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Original Article

Prediction of Sleep Disorders Based on Psychological Distress and Emotional Dysregulation in Adolescent Girls

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Abstract

Objective: The present study aimed to predict sleep disorders based on psychological distress and emotional dysregulation among adolescent girls.

Materials and methods: This research employed a descriptive-correlational design. The statistical population included all adolescent girls studying in secondary high schools in Tehran during the first semester of the 2024–2025 academic years, totaling 87,222 students. A sample size of 300 participants was determined and selected using a multistage cluster random sampling method. Data were collected using the Sleep Disorders Questionnaire, the Psychological Distress Scale and the Emotional Dysregulation Questionnaire. Statistical analyses were performed using SPSS version 27.

Results: The results showed that 45.3% of the variance in sleep disorders was predicted by psychological distress and emotional dysregulation. There was a positive and significant relationship between psychological distress and sleep disorders (β = 0.645). Moreover, emotional dysregulation was positively and significantly related to sleep disorders (β = 0.576). Additionally, stress (β = 0.669), anxiety (β = 0.630), and depression (β = 0.450) showed positive and significant associations with sleep disorders.

Conclusion: Based on the findings, psychological distress and emotional dysregulation play significant roles in predicting sleep disorders and explain a considerable proportion of their variance. Therefore, interventions targeting these psychological variables may help improve sleep quality and enhance mental health among individuals.

Keywords: Sleep Disorders; Psychological Distress; Emotional Dysregulation

Introduction

Psychological issues among adolescent girls hold particular importance, as this stage represents one of the most sensitive periods of personal and social development. During adolescence, girls experience significant physical, emotional, cognitive, and social changes. Hormonal fluctuations resulting from puberty may lead to mood swings and emotional instability, thereby influencing their psychological well-being. Among the key concerns attracting increasing attention from researchers in recent years are sleep disorders in adolescents, especially among

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girls. Studies have shown that sleep quality plays a crucial role in emotional regulation, cognitive processing, and mental health, and that sleep disturbances are often associated with higher levels of psychological distress and emotional dysregulation (1, 2). Moreover, research indicates that sleep problems during adolescence are not only linked with anxiety and depression but also with difficulties in emotion control and poor social adjustment (3, 4). Therefore, investigating sleep disorders among adolescent girls and the psychological factors that influence them can play a vital role in promoting mental health and preventing emotional and behavioral difficulties.

Empirical studies have demonstrated that poor sleep quality may be accompanied by increased stress, anxiety, concentration and memory problems, and impaired decision-making abilities among adolescent girls. Inadequate or poor-quality sleep weakens emotional regulation and increases negative reactivity to daily stressors (1). Furthermore, scientific evidence suggests that sleep disorders are not merely consequences of psychological disorders such as depression and anxiety, but may also act as contributing or exacerbating factors, establishing a bidirectional relationship between sleep and mental health (3). Hence, examining the relationship between sleep quality and the psychological condition of adolescents—particularly girls—are of great importance for preventing deeper psychological issues in the future.

One of the key psychological factors associated with sleep disorders and mental health is psychological distress. Psychological distress refers to a condition in which an individual feels helpless and powerless in facing life's pressures and believes they have no control over outcomes (5). This state is typically characterized by feelings of hopelessness, depression, anxiety, and decreased motivation to cope with everyday challenges (6). Research has shown that psychological distress can lead to reduced quality of life, poor academic performance, and increased risk of emotional and behavioral disorders among adolescents (4). In adolescents, psychological distress often manifests as feelings of incompetence, lack of control, and inability to manage difficulties. Such distress may stem from academic and social pressures, hormonal and physical changes during puberty, poor coping skills, or unhealthy family relationships. If not identified and managed in time, psychological distress can result in serious outcomes such as academic decline, social problems, and even risk-taking behaviors (7).

