Annals of Clinical and Analytical Medicine

Prevalence of Anxiety and its Effect on Academic Performance Among Secondary School Students in Al-Ahsa City, Eastern Saudi Arabia, 2020: Cross-Sectional Study

Shaima Al-Makinah (1) *, Zahra Al-Aithan (1), Ahmed Al-Quryan (2)

(1) Resident in Saudi Board of Family Medicine Training Program, Al-Ahsa, Saudi Arabiaa.
(2) Consultant Family Medicine, Postgraduate Centre of Family and Community Medicine, MOH, Al-Ahsa, Saudi Arabia

*Corresponding author

Abstract

Introduction: One out of five adolescents with anxiety refuses to attend school and half the adolescents with anxiety perceived by their parents as had impairment while concentrating on schoolwork, when giving oral reports or when taking an exam. There were few studies aiming to assess anxiety among school students Saudi Arabia. This study aimed to estimate the prevalence and determinants of anxiety among secondary school students and its association with sleep quality.

Methods: The study design is a descriptive cross-sectional study that included secondary school students in Al-Ahsa city. The sample size was determined based on the number of students in secondary schools in Al-Ahsa which was taken from ministry of education, and it was calculated by website-based statistical calculator with a 5% margin of error and 95% confidence level. Self-completed questionnaires were distributed to all participants, via electronic link, which contains sociodemographic questions, General Anxiety Disorder (GAD 7) scale.

Results: Out of 719 secondary school students responded to the survey, 70.1% were females and 41.9% were in the second year of the secondary school. Regarding anxiety level, about 35% were considered to be non-anxious, 54% were considered to have mild to moderate anxiety level, while 10.8% had severe anxiety. Female gender was significantly associated with anxiety as 69.2% of the female students were anxious in comparison to 54.4% of male students. Having an inadequate sleep, having a stressful event in the past 6 months, and having working mothers were potential predictors for anxiety among the students.

Conclusions: The prevalence of anxiety among secondary school students is high and more than tenth of the students had severe anxiety which may require a sort of professional intervention. Certain subgroups of high-risk students should be targeted by public health interventions, such as females or those with stressful events, aiming at improvement of mental health of school students in Saudi Arabia.

Keywords: Anxiety, Sleep quality, Adolescents, Risk factors, Saudi

Introduction

usually have their onset during adolescence life (1). It affects about 20 percent of them and often under-diagnosed (2). One of the most prevalent mental health problems among adolescents is anxiety, and it is highly prevalent reaches up to 62 percent (3). It is the most common health problem in women and a leading cause of substance abuse in men (4). Anxiety can lead to family conflicts, violence, eating disorders, and leads to other harmful social impacts (5). It is also considered as a predictor for depression, which itself can lead to suicide. (2) Also, it can affect academic performance. Many researchers found that anxiety is negatively related to academic achievement (6).

One out of five adolescents with anxiety refuses to attend school and half the adolescents with anxiety perceived by their parents as had impairment while concentrating on schoolwork, when giving oral reports or when taking an exam (7). Also, sleep quality can be affected by anxiety (8). previous studies have consistently reported a correlation between emotional problems and short sleep duration (9). Short sleep duration itself can lead to increase insulin resistance, hypertension, hyperlipidemia, cardiovascular disease (10). Also, poor sleep quality can affect academic performance (11). There were many studies that estimate the prevalence of anxiety among secondary school students and its association with sociodemographic characteristics. The variation of the prevalence of anxiety from country to others may be due to different samples, age groups, screening tools, and lifestyle. In Australia, the prevalence was 14.4 percent. While in the USA, 18.4 percent (12). On the other hand, the prevalence of anxiety was less on Denmark 5.7 percent (13), Italy 5.8 percent, (14) China 27.3 percent (8).

The reported prevalence of anxiety in Egypt was 21 percent. (16) while in Jordan, it was 41.2% (15), and in Kuwait was 14.9% (16). There were few studies conducted in Saudi Arabia. The last study shows the highest prevalence of anxiety which was conducted in Qassim region in 2019, and it was cross-sectional study that includes most of the secondary school students in Qassim, they used GAD 7 survey tool to evaluate anxiety, prevalence of anxiety was 62% as

this study also shows significant relationship between anxiety and sociodemographic variables like gender (p-value <0.001)(in all levels of anxiety, females were higher than males), marital status (p-value 0.001) (students with single status were more anxious compared to others).(3)The second study was a cross-sectional study conducted among secondary school students in Jizan in 2017, Depression Anxiety Stress Scales (DASS) survey tool was used to evaluate anxiety, the prevalence of anxiety was 59.7 percent. It shows a significant relationship between anxiety and sociodemographic variables such as gender, history of chronic diseases, mother education, and occupation (p-value <0.001). Females were higher than males, also, students with a history of chronic diseases especially students with diabetes mellitus and bronchial asthma more anxious than non-diseased students (p-value <0.001), students with higher mother's education more anxious than students with lower mother's education (p-value 0.034), students of employed mothers more anxious than others (p-value 0.001) (17).

