Sleep Disturbances and Their Relationship with Anxiety and Stress in Adolescents.

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Abstract

Background: Sleep disorders are a growing issue of social health among adolescents, and they are also closely associated with high anxiety and stress. Academic requirements, the use of electronic devices, and lifestyle modifications are among the contributing factors that can result in sleep disruption, emotional regulation and cognitive dysfunction.

Objectives: To find out sleep disturbances of adolescents and assess the association between anxiety and stress using validated psychological measurement.

Methodology: This study was a cross-sectional conducted at Department of Medicine, LRH-MTI, Peshawar between jan 2019 to jan 2021.one that involved 150 adolescents between the age of 13 and 18 years. The quality of sleep was evaluated with the use of Pittsburgh Sleep Quality Index (PSQI), anxiety and stress were evaluated with Depression Anxiety Stress Scale (DASS-21). The SPSS version 19.0 was used to analyze data. The correlation and independent t-tests of Pearson were used, and $p<0.05$ was taken as statistically significant.

Results: The mean age was 15.8 years with a standard deviation of 1.7 year. 63 % of the adolescents reported poor sleep quality and had a mean PSQI score of 8.2 + 2.5. Adolescents who had poor sleep had a higher score in anxiety (mean = 13.5 ± 4.7, $p=0.001$) and stress (mean = 15.3 ± 5.4, $p=0.002$) than did adolescents with good sleep. There were positive significant relationships between PSQI and anxiety ($r=0.63$, $p<0.001$) and PSQI and stress ($r=0.58$, $p<0.001$).

Conclusion: The rates among the adolescents are high and are strongly linked to high levels of anxiety and stress. Interventions including the sleep hygiene education, stress, and psychological counseling should be offered early to enhance mental health and academic performance in this group.

Keywords: Sleep Disturbances, Anxiety, Stress, Adolescents.

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Introduction

Sleep is an important biological process that is required to support cognitive processes, emotional control and physical well being. Adolescence is a stage of physiological, psychological, and social

transformations that can be the cause of upset sleep patterns. The issue of sleep deprivation in adolescents is the topic that has gained a great amount of attention over the last few years because, in addition to a high correlation with mental illnesses, it is closely linked to anxiety and stress [1]. Adolescence is the period between childhood and adulthood indicating an elevated academic pressure, social pressures, and behavior alterations which can disorient the sleep-wake cycling [2].Studies across the world have shown that between 25-40 % of the experience of adolescent lacks or has inadequate sleep [3]. The problem is caused by factors like use of electronic devices at late hours, use of caffeine, irregular sleep patterns and heavy workload in school [4]. Sleep deprivation has been related to low academic achievement, deterioration of attention, emotional imbalance, and psychiatric disorders risks [5]. Also, persistent sleep deprivation interferes with hormonal and circadian systems, which can enhance psychological trauma and emotional instability [6].Sleep disturbances and mental health are bi-directional, in such a way that sleep deprivation may increase anxiety and stress levels, and a high level of anxiety may negatively affect the ability to fall and sustain sleep [7]. A study by Gregory and Sadeh showed that lack of good sleep in adolescence is a predictive of anxiety and depressive disorders later in life [8]. Equally, Alvaro et al. established that adolescents who had high levels of stress had longer sleep latency and less time of total sleep than their low-stress counterparts [9].There has also been greater aggravation of the problem of sleep with increased use of smartphones and exposure to blue light during the night. In a cross-sectional Study by Lemola et al., the use of mobile devices during the night was highly correlated with the reduction of sleep duration as well as an augmentation of anxiety symptoms among teenagers [10]. Besides, environmental factors like noise, family conflicts and school stress are important factors that contribute to the onset and maintenance of sleep problems [11]. Unattended sleep disturbances may have emotional health and quality-of-life consequences in the long-term. It is important to identify and treat poor sleeping patterns early enough to avoid psychological disorders [12]. There are a number of studies which recommended that sleep hygiene education and stress management can result in better sleep duration and mental health outcomes [13,14]. Nevertheless, not much studies have investigated such association in developing nations where academic and social demands are stiff among adolescents [15]. Thus, the proposed study served to evaluate the frequency of sleep disturbances in adolescents and to define their correlations with the levels of anxiety and stress with the help of the validated psychology instruments. The knowledge of this association can inform educational practitioners, parents and medical practitioners to adopt specific measures to encourage adolescents to sleep better and maintain a good mental health.