Another psychological factor closely linked to sleep difficulties is emotional dysregulation, which refers to the inability to identify, accept, or effectively control one's emotions (and sometimes those of others). Simply put, emotional dysregulation reflects poor emotional control and management skills (8). This condition can manifest as intense emotional reactions, difficulty calming down after stress or discomfort, and ineffective coping strategies. Individuals struggling with emotion regulation are more prone to stress, anxiety, depression, and interpersonal difficulties. Emotional dysregulation negatively affects attention, memory, and decision-making, and may reduce the individual's overall functioning and success (9).

In general, studying sleep disorders in relation to psychological distress and emotional dysregulation among adolescent girls is of great significance due to the direct and indirect impact of these factors on sleep quality. Psychological distress—which encompasses anxiety, depression, and stress—may activate the sympathetic nervous system and disrupt sleep through the release of stress hormones. Emotional dysregulation, which involves difficulties in managing emotions, can also heighten anxiety and contribute to sleep problems. Together, these factors can undermine sleep quality and thus are considered primary predictors of sleep disorders among adolescent girls. Research highlights that these variables are especially important during adolescence, a period marked by psychological and social transitions. Existing research gaps—such as the long-term effects of sleep disorders on emotional and cognitive development, the complex role of emotions and worries in sleep, and the scarcity of studies focusing specifically on adolescent girls—have motivated this study to deepen understanding of these relationships and to inform interventions aimed at improving sleep quality among this population (10). In previous studies Yu et al. (11) examined the role of worry and sleep disturbances among medical students; Shi et al. (12) explored the relationship between anxiety, depression, and sleep disorders in adolescents; and Yang et al. (10) confirmed the association between emotional regulation difficulties and sleep quality in teenagers. Accordingly, the present study seeks to answer the question: Can sleep disorders be predicted based on psychological distress and emotional dysregulation among

adolescent girls.

Materials and methods

Study Design: The present study employed a quantitative research approach. In terms of purpose, it was an applied study, and methodologically, it was descriptive–correlational in nature. Data were collected through a field survey.

Population and Sampling: The statistical population consisted of all adolescent girls studying in secondary high schools in Tehran during the first semester of the 2024–2025 academic year, totaling 87,222 students. Based on the rule proposed by Tabachnick and Fidell (13), the sample size was determined to be 300 participants. Sampling was carried out using a multistage cluster random sampling method.

First, four eastern districts of Tehran (Districts 7, 8, 13, and 14) were randomly selected. Then, three schools were randomly chosen from each district, followed by three randomly selected classes from each school. Finally, ten students were randomly chosen from each class to participate in the study.

In total, 360 questionnaires were distributed, and after screening, 300 fully completed and valid questionnaires were included in the final analysis.

Inclusion Criteria: Participants were required to:

1. Be female adolescents enrolled in secondary high school (grades 10–12).
2. Be aged between 16 and 18 years.
3. Willingly participate in the study.

Exclusion Criteria: Participants were excluded if they:

1. Provided incomplete questionnaire responses.
2. Expressed unwillingness to complete the questionnaires.
3. Had a history of school dropout for more than one academic semester.

Research Instruments

Sleep Disorders: The Pittsburgh Sleep Quality Index (PSQI), developed by Buysse et al. (14), was used to assess sleep quality and disturbances during the past month. The questionnaire consists of 13 items, five of which are open-ended and not included in statistical analyses. Items are rated on a four-point Likert scale ranging from 1 (“not during the past month”) to 4 (“three or more times per week”). The total score ranges from 13 to 52, with higher scores indicating poorer sleep quality. The reliability of the PSQI has been reported with Cronbach’s alpha values ranging from 0.79 to 0.83 in the original study (14) and 0.83 in Castro et al. (2004). The Persian version, validated by Afkham Ebrahimi et al. (15), showed satisfactory reliability ($\alpha = 0.79$) and acceptable face validity.

