

COVID-19 and Lockdown: Anxiety Levels and Sleep Difficulties among School Students in Saudi Arabia

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ABSTRACT

The researchers in this study aim to assess the impact of the novel coronavirus (COVID-19) crisis on the anxiety level and sleep difficulties of the students at the International Indian School Jubail (IISJ), in Saudi Arabia. The study sample comprised of 400 students (200 boys and 200 girls) selected from the senior secondary sections of the school, studying in grades Ninth to 12th (aged 14-18 years). The Zung Self-Rating Anxiety Scale and the Athens Insomnia Scale tests were administered to the students using Google Forms survey during the midst of the Coronavirus outbreak from June to September 2020. Results indicated that there was a significantly high level of anxiety and subsequently sleep difficulties among the students. Girls were more anxious than boys and consequently faced difficulty in sleep induction than boys. Moreover, staying awake during nights was substantially high during the lockdown among girls. Our study outcomes demonstrated the prevalence of varied sleep manifestations among our participants and noticeable side effects of lockdown period on the quality of sleep. Correlation established between sleep difficulties and anxiety levels in boys and girls displayed those students with more sleep difficulties are having higher anxiety levels than students with fewer sleep difficulties. The findings of this study showed that there was a greater prevalence of negative impact of COVID-19 on the mental health of the participants. Such disruptions can hamper the learning ability, motivation, and concentration of students, which are successful pointers in accomplishing educational goals. Our study is significant because it will encourage educational institutions to provide life-skills programs to combat anxiety and sleep difficulties as a part of the curriculum and render psychological support to students. There is also a pressing necessity to implement public awareness programs, and interventions for sound mental health of the general populace.

Keywords: COVID-19, anxiety, sleep, mental health, school students.

INTRODUCTION

The COVID-19 pandemic originating from the Wuhan city of China (Hubei Province) was a game changer impacting the entire human race across the globe. On 30 January 2020, the World Health Organization (WHO) declared a universal public health emergency, and governments were urged to prepare for the global spread of the pandemic. With the implementation of emergency lockdown regulations, billions and billions of people were forced to stay at home. Governments all over the world witnessed unprecedented changes and challenges at all fronts. Unlike pandemics and epidemics that broke out earlier, the 2019 COVID-19 pandemic, a global worldwide crisis has fractured the sensibilities of mankind (smouldering till date).

Due to the abrupt increase of infected cases and deaths globally, people started worrying about the threat to public health, and the uncertainty about future kept them disturbed most of the time. Consequently, changes in our societal lifestyles and daily lives due to the pandemic led to significant health problems. Anxiety, stress, anger, coupled with extreme fear of being infected resulted in distress and depression among the public. Social restrictions, quarantine or self-isolation rendered an environment of 'work from home' concept which further accelerated the stressful climate as families encountered the challenges of mixing their profession with familial

commitments. Health, being a major concern gets adversely affected during pandemics and epidemics with the psychic component posing larger challenges and concerns.

With nationwide lockdowns, alert and social distancing protocols being enforced everywhere, schools and university campuses in the Kingdom of Saudi Arabia were also completely shut. On 9 March 2020, the Saudi Ministry of Education (MOE) directed the closure of educational organizations as well as initiated the delivery of classes

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through online mode. Closure of educational institutions had a terrible impact on the psychic well-being of students, teachers and parents. The effect of school closures disrupted the lives of students and their families, posing potential threat and dire consequences to children's health and well-being (Golberstein, Wen, & Miller, 2020). Previous research studies conducted after the outbreak of SARS (severe acute respiratory syndrome) in 2003, documented the psychological effects of quarantine and how the infectious disease caused anxiety and post-traumatic stress disorders (Hawryluck et al., 2004; Wu, Chan, & Ma, 2005). Traumatic, stressful, and sudden events can cause a serious and negative impact on the mental health of people. The worry of being contacted or transmitted with the disease causes more psychological distress as people are constantly gripped with a sense of fear. Such unexpected and shocking events or viral outbreaks can cripple the psycho-emotional well-being of humans.