A cross-sectional study conducted among female secondary school students in Taif in 2014. Castello and Comery Anxiety scale was used to assess the level of anxiety. The prevalence of anxiety was 54.9 percent (1). The fourth study was a cross-sectional study conducted among male secondary school students in Abha and Assir regions in 2007. DASS tool was used to assess the prevalence of anxiety, 48.9 percent of students were diagnosed to have anxiety (18). Another cross-sectional study was conducted in Saudi Arabia in 2018, and adolescents were included. It shows that 56.1 percent of persons with anxiety sleep less than 7 hours per day (p-value 0.001) (10). That is why it is crucial to focus on anxiety and identify the students at risk to manage it early and prevent the harmful consequences of the anxiety. This study aimed to estimate the prevalence of anxiety among secondary school students and to assess how an individual's anxiety relates to their academic performance. Moreover, we attempted to explore the association of anxiety with other factors such as sociodemographic and sleep quality.

Methods

The study design is a descriptive cross-sectional study as it is considered the best feasible study for surveying large populations such as female and male secondary school students in Al-Ahsa city. The study was conducted in secondary schools in Al-Ahsa. The time required to implement and finalize our study is one year starting from 1st of May 2020 till 31st of December 2021. Student who studied in secondary schools in Al-Ahsa in the 2019/2020 academic year were included while those with intellectual disabilities were excluded from the present study.

The sample size was determined based on the number of students in secondary schools in Al-Ahsa which was taken from ministry of education, and it was calculated by website-based statistical calculator with a 5% margin of error and 95% confidence level. We used a stratified cluster sampling methodology, and then we chose some schools from each cluster by simple random sampling. Then from each grade of three grades of each secondary school selected, we chose some students by simple random technique.

Self-completed questionnaires were distributed to all participants. The questionnaire consists of three components: (1) sociodemographic information including Age; Gender; Marital status; Grade; Mother's and Father's education; Family income; Presence of a stressful event in the past six months; Presence of chronic illness; Smoking status; and GPA in the last semester. General Anxiety Disorder (GAD 7) severity tool to assess anxiety. validated in the Arabic version (19). This tool was calculated by assigning scores of 0, 1, 2, and 3 to the response categories of not at all, several days, more than half the days, nearly every day, respectively. GAD 7 total score range from 0, 10, and 15 represent cut off points for mild, moderate, and severe anxiety, respectively. Suleiman and colleagues translated the English tool to Arabic, then tested and validated it; the details of this process were published in the Western Journal of Nursing Research (20).

Due to COVID-19 quarantine, the questioners were sent to the education authorities and then distributed to the schools using electronic forms. The electronic link to the questioner was sent to the students from school management after obtaining of patents permission. The collected data from the survey was entered, managed, and computed by using SPSS software version 26. The prevalence and other descriptive analysis for outcome variables was calculated with a 95% confidence interval. The mean was used to estimate the continuous data. The chi-square test was used to assess the associations between categorical outcomes and the variables and t-test for continuous variables. Regression analysis was used to identify potential predictors of anxiety The statistical significance level was maintained as P less than 0.05 during the entire analysis.

Selected participants were contacted verbally to take their permission to be involved in the study. During the interview, every participant was informed about the aim of the study and was assured of the full confidentiality of their data. Approval from the ethical committee in the postgraduate center of family medicine in Al-Ahsa was taken, and we obtained permission from the ministry of education before proceeding to this study.

Results

Out of 719 secondary school students responded to the survey, 70.1% were females and 29.9% were males. The majority of the students (86.9%) aged 16 to 18-year-old, 93.6% were singles, and 41.9% were in the second year of the secondary school. Almost all students, except eight students, were studying in governmental schools and around 62.2% claimed to score >95% in the last semester (table 1).