Psychological Distress: The Depression, Anxiety, and Stress Scale (DASS-21), developed by Lovibond and Lovibond, was used to measure psychological distress (16). The questionnaire includes 21 items assessing three dimensions: depression, anxiety, and stress, each measured by seven items. Responses are rated on a four-point Likert scale ranging from 0 (“did not apply to me at all”) to 3 (“applied to me very much”). In the factor analysis by Antony et al. (17), the three components explained 68% of the total variance, and Cronbach’s alpha coefficients were 0.97, 0.92, and 0.95 for depression, anxiety, and stress, respectively. The Persian version was validated by Samani and Jokar, reporting Cronbach’s alpha values of 0.81, 0.74, and 0.78, and test–retest reliabilities of 0.80, 0.76, and 0.77 for the same subscales (18). The KMO index (0.9012) and Bartlett’s test of sphericity ($\chi^2 = 3092.93$, $p < 0.001$) confirmed the adequacy of the sample for factor analysis. Confirmatory factor analysis supported the three-factor structure consistent with the original DASS model.

Emotional Dysregulation: The Short Form of the Difficulties in Emotion Regulation Scale (DERS-SF), developed and validated by Børberg et al. (19), was used to assess emotional dysregulation. The scale consists of 16 items rated on a six-point Likert scale ranging from 1 (“almost never”) to 6 (“almost always”). Børberg et al. (19) reported high reliability (Cronbach’s $\alpha = 0.94$). The Persian version, validated by Fallahi et al., also demonstrated strong internal consistency ($\alpha = 0.91$) and satisfactory model fit indices (CFI = 0.99, RMSEA = 0.04) (20).

Data Analysis: Data analysis was conducted at both descriptive and inferential levels. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize participants’ characteristics. The normality of data distribution was examined using the Kolmogorov–Smirnov test, as well as skewness and kurtosis indices when necessary. At the inferential level, multiple linear regression and Pearson correlation analyses were performed to test the research hypotheses. All statistical analyses were conducted using SPSS version 27.

Table 1: Descriptive Statistics of the Research Variables

Variable	n	Minimum	Maximum	Mean	Standard Deviation
Emotional Dysregulation	360	16	99	45.00	20.496
Sleep Disorders	360	13	49	26.00	7.244
Stress	360	7	28	15.00	4.659
Anxiety	360	7	28	15.00	5.770
Depression	360	7	28	16.00	4.953
Total (Psychological Distress)	360	21	83	46.00	13.906

Results

Based on the descriptive results (Table 1), the mean and standard deviation values of the study variables indicated that emotional dysregulation (Mean = 45) and psychological distress (Mean = 46) were at relatively high levels, showing the highest means among all variables. Moreover, the mean score of sleep disorders (Mean = 26) suggests that participants experienced sleep problems at a mild to moderate level. The three components of psychological distress—stress, anxiety, and depression—showed mean scores of 15, 15, and 16, respectively. These findings reflect a moderate level of psychological strain among adolescent girls participating in the study.

The results of the Kolmogorov–Smirnov and Shapiro–Wilk tests indicated that none of the research variables—including emotional dysregulation, sleep disorders, psychological distress, and its subcomponents (stress, anxiety, and depression)—followed a normal distribution ($p < 0.05$). Although the Skewness and Kurtosis indices did not show severe deviations from normality, they suggested that some variables had slightly skewed or flatter distributions compared to a normal curve (Table 2). Accordingly, the research hypotheses were analyzed using nonparametric methods, particularly the Spearman rank-order correlation test.

Main Hypothesis: Sleep disorders can be predicted based on psychological distress and emotional dysregulation among adolescent girls.

Regression Analysis Results

The findings revealed that the multiple correlation coefficient ($R = 0.673$) indicates a relatively strong relationship between the predictor variables—psychological distress and emotional dysregulation—and the dependent variable, sleep disorders. The coefficient of determination ($R^2 = 0.453$) showed that approximately 45% of the variance in sleep disorders is explained by these predictors, and the adjusted R^2 (0.448) suggests the stability and adequacy of the regression model. The Durbin–Watson statistic (1.918) indicated that there was no autocorrelation among residuals, confirming the independence of errors. Moreover, the ANOVA results confirmed the overall significance of the regression model ($F = 98.256$, $p < 0.001$), indicating that the model has good predictive power in explaining variations in sleep disorders among adolescent girls (Table 3).

