instruments

Media exposure was assessed using a self-reported Screen Time and Media Use Questionnaire, adapted from commonly used adolescent media exposure measures. The questionnaire assessed average daily time spent on smartphones, social media platforms, video streaming, and online gaming. Items were scored in hours per day, with higher scores indicating greater media exposure. Similar self-reported screen-time measures have demonstrated acceptable reliability in adolescent populations [6].

The Perceived Stress Scale–10 (PSS-10), developed by Cohen et al. [15], was used to quantify psychological stress. Ten elements make up the PSS-10, which measures how stressful a person's living circumstances were over the previous month. A total score of 0–40 is obtained by rating each item on a 5-point Likert scale from 0 (never) to 4 (very often). Higher scores indicate higher levels of perceived stress.

With Cronbach's alpha values ranging from 0.78 to 0.91, the PSS-10 has shown strong internal consistency in teenage groups [16]. The Bahasa Indonesia version has also demonstrated adequate reliability [17].

Measured weight (kg) divided by height squared (m2) yielded the body mass index. Stadiometers and calibrated digital scales were used to measure height and weight in accordance with established protocols. Based on the World Health Organization's growth reference standards, BMI-for-age z-scores were calculated and classified as underweight, normal weight, overweight, or obese [18].

A standardized menstrual health questionnaire modified from earlier studies on adolescent reproductive health was used to measure monthly features. Age at menarche, cycle regularity, cycle length, menstrual bleeding duration, and the existence and intensity of dysmenorrhea were all evaluated by the questionnaire. A numerical rating scale ranging from 0 (no pain) to 10 (severe pain) was used to assess the severity of dysmenorrhea. Research on teenage menstruation health has extensively employed and validated similar metrics [13].

D. Data Collection Procedure

The Institutional Review Board of the organization granted ethical approval. affiliated institution prior to data collection. Permission was also secured from the local education authority and school principals. Parents or guardians received written information sheets explaining. The goals, methods, and confidentiality measures of the study, and provided written informed consent. Assent was obtained from all participating adolescents using age-appropriate explanations. Data collection was conducted during school hours in designated

classrooms. Anthropometric measurements were performed by trained research assistants to ensure accuracy and consistency. Participants then completed the self-administered questionnaires under supervision to minimize missing data and clarify procedural questions without influencing responses. At the end of data collection, participants were given brief feedback on general adolescent health and information on accessing school health services if needed.

The content validity of all instruments was examined by specialists in adolescent Research on health and nursing. Internal consistency reliability Cronbach's alpha coefficients were used to evaluate. The Perceived Stress Scale (PSS-10) showed a satisfactory level of dependability in the present study. Reliability for the media exposure questionnaire and menstrual characteristics questionnaire was also evaluated, with values indicating acceptable consistency within (Cronbach's $\alpha > 0.70$).

E. Data Analysis

AMOS version 29 and IBM SPSS Statistics version 29 were used to analyze the data. Study variables and participant characteristics were summarized using descriptive statistics. Frequencies and percentages were used to summarize categorical variables, whereas means, standard deviations, medians, and interquartile ranges were used for continuous variables.

Preliminary analyses included assessment of normality using skewness and kurtosis values and examination of multicollinearity using variance inflation factors (VIF). Bivariate relationships among media exposure, psychological stress, BMI, and menstrual characteristics were analyzed using Spearman or Pearson correlation tests, depending on the distribution of the data.

To evaluate the hypothesized pathways, structural equation modeling (SEM) with path analysis was conducted. This approach was chosen because it permits simultaneous estimation of direct and indirect relationships among variables and testing of mediation effects within a single model. Media exposure was specified as the variable that is independent, menstrual characteristics as the outcome variable, and psychological stress and BMI as mediating variables. Age and age at menarche were present as covariates.

Using 5,000 resamples and bias-corrected bootstrapping, indirect (mediation) effects were assessed. When the indirect effect's 95% confidence interval did not include zero, mediation was deemed statistically significant. In accordance with suggested SEM reporting guidelines, model adequacy was assessed using a number of fit indices, such as chi-square (χ^2), comparative fit index (CFI), Tucker–Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) [19].

Results

In total, 150 The study included teenage girls as participants. The average age at menarche was 12.3 ± 1.1 years, while the average age of participants was 15.2 ± 1.6 years. Considering BMI-for-age classification, 14.0% of participants were underweight, 58.0% had normal weight, 18.7% were overweight, and 9.3% were classified as obese. Regarding menstrual characteristics, 32.7% of participants reported irregular menstrual cycles and 61.3% experienced dysmenorrhea. The average daily media exposure was 5.1 ± 1.9 hours/day, and the mean perceived stress score (PSS-10) was 19.4 ± 6.2, indicating a moderate level of perceived stress.