As a result of the major transformations in the lives of the individuals due to the COVID-19 pandemic, many concerns about the mental health of people have been brought to light, specifically among the students. While recent studies have largely focused on college/university students' psychic well-being during the pandemic, studies on school students are minimal. Previous research conducted on mental health problems during the COVID-19 crisis addressed symptoms of anxiety, fear, depression, stress, sleep disturbances etc. Apparently, we can say "anxiety is a complex state characterized by a subjective feeling of apprehension and heightened physiological reactivity" (Levitt, 2016, p.5). Similarly, like anxiety, any abnormal change in the way one sleeps is a sleep disorder, with some common sleep disorders being Insomnia, Sleep Apnea, Restless Leg syndrome, Narcolepsy, and Rapid Eye Movement (REM) sleep behaviour disorder.

LITERATURE REVIEW

A cluster of studies on mental health from different nations were published at similar and/or different stages or periods of COVID-19 lockdown with varying samples. However, the major focus of all these studies was a common thread linking to the viral outbreak and its impact on the general population. Regarding studies on anxiety in students, one of the preliminary studies was from China, with a sample of 7143 college students (Cao et al., 2020). This was followed by a plethora of articles highlighting the importance of mental health care issues. The findings of a study from a Spanish University on the psychological impact after the introduction of strict and prolonged confinement (after about one to two months) on business students, showed that they suffered from high levels of anxiety, with female students suffering more than males (Garvey et al., 2021). Another study on health care students at a Jordanian University aimed to assess the levels of anxiety and depression showed that they were high. The study also assessed the subsequent impact on their learning process, which was found to be negatively affected, as reported by more than half of the respondents (Basheti, Mhaidat, & Mhaidat, 2021). Similarly, a study on final year management students during lockdown in India showed that the level of depression was as high as 43%, with social distress, worry about career

paths, economic downturn, job offers revoked as the main causes. Insecurity about employment opportunities offered by companies, fear of delay in joining their jobs posed serious threats to their careers (Satpathy & Ali, 2020). Research conducted in Saudi Arabia about the anxiety level of university students showed that 35% of students experienced moderate to extreme levels of anxiety, with an association being formed between their anxiety and level of study, especially the fourth-year students (Khoshaim et al., 2020). In the study exploring the impact of the pandemic on mental health of Pakistani students, the female students were found to be more anxious compared to male students. The reason was that the female students in this study, on one hand had to attend online classes and meet overwhelming assignments, and on the other hand, they had to cope with household obligations, act as caregivers to their siblings, in addition to important stressors (from qualitative feedback) associated with their academic performance, and uncertainty about exams (Baloch et al., 2021).

Besides these studies on anxiety, a deluge of studies has also surfaced about sleep patterns and difficulties. In a study conducted on Italian residents during home confinement, changes in sleep patterns were markedly visible, as the young adults went to bed and woke up later, spending more time in bed, with poorer sleep quality. The researchers also assessed the usage of digital media before bedtime which surged during the lockdown. The increase in sleep difficulties was stronger in those who suffered from anxiety, stress symptomatology and a higher rate of depression (Cellini et al., 2020). An interesting study from Israel explored the perceptions of sleep problems among children and parents focusing on maternal psychological responses and reports of sleep during the COVID-19 crisis. The findings of the study were reported as varied – no changes in sleep patterns (Zreik et al., 2021). A study by Marelli et al. (2021) on sleep quality in Italian university students and administration staff found the impact of delay in bedtime and in wakeup was more in students than in administrative staff members. Students also suffered from difficulty in falling asleep or problems in sleep initiation, with home confinement affecting their sleeping habits. These research studies emphasize the effects and implications on the psychic health of students during the lockdown due to COVID-19 outbreak.

In light of the increasing health concerns about the pandemic, the researchers in this study assessed the impact of the novel coronavirus (COVID-19) crisis on two aspects of mental health – anxiety level and sleep difficulties of the students at the International Indian School Jubail (IISJ), in Saudi Arabia. It is essential to examine these two factors as they are directly connected to a student's academic progress. IIS Jubail has been a boon to the children of the expatriate Indian community living in and around Jubail, Saudi Arabia. Executing the best standards of learning and ensuring quality routes towards successful educational practices, IIS Jubail has carved a prominent place amongst the international schools in the Kingdom. Owing to the COVID-19 pandemic situation, IIS Jubail resorted to quick steps in adopting a systematic approach in coping, managing, and continuing its educational goals, while upholding the school's mission and vision at the forefront. The aim of the study was to assess the impact of

COVID-19 lockdown on the levels of anxiety and sleep difficulties of Indian school students in Saudi Arabia.