Material & Methods

It was a cross-sectional study which was carried on 150 adolescents aged between 13 and 18 years in Department of Medicine, LRH-MTI, Peshawar between jan 2019 to jan 2021. The sleep quality was measured by using the Pittsburgh Sleep Quality Index (PSQI) and anxiety and stress were measured through the application of Depression Anxiety Stress Scale (DASS-21). The two instruments have been shown to be very reliable and valid in adolescents. Participants and guardians had their informed consent.

Inclusion Criteria

Patients with aged 13 -18 years who gave consent and attended school on a regular basis.

Exclusion Criteria

Adolescents who had a known psychiatric diagnosis or were taking drugs that influenced sleep were not included.

Ethical Approval

Ethical Approval was taken in Ethical Approval Board of LRH-MTI, Peshawar which approved the ethical aspects. The participants gave their informed consent. The Study was conducted according to the principles of the Declaration of Helsinki (2013) and the requirements of a country to safeguard the rights of the participants, provide confidence, and engagement on a voluntary basis

Data Collection

The data were gathered through self-administered questionnaires that were administered at school hours. The process was done under confidentiality and anonymity.

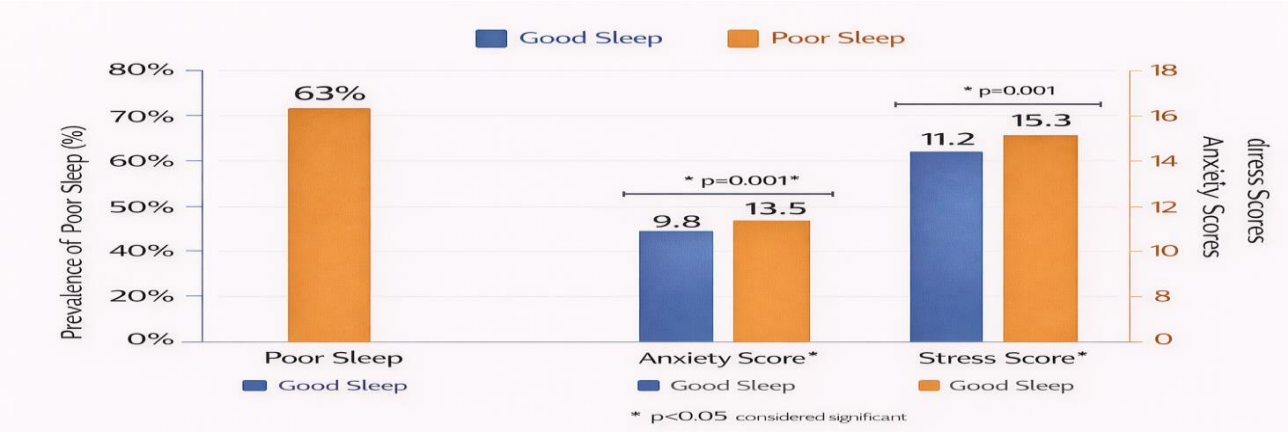
Statistical Analysis

The SPSS version 19.0 was used to analyze the data. The descriptive statistics were provided as the mean with standard deviation (SD). Correlation was performed by Pearson to explore the relationship existing between sleep quality, anxiety and stress. Independent t-tests were used to identify group differences and p less than 0.05 was taken to be statistically significant.

Results

They involved 150 adolescents (74 and 76 males respectively) whose Mean age was 15.817 years. There were 94 respondents (63%), who had poor sleep quality according to PSQI scores. The average score of the PSQI was 8.2 or 2.5 and the higher the score the poorer the sleep quality. The average anxiety score was 13.5/ 4.7 and the average stress score was 15.3/ 5.4.The adolescents who had poor sleep quality were found to have high anxiety and stress compared to those who had good sleep quality p=0.001 and p=0.002 respectively. The correlation analysis of Pearson showed that there was a strong and positive correlation between PSQI and anxiety (r=0.63, p<0.001) and PSQI and stress (r=0.58, p<0.001). These findings have shown that a greater level of sleep disturbance is linked with the increased levels of anxiety and stress among teenagers.

Fig 1: Prevalence of Poor Sleep and Associated Anxiety and Stress Scores Among Adolescents.



The chart shows that 63% of adolescents reported poor sleep. Those with poor sleep had significantly higher anxiety (p=0.001) and stress (p=0.002) scores compared to the good sleep group.