Table 1. The Demographic, Anthropometric, Media Involvement, and Menstrual Qualities (N = 150)

Characteristic	n (%) or Mean ± SD
Age (years)	15.2 ± 1.6
Age at menarche (years)	12.3 ± 1.1
BMI-for-age category	
• Underweight	21 (14.0%)
• Normal weight	87 (58.0%)
• Overweight	28 (18.7%)
• Obese	14 (9.3%)
Media exposure (hours/day)	5.1 ± 1.9
Perceived stress (PSS-10)	19.4 ± 6.2
Menstrual cycle	
• Regular	101 (67.3%)
• Irregular	49 (32.7%)
Dysmenorrhea (yes)	92 (61.3%)
Dysmenorrhea severity (0–10)	4.8 ± 2.3

The descriptive data of the primary Table 2 presents the study factors. The mean BMI-for-age z-score was 0.47 ± 1.12. A typical menstrual period length was 29.1 ± 4.8 days, with a mean bleeding duration of 5.6 ± 1.4 days. The mean dysmenorrhea severity score was 4.8 ± 2.3. Internal consistency of the PSS-10 in this study was acceptable (Cronbach's α = 0.82) (Table 2).

Table 2. Study Variable Descriptive Statistics

Variable	Mean ± SD	Min–Max
Media exposure (hours/day)	5.1 ± 1.9	1–10
Perceived stress (PSS-10)	19.4 ± 6.2	4–36
BMI-for-age z-score	0.47 ± 1.12	−2.4–3.1
Cycle length (days)	29.1 ± 4.8	21–45
Bleeding duration (days)	5.6 ± 1.4	3–9
Dysmenorrhea severity	4.8 ± 2.3	0–9

Bivariate correlation analysis (Table 3) showed that media exposure was positively correlated with perceived level of stress ($r = 0.41$, $p < 0.001$) and BMI-for-age z-score ($r = 0.28$, $p = 0.001$). Perceived stress was significantly associated with menstrual cycle irregularity ($r = 0.34$, $p < 0.001$) and dysmenorrhea severity ($r = 0.46$, $p < 0.001$). BMI-for-age z-score was

moderately associated with dysmenorrhea severity (r = 0.22, p = 0.006) but not with cycle length (r = 0.09, p = 0.274).

Table 3. Correlations Between Important Factors

Variable	1	2	3	4
1. Media exposure	1.00			
2. Perceived stress	0.41***	1.00		
3. BMI z-score	0.28**	0.31***	1.00	
4. Dysmenorrhea severity	0.38***	0.46***	0.22**	1.00

Note. p < .01, *p < .001

The hypothesized path model was shown acceptable match the data: $\chi^2(4) = 7.86$, p = 0.097; CFI = 0.972; TLI = 0.941; RMSEA = 0.068 (90% CI: 0.000–0.121); SRMR = 0.041 (Table 4). Media exposure showed a significant direct effect on perceived level of stress (β = 0.45, p < 0.001) and BMI-for-age z-score (β = 0.29, p = 0.002). Perceived stress was significantly associated with menstrual characteristics, particularly dysmenorrhea severity (β = 0.51, p < 0.001) and menstrual cycle irregularity (β = 0.37, p < 0.001). BMI-for-age z-score also demonstrated a smaller but significant direct association with dysmenorrhea severity (β = 0.21, p = 0.011).

Table 4. Standardized Path Coefficients and Model Fit for Structural Equations

Path	β	p
Media exposure → Psychological stress	0.45	<0.001
Media exposure → BMI z-score	0.29	0.002
Psychological stress → Dysmenorrhea severity	0.51	<0.001
BMI z-score → Dysmenorrhea severity	0.21	0.011

Note: Model fit indices: $\chi^2(4)=7.86$; p=0.097; CFI=0.972; TLI=0.941; RMSEA=0.068; SRMR=0.041

Bootstrapped mediation analysis (5,000 resamples) showed a notable indirect impact of media exposure on dysmenorrhea severity through psychological stress (indirect β = 0.23; 95% CI: 0.14–0.34). The covert pathway just using BMI was smaller but substantial (indirect β) = 0.06; 95% CI: 0.01–0.12). A sequential indirect pathway via psychological stress and BMI was also significant (indirect β = 0.04; 95% CI: 0.01–0.08) (Table 5), indicating that psychological stress partially mediated the relationship between media exposure and menstrual characteristics.