METHOD

Study Design, Participants, and Data Collection

The survey was conducted online through a Google Forms questionnaire. The Zung Self-Rating Anxiety Scale, a rating instrument for anxiety, and the Athens Insomnia Scale, a psychometric instrument for insomnia, were used. The questions from these two scales were transferred to Google Forms and administered online. Participants were from the International Indian School Jubail (IISJ), in Saudi Arabia. The study sample comprised of 400 students (200 boys and 200 girls). They were randomly selected from 1367 students of the senior secondary sections of the school, from grades Ninth to 12th, inclusive of both boys and girls. The researchers used simple random sampling process (Takooshian, Mrinal, & Mrinal, 2001) for the selection of sample. These 400 students responded to the questionnaire after voluntarily agreeing to participate in the survey. The age groups of these respondents were 14 to 18 years. The participants were informed about the objectives of the study and were assured of the confidentiality of their responses and the possibility of the results being published.

The Zung Self-Rating Anxiety Scale and the Athens Insomnia Scale tests were administered during the online counselling classes which are routinely conducted in school by one of the authors of this paper. Data was collected during the midst of the Coronavirus outbreak from June to September 2020. The responses were tabulated and treated with statistical tools. The demographic information of the participants is detailed in Table 1. 66.5% boys were from grades Ninth and Tenth while 33.5% were from grades 11th and 12th. The percentage of girls was equal in the Ninth and Tenth grades (50%) as well as in 11th and 12th grades (50%).

Measures

The researchers used the following survey tools to measure the anxiety level and sleep difficulties in students. The questionnaires were administered through Google Forms.

Zung Self-rating Anxiety scale

The Zung Self-Rating Anxiety Scale (SAS) is a validated 20-item self-report questionnaire (Zung, 1971). It is a method of measuring the levels of anxiety in patients who have anxiety-related symptoms. The scale focuses on the most common anxiety disorders. The self-administered test has 20 questions. Each question is scored on a scale of 1-4 (1=none or a little of the time, 2=some of the time, 3=good part of the time, 4=most of the time). Questions 1-5 depict emotional anxiety symptoms, and questions 6-20 signify the physical symptoms of anxiety. The overall scores in this scale range from 20-80. The norms set to measure the anxiety ranges are as follows: 20-44 (normal range), 45-59 (mild to moderate), 60-74 (above moderate), and 75-80 (extreme).

Athens Insomnia scale

The Athens Insomnia Scale (AIS), a validated self-assessment

psychometric instrument records and assesses any sleep difficulty. The AIS-8 is an eight-item self-report questionnaire (Soldatos, Dikeos, & Paparrigopoulos, 2000). It measures the severity of sleep difficulties. The scale comprises of eight items or questions (see Table 4), where questions 1-5 apply to nocturnal sleep – sleep induction, awakenings during the night, final awakening, total sleep duration, and quality of sleep. Questions 6-8 apply to dysfunction during daytime – well-being during the day, functioning capacity during the day and lastly, sleepiness during the day. Each question has a range from 0 to 3, where 3 represents negative items – very delayed or decreased or severe on the Likert scale. Based on the aggregate scores of all these eight factors, the score limit ≥ 6 is used to identify sleep problems.

Statistical Tools

To analyze the data at different levels, we used the t-test to determine the significant differences in anxiety levels and sleep difficulties amongst boys and girls. Means and percentages were calculated to understand anxiety levels based on the Zung Self-rating Anxiety Scale and to study the distribution of sleep-related symptoms based on the Athens Insomnia Scale. Chi-Square test was used to find whether the differences in anxiety level ranges was statistically significant amongst boys and girls. Pearson's correlation coefficient was used to find the statistical relationship between two continuous variables – sleep difficulties and anxiety levels in boys and girls.

RESULTS

Impact of COVID-19 Lockdown on Anxiety Levels of Students

400 students were administered the Zung Self-rating Anxiety Scale through Google Forms to assess their anxiety levels. The Means and SD are displayed in Table 2. The bar graph displays the mean of anxiety levels (Figure 1). From the table it is very evident that girls ($M=52.95$) were high on anxiety level compared to boys ($M=42.01$).

An independent samples t-test was done to determine the differences between boys and girls in anxiety levels during the lockdown. The study found a significant difference between boys and girls. 200 boys who received the Zung Self-rating Anxiety Scale ($M=42.01$, $SD=9.6652$) compared to 200 girls on the same test ($M=52.95$, $SD=13.3863$) demonstrated significantly low anxiety levels. The calculated t-value is $t = -9.370$, with df (degrees of freedom) = 398 and p (probability value) = 5.480 with CL (confidence level) = 95% (see Table 2). These results suggest that boys were less anxious compared to girls during the crisis.