Table 2 demonstrates the distribution of the family characteristics of the students. Levels of education among mothers, as reported by the students, were comparable to those among fathers. Those who had secondary school and bachelor education were 27.4% and 28.1% among mothers in comparison to 32.8% and 24.2% among fathers, respectively. However, the employment rate was much higher among fathers than mothers as 73.7% of the fathers versus 19.3% of the mothers were employed. Students distributed evenly

Table (1): Demographic and educational characteristics of the respondents

Variables	Frequency	Percent (%)
Gender		
Male	215	29.9
Female	504	70.1
Age		
15	41	5.7
16	153	21.3
17	287	39.9
18	185	25.7
>18	53	7.4
Marital status		
Single	673	93.6
Married	36	5.0
Divorced	3	0.4
Widowed	7	1.0
Academic year		
1	163	22.7
2	301	41.9
3	255	35.5
Type of school		
Governmental school	711	98.9
Private school	3	0.4
Quran school	5	0.7
GPA in the last semester		
< 60%	7	1.0
60-69%	13	1.8
70-79%	35	4.9
80-84%	25	3.5
85-89%	40	5.6
90-95%	152	21.1
>95%	447	62.2

across categories of family income with approximately a quarter of the students in each category including <5000, 5000-10000, 10-15000, and >15000 SAR.

Distribution of clinical and anxiety categories in the students is presented in table 3. About a half of the students exercise weekly and 94.4% have ever never smoked before. Students who reported to have a chronic illness accounted for 11% of the students. More than a half of the students reported a stressful event in the past 6 months and about 60% said they had no adequate sleep. Regarding anxiety level, about 35% were considered to be non-anxious, 54% were considered to have mild to moderate anxiety level, while 10.8% had severe anxiety.

Table 4 shows occurrence of items of General Anxiety Disorder (GAD 7) among the students. "Becoming easily annoyed or irritable" was the most commonly reported item (22.3%) as nearly every day happens, followed by item of "feeling nervous, anxious, or on edge" which was reported by 18.5% of the students as almost a daily event. The least commonly reported item as a daily event is "Being so restless that it's hard to sit still' followed by the item of "Not being able to stop or control worrying" which were reported by 6.8 and 9.6%, respectively.

Associations between anxiety and different students' characteristics were demonstrated in table 5,6, and 7. Female gender was significantly associated with anxiety as 69.2% of the female students were anxious in comparison to 54.4% of male students (p=0.001). However, other respondents' characteristics such as academic year, type of the school, and marital status were not significantly associated with anxiety. About family characteristics, significant associations were identified between students' anxiety and working mothers in comparison to non-working mothers, as well as, between students' anxiety and illiterate fathers compared to educated fathers. In another hand, father employment, family income or mother educations were not significantly associated with students' anxiety. Regarding life style and clinical factors, significant associations were detected between anxiety and lack of exercise at weekly basis, having a stressful event in the past 6 months, and lack of adequate sleep. Associations

between anxiety and other life style factors including smoking and presence of chronic illness were not statistically significant.

Table 8 presents findings of logistic regression for determinants of anxiety among the students. All students' characteristics were introduced to a logistic regression model and a final model was selected based on backwards step selection using likelihood ratio test. Gender, having an inadequate sleep, having a stressful event in the past 6 months, and having working mothers were potential predictors for anxiety among the students.

Discussion

Anxiety is one of the most common psychiatric disorders which affects quality of life and productivity of the patients (21). Anxiety disorders usually started early in the adolescence or even in the childhood age. Adolescents accounted for 18% of the global population and the majority of the adolescents live in developing countries. The global prevalence of anxiety among children and adolescents was 20.5% as estimated by pooled analysis of 29 studies (22).

The findings of the present study revealed that 54% of secondary school students were considered to have mild to moderate anxiety level, while 10.8% had severe anxiety. Thus, the prevalence of anxiety in the included study was 64.8%. In Alkhober city, anxiety prevalence was 65.7% of secondary school students, of them 9.6% had severe anxiety (23). Using the same tool of assessment, similar findings were found in Qassim region, with 63.5% prevalence of anxiety, as general, and 9.8% prevalence of severe anxiety (3).

The prevalence of anxiety among 1783 secondary school students in Al-Hassa, Saudi Arabia, was 49.9% (24). The proportion of the students who had severe anxiety was 6.8%, using the same assessment tool (GAD-7), which is less than that reported in the present study. In Almadinah city, anxiety was assessed by Kuwait University Anxiety Scale. The percentage of male secondary school students who had high anxiety was 19%. Males are generally known of lower anxiety than females, hence, inclusion only males could result in low anxiety level.