Table 5. Bootstrapped Indirect Effects (5,000 resamples)

Pathway	Indirect β	95% CI
Media → Stress → Dysmenorrhea	0.23	0.14–0.34
Media → BMI → Dysmenorrhea	0.06	0.01–0.12
Media → Stress → BMI → Dysmenorrhea	0.04	0.01–0.08

Discussion

This study examined the role of psychological stress in the relationships among media exposure, body mass index (BMI), and menstrual characteristics among adolescent girls within a biopsychosocial framework. The findings showed that greater media exposure was

associated with higher perceived stress and BMI-for-age z-scores. Psychological stress demonstrated the strongest direct association with menstrual outcomes, particularly dysmenorrhea severity and menstrual cycle irregularity. Furthermore, the mediation analysis indicated statistically significant indirect associations between media exposure and menstrual characteristics through psychological stress alone and sequentially through psychological stress and BMI.

These findings provide empirical support for a potential biopsychosocial pathway linking digital media exposure with adolescent reproductive health. Recent evidence indicates that the relationship between social media use and adolescent mental health is complex but that greater or problematic exposure can be associated with internalizing symptoms and psychological distress [20]. Developmental mechanisms may include heightened sensitivity to social feedback, social comparison, perceived exclusion, self-presentation pressures, and persistent connectivity, all of which may increase psychological vulnerability during adolescence [21]. At the same time, greater screen exposure may contribute to sedentary behavior and altered lifestyle patterns. A systematic review and meta-analysis found a positive association between screen time and obesity-related indicators among children and adolescents [22]. Taken together, these findings provide a plausible context for the observed associations among media exposure, psychological stress, and BMI in the present study.

The mediation findings extend previous literature by suggesting that psychological stress may operate as an explanatory statistical pathway rather than merely as a covariate in the association between media exposure and menstrual health. Nevertheless, because the present study used a cross-sectional design, the indirect effects should not be interpreted as proof of temporal or biological causation. Instead, they identify a pattern of interconnected associations that is compatible with a biopsychosocial framework. This interpretation is particularly relevant in adolescence, when developmental changes in social sensitivity, emotional regulation, digital engagement, and reproductive maturation occur simultaneously [21].

The positive association between media exposure and perceived stress observed in this study is consistent with previous research demonstrating that prolonged screen time and intensive social media engagement are associated with greater psychological distress among adolescents [8]–[10]. More recent meta-analytic evidence also indicates a positive association between social media use and internalizing symptoms across both community and clinical adolescent samples [20]. However, contemporary research cautions against assuming that all digital media exposure has uniformly harmful effects. The consequences appear to vary according to the type of use, content encountered, individual vulnerability, social context, and specific platform affordances [21]. Thus, the present findings are better interpreted as

indicating that greater media exposure may constitute one component of a broader psychosocial risk environment rather than functioning as an independent deterministic cause of stress.

Psychological stress also showed strong associations with dysmenorrhea severity and menstrual cycle irregularity. Physiologically, stress-related activation of the hypothalamic–pituitary–adrenal (HPA) axis may interact with reproductive endocrine regulation. A systematic review and meta-analysis of longitudinal studies demonstrated variation in HPA-axis activity across phases of the menstrual cycle, supporting biological interaction between stress-related neuroendocrine activity and reproductive hormonal processes [23]. Furthermore, a recent systematic review found that most studies examining psychological stress and menstrual function reported associations with menstrual disturbances, particularly irregular menstruation and abnormal menstrual flow [24]. These findings support the biological plausibility of the relationship observed in the present study, although the direction and magnitude of these interactions may differ across developmental stages and individual hormonal profiles.

The association between perceived stress and dysmenorrhea severity is also supported by more direct epidemiological evidence. A recent systematic review and meta-analysis involving 18,080 female college students identified stress as a significant risk factor for primary dysmenorrhea (pooled OR = 1.895), together with factors such as irregular menstrual cycles, early menarche, inadequate sleep, and family history of dysmenorrhea [25]. Although the participants in that meta-analysis were generally older than those in the present study, the consistency of the association strengthens the interpretation that psychological stress deserves greater attention when assessing menstrual symptoms in adolescent and young female populations.