Analysis of Anxiety Range in Boys and Girls

Furthermore, the researchers analyzed the anxiety ranges for boys and girls. The norms set to measure the anxiety ranges are as follows: 20-44 (normal range), 45-59 (mild to moderate), 60-74 (above moderate), and 75-80 (extreme). From Table 3 and Figure 2, it is evident that a higher percentage of boys (35%) are in the normal anxiety range as compared to girls (25%), while a higher percentage of girls (65%) are in the mild to

moderate range as compared to boys (60%). 10% of girls and 5% of boys are in the above moderate anxiety range. Total 30% respondents are within the normal anxiety range, 62.5% students are in the mild to moderate anxiety range and 7.5% are in the above moderate anxiety range.

To test whether the gender of students was different on anxiety ranges, we used the χ^2 test of independence with $\alpha = 0.05$ as criterion for significance. The Chi-square test is calculated based on the frequencies obtained from Table 3. It was found that there is no significant relationship between anxiety level and gender. $\chi^2 (2, N = 200) = 0.0292$, the P-Value (probability value) is .985506. As the Chi-square value is less than the probability value, it implies the differences are not statistically significant. The result is not significant at $p < .05$. This denotes that there is no significant difference in anxiety ranges between boys and girls. However, it can be observed that maximum students are in the mild to moderate anxiety range.

Impact of COVID-19 Lockdown on Sleep Difficulties of Students

400 students were administered the Athens Insomnia Scale through Google Forms to assess their sleep problems. The Means and SD are displayed in Table 2. The bar graph displays the mean of anxiety levels (Figure 3). From the table, it is apparent that girls ($M = 16.91$) were high on anxiety level compared to boys ($M = 8.23$). An independent samples t-test was done to determine the differences between boys and girls on sleep difficulty during the lockdown. There was a significant difference between boys and girls. 200 boys who received the Athens Insomnia Scale ($M = 8.23$, $SD = 4.0021$) compared to 200 girls on the same test ($M = 16.91$, $SD = 3.7740$) demonstrated significantly low sleep difficulty. The calculated t-value is $t = -22.315$, with df (degrees of freedom) = 398 and p (probability value) = 3.976 with CL (confidence level) = 95% (see Table 2). These results manifest that the girls suffered more sleep difficulties than boys during the crisis.

Distribution of sleep related symptoms based on the Athens Insomnia Scale

Table 4 shows the distribution of sleep related symptoms based on the Athens Insomnia Scale. We found that the difficulty in sleep induction among the boys was 32.5%, while among the girls it was 41%. And it was observed that girls (16%) suffered awakening during the night more than boys (11.5%). The total sleep duration was found to be more among the boys (9%) than girls (5%), though the overall quality of sleep was slightly better among the girls (15%) than boys (13.5%). A higher percentage of boys (12.5%) had decreased functioning during the day compared to girls (2.5%). Daytime sleepiness was also observed to be more among the boys (2%) compared to girls (1%). But the sense of well-being during daytime was found to be the same in both genders (16% each). Overall, we can conclude that sleep difficulties of varying manifestations were found among the study participants during lockdown (Figure 4).

Correlation between sleep difficulties and anxiety

levels in boys and girls

A Pearson correlation coefficient was computed to assess the linear relationship between sleep difficulties and anxiety levels in boys and girls. Table 5 shows that there is a positive correlation between the two variables, $r (198) = 0.68$, $p < 0.01$ (in boys) which means the results are 99% correct, implying if this test is conducted 100 times, we will get 99 like results. Also, similar results were observed in girls $r (198) = 0.53$, $p < 0.01$. The Pearson correlation test showed a significant positive relationship between sleep quality and level of anxiety among students of IIS Jubail.

DISCUSSION

The current study draws into discussion the impact of the COVID-19 lockdown on mental health, with regard to anxiety and sleep difficulties of students in Saudi Arabia. Also, this study is the first of its kind in the Kingdom to explore about Indian school students' psychological health during the crisis. As a result of major factors like reduced physical and social contact with peers, changes in daily routines and loneliness, psychological distress led to increased anxiety and depression amongst students. Several studies have reported that anxiety levels flared up due to social isolation. The core reason is that apparently humans being termed as social animals, consider communication and interaction as vital for their existence in the community. When these interactions are seized, it causes a severe blow, adversely affecting the behavioural tendencies and the mental health of individuals.