A low prevalence of anxiety was reported in a cross-sectional study that included only females' secondary schools in Abha, Saudi Arabia (18). The authors from

Table (2): Distribution of the family characteristics of the students

Characteristics	Frequency	Percent (%)
Father's education		
Illiterate	23	3.2
Can read and write	29	4.0
Primary education	49	6.8
Intermediate education	76	10.6
Secondary education	197	27.4
Diploma but not bachelor	75	10.4
Bachelor	202	28.1
Postgraduate education	68	9.5
Mother's education		
Illiterate	39	5.4
Can read and write	32	4.5
Primary education	57	7.9
Intermediate education	111	15.4
Secondary education	236	32.8
Diploma but not bachelor	35	4.9
Bachelor	174	24.2
Postgraduate education	35	4.9
Dose the father employed?		
Yes	530	73.7
No	189	26.3
Dose the mother employed?		
Yes	139	19.3
No	580	80.7
Family income		
<5,000 SAR	190	26.4
5,000-10,000 SAR	182	25.3
> 10000 to 15000 SAR	184	25.6
>15,000 SAR	163	22.7

Table (3): Distribution of clinical and anxiety categories in the students

Factors	Frequency	Percent (%)
Do you exercise weekly?		
Yes	362	50.3
No	357	49.7
Do you smoke?		
Never smoke	679	94.4
Quit less than 6 months	5	0.7
Quit more than 6 months	13	1.8
Current smoker	22	3.1
Do you have a chronic illness		
Yes	79	11.0
No	640	89.0
Type of the chronic disease? (n=79)		
Diabetes mellitus	6	7.6
Sickle Cell Disease	24	30.4
Bronchial Asthma	30	38.0
Missing	19	24.0
Do you have a stressful event in the past 6 months?		
Yes	406	56.5
No	313	43.5
Do you think you have adequate sleep?		
Yes	285	39.6
No	434	60.4
Anxiety level		
No anxiety	253	35.2
Mild anxiety	261	36.3
Moderate anxiety	127	17.7
Severe anxiety	78	10.8

King Khalid University used different assessment tool and found 16.4% and 14.3% prevalence of phobic anxiety and anxiety. As females are more susceptible to anxiety based on previously published studies. Using Castello and Comery Anxiety scale, researchers in Taif region found 54.9% prevalence in female students (1). In Eastern region, a questionnaire of Patient Health Questionnaire (PHQ) was used to assess different mental disorders (25). The prevalence of generalized anxiety disorder was 14% among secondary school students (25).

It is obvious that variability in the prevalence of anxiety is a result of differenced in assessment tools as well as differences in the study populations. Some studies focused in males and other in females, while the majority included both male and females.

Female gender was significantly associated with anxiety as 69.2% of the female students were anxious in comparison to 54.4% of male students. Similar findings were reported among students from Al-Hassa region as a proportion of anxious females were significantly higher than the proportion of anxious males (24). Using GAD-7 assessment tool, females were significantly more susceptible to be anxious than male among students live in Qassim region (3). About 71% of female students were severely anxious when compared to only 28.7% of male students (3).

However, other respondents' characteristics such as academic year and type of the school were not significantly associated with anxiety. Similar non-significant results were reported among students in Qassim region (3). Differently, among male students in Almadinah city, the highest anxiety score was among third year students compared to first- and second-year students (26). Similar findings have been frequently reported in the literature, as the third grade in the secondary school is essential in the determination of student's future. For instance, in Indian students included in Tripura area (4), the highest score of anxiety was among 12 grades which is equivalent to the third year of secondary school in Saudi Arabia.

The present study found a significant difference in students' anxiety based on parents' educational level, since students with illiterate fathers were more likely to be anxious compared to those who had educated fathers. Different results were reported in Almadinah city but for both parents as higher educational levels, such as bachelor or postgraduate levels, were significantly related to anxiety scores (26).

In another hand, father employment, family income or mother educations were not significantly associated with students' anxiety in the present study. Differently, family income was significantly

Table (4): Occurrence of items of General Anxiety Disorder (GAD 7) among the students

Item	Frequency	Percent (%)
Feeling nervous, anxious, or on edge		
Not at all sure	96	13.4
Several days	395	54.9
Over half the days	95	13.2
Nearly every day	133	18.5
Not being able to stop or control worrying		
Not at all sure	243	33.8
Several days	344	47.8
Over half the days	63	8.8
Nearly every day	69	9.6
Worrying too much about different things		
Not at all sure	244	33.9
Several days	290	40.3
Over half the days	90	12.5
Nearly every day	95	13.2
Trouble relaxing		
Not at all sure	251	34.9
Several days	291	40.5
Over half the days	72	10.0
Nearly every day	105	14.6
Being so restless that it's hard to sit still		
Not at all sure	419	58.3
Several days	206	28.7
Over half the days	45	6.3
Nearly every day	49	6.8
Becoming easily annoyed or irritable		
Not at all sure	173	24.1
Several days	304	42.3
Over half the days	82	11.4
Nearly every day	160	22.3
Feeling afraid as if something awful might happen		
Not at all sure	286	39.8
Several days	273	38.0
Over half the days	66	9.2
Nearly every day	94	13.1