Consistent with previous studies, psychological stress was positively associated with BMI-for-age z-scores. Stress-related neuroendocrine responses, particularly prolonged cortisol exposure, may influence appetite regulation, preference for energy-dense foods, and metabolic processes [11], [12]. In parallel, digital media exposure may indirectly affect weight status through sedentary behavior and displacement of physical activity, and meta-analytic evidence has demonstrated an association between screen time and higher BMI or obesity risk among children and adolescents [22]. These findings suggest that stress and digital exposure may operate through overlapping behavioral and metabolic mechanisms rather than representing completely independent predictors.

In the present study, BMI showed a modest but statistically significant association with dysmenorrhea severity. This result should be interpreted cautiously because evidence concerning BMI and dysmenorrhea remains heterogeneous. A systematic review and meta-

analysis involving nearly 30,000 participants found that underweight status was associated with an increased likelihood of primary dysmenorrhea, whereas evidence for overweight and obesity was less consistent [26]. Thus, the association between body composition and menstrual pain may not necessarily be linear. The present finding based on BMI-for-age z-scores may reflect more complex interactions involving nutritional status, metabolic regulation, inflammatory processes, stress, and reproductive maturation. Future studies should therefore examine BMI categories and potentially nonlinear relationships rather than relying only on continuous BMI measures.

One of the main contributions of this study is the identification of significant indirect pathways linking media exposure with dysmenorrhea severity through psychological stress and BMI. The strongest indirect association occurred through psychological stress alone, reinforcing the potential importance of psychosocial processes in menstrual health. The additional sequential pathway through psychological stress and BMI suggests that psychological and metabolic factors may be interconnected. These findings address a gap in the literature because media exposure, stress, BMI, and menstrual health have frequently been examined as separate domains [2], [3], whereas the present study evaluates them within a single analytical framework. Nevertheless, longitudinal studies are required to determine whether media exposure precedes increases in stress and whether subsequent changes in stress or BMI contribute prospectively to menstrual symptoms.

The findings also have practical relevance because dysmenorrhea during adolescence can substantially affect daily functioning, school participation, well-being, and healthcare-seeking behavior. A recent systematic review focusing specifically on adolescent dysmenorrhea emphasized both its substantial burden and continuing uncertainties regarding recognition and management in community and primary-care settings [27]. Therefore, assessment of menstrual health among adolescent girls may benefit from moving beyond reproductive symptoms alone to include perceived stress, digital-media habits, nutritional status, sleep, and other lifestyle factors. Such an integrated approach would be consistent with the biopsychosocial model examined in this study while avoiding the assumption that any single behavioral factor is sufficient to explain menstrual health outcomes.

Clinical and Health Implications

The results of this investigation have several significant ramifications for adolescent health promotion and clinical practice. First, menstrual health assessment in adolescents should incorporate psychosocial screening, particularly for perceived stress, alongside traditional biological indicators such as BMI and menstrual patterns. School health programs and primary care services may benefit from integrating stress management, digital literacy, and healthy media use education into reproductive health interventions. Second, interventions

aimed at reducing dysmenorrhea and menstrual irregularities should consider addressing upstream determinants, including excessive media exposure and stress-related behaviors. Strategies such as mindfulness-based stress reduction, cognitive-behavioral approaches, and guidance on balanced screen time may help lessen the adverse consequences of digital media on adolescent wellness. These approaches align with broader public health efforts to promote holistic adolescent health by integrating mental health, lifestyle behaviors, and reproductive health education.

Study Limitations

A number of restrictions should be acknowledged when analyzing the study's results. First, causal inference is not possible due to the cross-sectional design, and longitudinal studies are needed to confirm temporal relationships among media exposure, psychological stress, BMI, and menstrual outcomes. Second, media exposure and psychological stress were assessed using self-reported measures, which may be subject to recall and social desirability bias. Third, the study was conducted in a school-based sample from a alone setting, this could restrict generalizability to adolescents in distinct sociocultural or geographic situations. Finally, other relevant elements, like physical activity, sleep quality, and dietary intake, did not directly measured and ought to be considered in the future research to advance elucidate behavioral pathways.

Conclusion

This research provides evidence that the mental stress has a major part in the relationship within media exposure, menstrual cycle, and body mass index characteristics amidst adolescent girls. Media exposure was associated with increased stress and BMI, while psychological stress emerged as the strongest predictor of dysmenorrhea severity and menstrual irregularity. The identification of significant indirect pathways underscores the importance of adopting a biopsychosocial perspective when examining adolescent menstrual health. Interventions that address stress management and healthy digital media use may be essential components of comprehensive strategies to improve menstrual health and overall well-being among adolescents.

Conflict of Interest

The authors affirm that they have no conflicts of interest in relation to this article's publication.

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