As a result of deviation from the normal routine and the drastic changes that emerged out of the pandemic, it was imperative to underline the prevalence of mental health issues, as the ongoing crisis has largely dented the educational process. The purpose of this study was to assess school students' mental health and explore the effect on certain aspects. The major results of this study have shown negative impact of the lockdown during Covid-19 on anxiety levels and sleep difficulties in these school students. It was found that the students' mental health was significantly affected during the pandemic, with girl students displaying relatively high levels of anxiety in comparison to boys. The implications are that these disruptions can hamper the learning ability, motivation, and concentration of students, which are successful pointers in accomplishing educational goals.

A look at one of the previous studies revealed the reason for high levels of anxiety thoughts. In one of the cross-sectional studies conducted on high school girls and boys, it was disclosed that metacognitive beliefs affected girls more than boys. Girls were unable to control being worried and suffered from more and more worry which affected their health and hence they perceived that worry is dangerous and must be avoided (Bahrami & Yousefi, 2011). Earlier studies help to shed light on the aspect that girls are more prone to anxiety than boys. In a recent study among Chinese high school students, the results revealed that the female gender was at a higher risk factor for anxiety, and the higher the grade, the greater the anxiety reported among the senior high school students (Zhou et al., 2020). The findings of this current study were also similar and consistent with the findings of previous studies – girls are higher on the scale of anxiety resulting from the

COVID-19 outbreak (Baloch et al., 2021; Garvey et al., 2021; Marelli et al., 2021; Wang & Zhao, 2020). Our results indicated that girls displayed higher percentage in the mild to moderate anxiety range and above moderate anxiety range, while boys showed higher percentage in the normal anxiety range. In total, majority of the students were in moderate anxiety range compared to normal anxiety range. Moreover, our results are in line with those observed in Cellini et al.'s (2020) study that deduced that the participants with higher levels of anxiety have more sleep problems. A significant relation was found between sleep disturbances and anxiety levels during the pandemic.

The pandemic has remarkably affected students' life in disparate ways, including sleep. As the objective in our study was to investigate sleep habits and disorders, it was observed that the difficulty in sleep induction and staying awake during nights was significantly high during the lockdown amongst girls. It is surprising to note that though the total sleep duration was found to be more among the boys, yet the overall quality of sleep was better among the girls. In addition, the lockdown induced significant daytime sleepiness and decreased functioning amongst the boys in comparison to the girls, with the sense of well-being same for both boys and girls. Our study outcomes demonstrated the prevalence of varied sleep manifestations among our participants and noticeable side effects of lockdown period on quality of sleep and increased anxiety. Correlation established between sleep difficulties and anxiety levels in boys and girls displayed those students with more sleep difficulties are having higher anxiety levels than students with fewer sleep difficulties. The findings of this study showed that there was a greater prevalence of negative impact of COVID-19 on the mental health of the participants. With students staying awake during the nights, lifestyles have turned unscheduled and the sense of keeping track of time has gone awry. Being confined indoors means being exposed to low levels of natural light, which is vital in building components in our body. It is evident that sleep initiation occurs followed by a healthy sense of well-being during the daytime. If the biological sequences of daytime are disturbed, it can lead to poorer sleep quality during nights. Ranjbar et al. (2021) reported some findings regarding Iranian students' sleep patterns and lifestyle aspects (during their leisure). It was found that the majority (53.5%) had even more than twelve hours of sleep throughout the day during lockdown. Unprecedented lockdown, unanticipated changes during quarantine period have had profound effects on students potential behavioural and sleep patterns.

Sleep initiation problems, frequent night awakenings, nightmares and sleep panic attacks are some of the symptoms of troubled sleeping at night. Generally, sleep problems or difficulties occur due to changes in sleep habits. When a child does not sleep enough or if their schedule goes disturbed or at times unpredictable, they are more likely to feel lethargic and sluggish resulting in a lack of concentration during their online classes and non-completion of tasks. It can also make them feel irritable leading to a change in their attitude and misbehaviour with parents and siblings at home. And this may result in high anxiety levels. Hence, anxiety and depression are more common in children who have chronic sleep problems. With the sleep-wake rhythms changed remarkably during this crisis, our study also reports increased incidence of anxiety symptoms

associated with sleep. In comparison with the other studies, Becker and Gregory's (2020) editorial section gave recommendations for improved sleep. Although many students suffered from sleep disturbances, they suggested for attaining adequate sleep, one can avail the opportunities of reduced travelling time (to and from school), reduced preparation time for in-person presence, and reduced effort in extracurricular activities.