Table 1: Demographic Characteristics of Study Participants (n = 150)

Variable	Frequency (n)	Percentage (%)
Gender		
Male	74	49.3
Female	76	50.7
Age (years)		
13–14	42	28.0
15–16	61	40.7
17–18	47	31.3
Socioeconomic Status		
Low	39	26.0
Middle	81	54.0
High	30	20.0

Table 2: Comparison of Sleep Quality, Anxiety, and Stress Scores Among Adolescents

Parameter	Good Sleep (n=56)	Poor Sleep (n=94)	p-value
PSQI Score (Mean ± SD)	4.5 ± 1.3	8.2 ± 2.5	<0.001*
Anxiety Score (Mean ± SD)	9.8 ± 3.2	13.5 ± 4.7	0.001*
Stress Score (Mean ± SD)	11.2 ± 4.0	15.3 ± 5.4	0.002*

Table 3: Correlation Between Sleep Quality, Anxiety, and Stress Scores

Variables	Correlation Coefficient (r)	p-value
PSQI vs. Anxiety Score	0.63	<0.001*
PSQI vs. Stress Score	0.58	<0.001*
Anxiety vs. Stress Score	0.66	<0.001*

Discussion

The Study determined the correlation between sleep problems and their relationship with anxiety and stress in adolescents. Our results showed that low sleep quality was very common and has strong dependence on high anxiety and stress levels, indicating that, sleep and emotional well-

being have a strong mutual relationship. These findings are consistent with the existing Study that found out that sleep deprivation has negative impacts on psychological health and cognitive performance in adolescents [16]. The Study carried out found that adolescents whose sleep patterns are abnormal and who go to bed late experience increased anxiety and depressive symptoms than those that have regular sleep patterns [17]. Also pointed out that the insufficient sleep hygiene behavior, including excessive screen time and shorter sleep periods, leads to stress and emotional dysregulation among the teens [18]. Such results support our observation that low sleep quality is both symptomatic and a risk factor of development of psychological distress. In the same manner, it was concluded that study sleep disturbances were predictors of the development of generalized anxiety disorder among adolescents after one year of follow up [19]. Such a longitudinal correlation suggests that the early treatment of sleep-related problems can be a preventive measure in the mental health management of this group of people. In addition, a study by found out that adolescents who had chronic insomnia were at a considerably high risk of developing anxiety and mood disorders [20]. Lifestyle and environmental variables are also found to mediate the association between sleep and psychological stress which showed that academic pressure, use of technology during the night and lack of parental supervision were found to have a significant influence on sleep duration and quality among students [21]. In our Study, the level of stress among students having irregular bedtime habits and longtime exposure to electronic media was significantly high. These are likely to increase physiological arousal leading to impaired circadian rhythms and decreased sleep efficiency [22,23]. These findings are consistent with our findings, which indicate that there is a positive relation between poor sleep (high PSQI scores) and the level of anxiety. In general, these results can be viewed as high-intensity evidence of multifaceted interactions between sleep, stress, and anxiety. A longitudinal and the use of interventions in future studies is justified to create a cause-effect relationship and test specific interventions to improve sleep hygiene and mental resilience in adolescents.

Conclusion

This study highlights a significant association between sleep disturbances, anxiety, and stress among adolescents. The low quality of sleep had a strong association with increased levels of anxiety and stress. This age group is vulnerable and it can be predicted that early identification, awareness programs and interventions that encourage healthy sleep habits can enhance psychological well-being and academic performance.

Limitations

The cross-sectional nature of the study does not permit the causal relationship to be constructed between sleep disturbances and the psychological outcomes. The self-reported questionnaires can bring about the bias of recall. As well the sample size was restricted to one geographic region which could limit the generalizability of the results to larger groups of adolescents.

Future Findings

Further Study ought to use longitudinal and interventional designs in order to identify causal relationships between sleep, anxiety, and stress. Sleep objective data including the use of actigraphy and measurement of lifestyle choices including diet and physical activity would potentially offer more understanding into determinants of adolescent mental health that are modifiable.

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Conflict of Interest: Nil

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Authors Contributions

Concept & Design of Study: **Atta Muhammad Khan**[2]

Drafting: **Sadaf Abdullah**[3]

Data Collection & Data Analysis: **Zia ullah Khan**[1]

Critical Review: **Zia ullah Khan**[1]

Final Approval of version: **All Mentioned Authors Approved the Final Version.**

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