As presented in Table 4, the results indicate that psychological distress was the strongest and most significant predictor of sleep disorders among adolescent girls, with an unstandardized coefficient of $B = 0.291$, a standardized coefficient of $\beta = 0.558$, and a p-value < 0.001. This finding suggests that higher levels of psychological distress are directly associated with increased sleep problems.

In contrast, emotional dysregulation showed a positive but statistically marginal relationship with sleep disorders ($B = 0.040$, $p = 0.085$), suggesting that its predictive effect was not statistically significant at the 0.05 level, though the direction of effect remained positive. The collinearity diagnostics (Tolerance = 0.318–0.355, VIF = 2.820–3.144) were within acceptable ranges, indicating no multicollinearity issues among the predictor variables and confirming the reliability of the regression model.

Table 2: Results of the Kolmogorov–Smirnov and Shapiro–Wilk Normality Tests

Variable	n	Shapiro–Wilk	Kolmogorov–Smirnov	Skewness	Kurtosis
Emotional Dysregulation	360	0.000	0.000	0.412	–0.602
Sleep Disorders	360	0.000	0.027	0.189	–0.512
Stress	360	0.000	0.000	0.278	–0.498
Anxiety	360	0.003	0.000	0.297	–0.814
Depression	360	0.000	0.002	0.103	–0.499
Psychological Distress (Total)	360	0.001	0.064	0.372	–0.086

Table 3: Summary of the Regression Model

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin–Watson	F	Sum of Squares	Sig.
1	0.673	0.453	0.448	5.381	1.918	98.256	8535.238	0.000

Predictor Variables: Psychological Distress, Emotional Dysregulation
Dependent Variable: Sleep Disorders

Overall, these findings demonstrate that psychological distress exerts a strong and significant influence on sleep disorders, whereas the effect of emotional dysregulation is weaker and not statistically significant.

Discussion

The present study aimed to predict sleep disorders based on psychological distress and emotional dysregulation among adolescent girls. The results showed that 45.3% of the variance in sleep disorders could be explained by psychological distress and emotional dysregulation. Furthermore, the standardized regression coefficient indicated that sleep disorders were positively predicted by psychological distress ($\beta = 0.558$). This finding aligns with the results of previous studies conducted by Sharifian & Khoda-Rahimi (21), Askari et al. (22), Talebi-Ashleghi & Ghodrati-Mirkouhi (23), Karimi-Rad et al. (24), Mesbahi & Saraei (25), Mousavi & Ghorbani (26), Golehdarizadeh & Mousavi (27), Chieh et al. (28), Cheung et al. (29), Salworth & Lippold (8), Ullrich et al. (30), and Clancy et al. (31).

Given that psychological distress and emotional dysregulation are key components of psychopathology closely related to sleep disorders, numerous studies have shown that these constructs can significantly impair sleep quality and disrupt sleep patterns. For instance, Sharifian and Khoda-Rahimi (21) reported that depression, mediated by anxiety sensitivity, was associated with poor sleep quality, while Askari et al. (22) found that depression indirectly reduced sleep quality through internet addiction. Similarly, Talebi-Ashleghi and Ghodrati-Mirkouhi (23) demonstrated significant relationships between depression, stress, and sleep disturbances among female students, confirming the predictive mechanism observed in this study. In line with this, Karimi-Rad et al. (24) found that depressive and anxiety symptoms were related to poor sleep quality, and Mesbahi and Saraei (25) confirmed the association between negative emotions and sleep disorders in clinical populations. In the context of emotional dysregulation, Mousavi and Ghorbani (26) reported that the inability to understand and regulate emotions predicted sleep disturbances, while Cheung et al. (29) confirmed a reciprocal and mutually reinforcing relationship between emotional dysregulation and sleep disorders. Chieh et al. (28) also reported that negative experiences such as loneliness and abuse were linked to sleep problems among adolescents, often accompanied by emotional sensitivity. Furthermore, Golehdarizadeh and Mousavi (27) found that worry, rumination, and obsessive thoughts were associated with lower sleep quality, and Clancy et al. (31), in a meta-analysis, confirmed that rumination and worry were linked to reduced sleep duration, poorer quality, and longer sleep latency. Similarly, Salworth & Lippold (8) and Ullrich et al. (30) emphasized the detrimental effects of anxiety and worry on sleep quality. Overall, these findings suggest that both psychological distress and emotional dysregulation can simultaneously and significantly predict sleep disorders among adolescents through mechanisms such as increased cognitive arousal, weakened cognitive inhibition, impaired emotion regulation, and overactivation of the nervous system.