Extensive research has shown that mental health and academic performance go hand in hand. This fact is quite evident in this pandemic situation too. If a student is under stress, anxiety, depression or any mental health issue, their cognitive capacity and concentration will malfunction, and students might lose interest in their studies. For success in life, mental health plays a pivotal role. Educational organizations have traditionally been focusing on the physical health of students by imparting physical education courses as part of the curriculum, but psychological health has always taken a backseat. Our study enlightens the need to simultaneously incorporate psycho-social curricula to be able to manage stressful situations during such emergency crises. This study is significant because it will encourage educational institutions to provide life-skills programs to combat anxiety and sleep difficulties as a part of the curriculum and render psychological support to students. This will also equip them to cope up with crisis situations in the future, thereby preventing further hassles in their academic performance.

CONCLUSION

The Covid-19 pandemic is considered as one of the unanticipated challenges coupled with various obstacles. Hence, dealing with emotional and psychological issues during the current pandemic has been a massive challenge for mankind. The current study concluded that anxiety levels are high and showed evidence of sleep difficulties in students. Besides, it can be inferred that girls suffered awakening during the nights and had higher anxiety levels in comparison with boys. The fear of getting infected or losing their loved ones to the pandemic coupled with the worry to rapidly adjust to the new teaching and assessment procedures would have contributed to enormous pressure on the students (Khoshaime et al., 2020). Constant support and encouragement from teachers during this time of crisis is essential to help and heal students psychologically, for they have been under constant stress and pressure ever since the pandemic broke out. At times, teachers need to be more flexible during catastrophic events like pandemics or epidemics and be ready to relax rules, extend deadlines, accept open-ended responses, and make students feel less stressed. Educational institutions need to offer psychological support in whatever manner possible through online counselling sessions, workshops concerning mental health, especially for girls as they are more vulnerable during periods of isolation. Saudi Arabia to a large extent has been able to tackle the COVID infected cases systematically and the educational sector too has been handled effectively. However, there is a pressing necessity to implement public awareness programs, and interventions for sound mental health of the general populace. The researchers of this study believe that communications, interactions and building interpersonal

relationships with friends and family members, besides personal health care will help fight against COVID-19 anxiety issues. This current study adds to the existing body of studies from various countries on mental health issues. Undoubtedly, previous and recent studies have provided the basis and inspiration for composing this research. This study also calls for an urgent need of introducing coping mechanisms and strategies by policy makers, curriculum developers, clinical practitioners, and education reformers during pandemics and disasters. It further recommends educational organizations to be ready with back-up plans to tackle and avoid losses incurred during such disasters and crisis events.

LIMITATIONS

This study has some limitations, including other variables like stress and depression. The study did not include cross-sectional studies between students of other International Indian schools in the Kingdom. Also, this study's sample limits itself to students from senior secondary sections of the school. Lastly, the study's coverage limited itself to students' perception of home confinement or lockdown and its impact on their mental health and does not include other factors like contact with COVID-19 patients or deaths in family, influence of media which can be considered for our future research.

Table 1. Participants' Demographic Details.

Gender	Grades		Total	Age % Mean (SD)
	9th – 10th	11th – 12th		
Boys (N)	113	87	200	15.2 (2.3)
Percentage (%)	66.5	33.5	100	-
Girls (N)	100	100	200	15 (1.2)
Percentage (%)	50	50	100	-

Table 2. Means, SD and t-Test Values of Different Variables.

Variable	M (Boys)	SD (Boys)	M (Girls)	SD (Girls)	t- Test	df	p	95% Confidence Interval of the Difference
Anxiety Level	42.01	9.6652	52.95	13.3863	-9.370	398	5.480	CI [7.684, 14.196]
Sleep Difficulty	8.23	4.0021	16.91	3.7740	-22.315	398	3.976	CI [7.5952, 9.7648].

Table 3. Analysis of Anxiety Range in Boys and Girls.

	Within Level	Normal	Frequency (%)	Mild Moderate	to	Frequency (%)	Above Moderate	Frequency (%)
Boys (N=200)	70		35	120		60	10	5
Girls (N=200)	50		25	130		65	20	10
Total (N=400)	120		30	250		62.5	30	7.5

Table 4. Distribution of sleep related symptoms based on the Athens Insomnia Scale.

Items of AIS	Boys N=200	Frequency (%)	Girls N=200	Frequency (%)	Total N=400	Frequency (%)
Sleep Induction	65	32.5	82	41	147	36.75
Awakenings During the Night	23	11.5	32	16	55	13.75
Final awakening earlier than desired	8	4	7	3.5	15	3.75
Total Sleep duration	16	8	10	5	26	6.5
Overall Quality of sleep	27	13.5	30	15	57	14.25
Sense of well-being during the day	32	16	32	16	64	16
Functioning (Physical and Mental) during the day	25	12.5	5	2.5	30	7.5
Sleepiness during the day	4	2	2	1	6	1.5

Table 5. Summary of Correlation Matrix Showing Sleep Difficulties and Anxiety Levels in Boys and Girls.

Boys (200)		Anxiety Level	
	r		Sig
Sleep Difficulties	0.68		0.01, p < 0.01
Girls (200)		Anxiety Level	
	r		Sig
Sleep Difficulties	0.53		0.01, p < 0.01

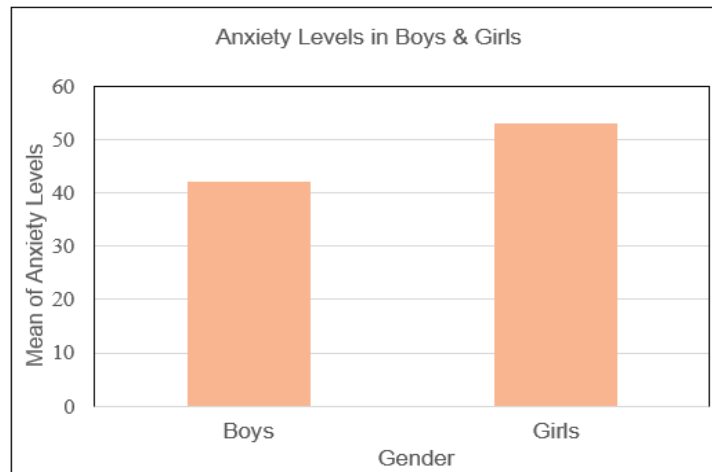


Figure 1. Anxiety Levels in Boys & Girls

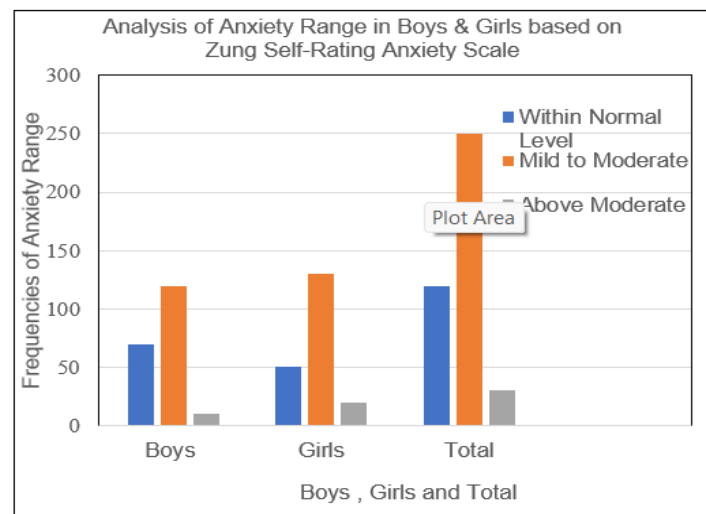


Figure 2. Analysis of Anxiety Range in Boys & Girls

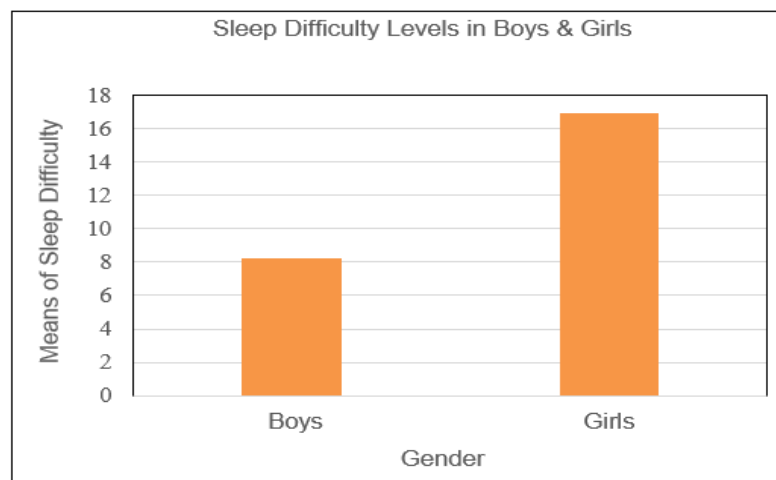


Figure 3. Sleep Difficulty Levels in Boys & Girls

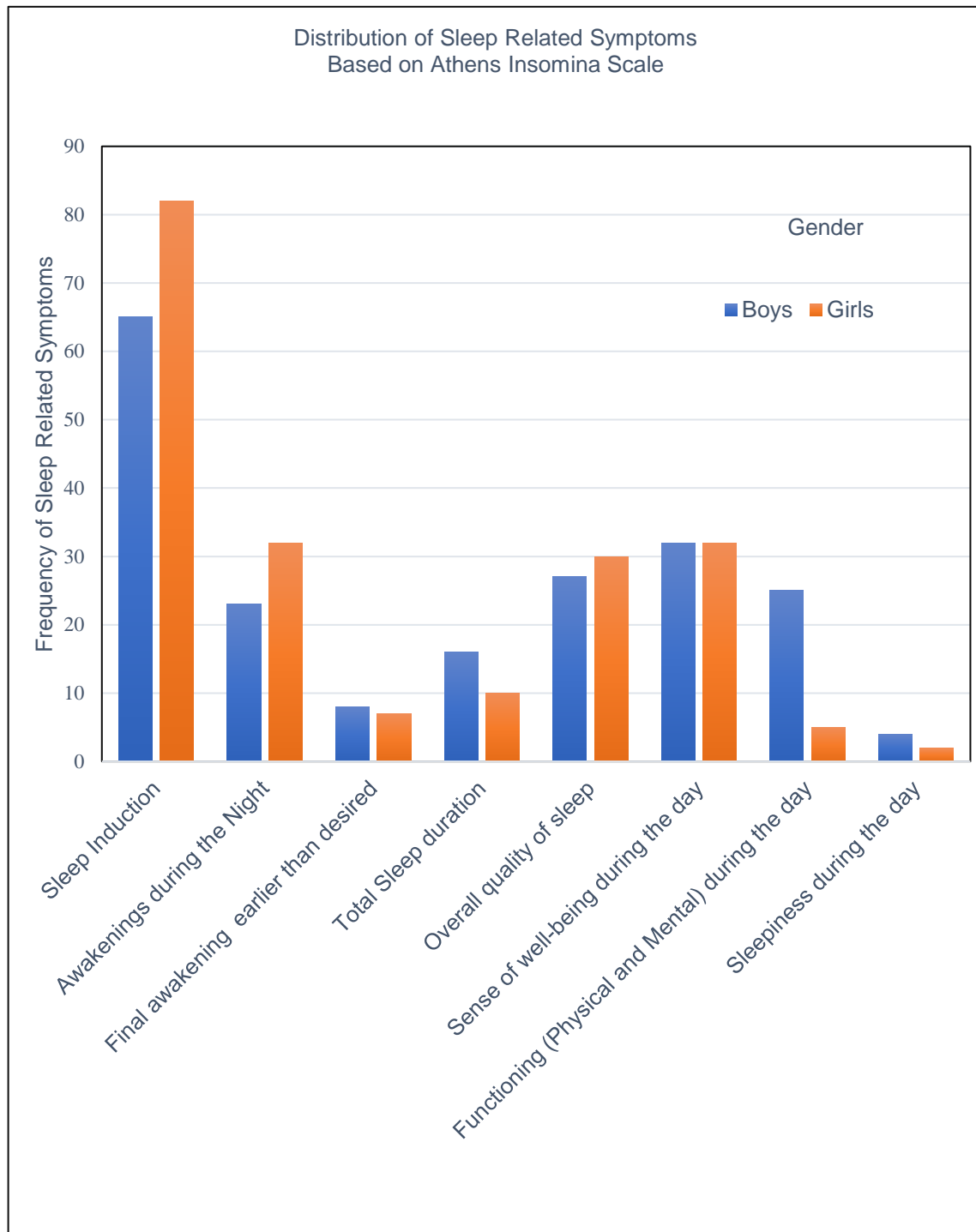


Figure 4: Analysis of Sleep Related Symptoms in Boys & Girls

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