With respect to the finding that sleep disorders were significantly predicted by psychological distress, it can be argued that sleep problems—representing disruptions in both biological and psychological functioning—are directly influenced by mental health components.

Table 4: Regression Coefficients for Predictor Variables

Variable	Unstandardized Coefficient (B)	Standard Error	Standardized Coefficient	t	Sig.	Tolerance	Variance Inflation Factor
Constant	11.508	2.211	—	5.205	0.000	—	—
Emotional Dysregulation	0.040	0.023	0.114	1.725	0.085	0.355	2.820
Psychological Distress	0.291	0.036	0.558	8.024	0.000	0.318	3.144

Psychological distress, characterized by feelings of helplessness and lack of control, triggers emotional, cognitive, and physiological mechanisms that lead to or exacerbate sleep disturbances among adolescents. Individuals experiencing psychological distress often report symptoms such as anxiety, depression, and exhaustion, which may activate the sympathetic nervous system and result in prolonged cortisol secretion (15). This chronic physiological arousal disrupts the natural sleep–wake cycle (32). Adolescents with high levels of distress often experience intrusive negative thoughts, dysfunctional beliefs, and a lack of control over stressful situations, which increase cognitive activity at night and reduce sleep quality. Based on Seligman's learned helplessness theory (1976), when individuals repeatedly face situations in which their efforts fail to produce change, they come to believe that their responses are ineffective. This leads to reduced motivation, passivity, and lower psychological functioning, making them more prone to chronic anxiety and sleep disturbances. Emotionally, psychological distress is closely associated with high levels of anxiety and depression (33). These negative emotions induce persistent physiological responses such as elevated heart rate, muscle tension, and nighttime awakenings, which compromise both the quality and quantity of sleep. Moreover, individuals experiencing psychological distress often adopt maladaptive attributional styles, interpreting negative events as internal, stable, and global. Such thinking patterns intensify feelings of helplessness and hinder emotional recovery (34). Consequently, their minds remain engaged in persistent rumination and negative self-talk, preventing entry into restorative stages of sleep. In summary, psychological distress weakens executive functioning, reinforces negative expectations, and sustains chronic stress—all of which contribute to the development of sleep disorders.

Limitations: This study had several limitations. The geographical scope of the sample was limited to the eastern districts of Tehran; therefore, generalization of the findings to other regions with different cultural, economic, or educational contexts should be made cautiously. Data were collected solely through self-report questionnaires, which may involve response biases, particularly among adolescents. Additionally, the cross-sectional design of the study prevented assessment of longitudinal changes in sleep patterns. Moreover, the study model focused only on three psychological variables, leaving out other biological, environmental, and familial factors that might influence sleep.

Ethical Considerations: To ensure ethical integrity and protect participants' rights, several ethical measures were observed. The purpose, procedures, and duration of the study were fully explained to all participants, and informed consent was obtained prior to participation. Participants were assured of anonymity and confidentiality, and no identifying information was recorded in the questionnaires or reports. They were also informed that participation was voluntary and that they could withdraw at any stage without any consequences. Furthermore, participants were told that the results could be shared and explained to them upon request.

Conclusion

Based on the findings, psychological distress and emotional dysregulation play significant roles in predicting sleep disorders and explain a considerable proportion of their variance. Therefore, interventions targeting these psychological variables may help improve sleep quality and enhance mental health among individuals. Moreover, the study model focused only on three psychological variables, leaving out other biological, environmental, and familial factors that might influence sleep.

Conflict of Interests

Authors declare no conflict of interests.

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