associated with anxiety among students in Alkhober city, as a significantly higher proportion of students with low family income (<5,000 SAR) were moderately to severely anxious in comparison to those who had higher income (23). However, anxiety among male students who surveyed in Almadinah city was not significantly related to family income (26). Mothers' education was significantly related to higher score of anxiety among students in Jazan region (17). Due to confounding effect, usually variables related to education and occupation confound each other. Hence, regression analysis is indicated for control of confounding effect and determination of potential predictors of anxiety.

We detected significant relations between anxiety and having a stressful event in the past 6 months. Similar results reported in an Indian study where stressful event in the previous 6 months was a significant predictor of anxiety among high school students (4).

Among the included students, no significant relation between anxiety and smoking or presence of chronic illness were not statistically significant. However, smoking and history of chronic diseases were significantly associated with higher anxiety scores among male students in Almadinah city (26).

In the present study gender, having an inadequate sleep, having a stressful event in the past 6 months, and having working mothers were potential predictors for anxiety among the students. At the final model, females were 1.7 more likely to be anxious than males, and students who had working mothers were 1.9 more likely to be anxious than those who had not. Having a stressful event in the past 6 months was a strong predictor for anxiety among the students, as students who had an event were 5.9 times more likely to be anxious than those without a history of a stressful event. Moreover, reporting of having an inadequate sleep was associated with approximately 3 times more risk to be anxious compared to students who reported having an adequate sleep.

This study has no potential limitations as a cross-sectional study aimed to assess the prevalence of anxiety among students. The sample size was adequate and the assessment tool, General Anxiety Disorder (GAD 7), was previously validated among students in Saudi Arabia (27). The internal consistency of the

questionnaire in was good (Cronbach's alpha = 0.83) as demonstrated by Alghadir et al (27)..

Conclusions

The prevalence of anxiety among secondary school students is high and more than tenth of the students had severe anxiety which may require a sort of professional intervention. Female gender, having an inadequate sleep, having a stressful event in the past 6 months, and having working mothers were potential predictors for anxiety among the students. These subgroups of high-risk students should be targeted by public health interventions aiming at improvement of mental health of school students in Saudi Arabia.

Conflict of interests

The authors declared no conflict of interests.

References

1.   DESOUKY DES, Ibrahem RA, Omar MS. Prevalence and comorbidity of depression, anxiety and obsessive compulsive disorders among Saudi secondary school girls, Taif Area, KSA. 2015.

2.   Alslman ET, Baker NA, Dalky H. Mood and anxiety disorders among adolescent students in Jordan. Eastern Mediterranean Health Journal. 2017;23(9).

3.   Alharbi R, Alsuhaibani K, Almarshad A, Alyahya A. Depression and anxiety among high school student at Qassim Region. Journal of family medicine and primary care. 2019;8(2):504.

4.   Nag K, Ghosh B, Datta A, Karmakar N, Bhattacharjee P. A cross-sectional study on the prevalence of anxiety among school students in Teliamura municipality area of Tripura. Indian journal of psychiatry. 2019;61(5):491.

5.   Nguyen DT, Dedding C, Pham TT, Wright P, Bunders J. Depression, anxiety, and suicidal ideation among Vietnamese secondary school students and proposed solutions: a cross-sectional study. BMC public health. 2013;13(1):1-10.

6.   Alpert R, Haber RN. Anxiety in academic achievement situations. The Journal of abnormal and social psychology. 1960;61(2):207.

7.   de Lijster JM, Dieleman GC, Utens EM, Dierckx B, Wierenga M, Verhulst FC, et al. Social and academic functioning in adolescents with anxiety disorders: A systematic review. Journal of affective disorders. 2018;230:108-17.

8.   Xiong W, Liu H, Gong P, Wang Q, Ren Z, He M, et al. Relationships of coping styles and sleep quality with anxiety symptoms among Chinese adolescents: a cross-sectional study. Journal of affective disorders. 2019;257:108-15.

9.   Ogawa S, Kitagawa Y, Fukushima M, Yonehara H, Nishida A, Togo F, et al. Interactive effect of sleep duration and physical activity on anxiety/depression in adolescents. Psychiatry research. 2019;273:456-60.

10.   Althakafi KA, Alrashed AA, Aljammaz KI, Abdulwahab IJ, Hamza R, Hamad AF, et al. Prevalence of short sleep duration and effect of co-morbid medical conditions–A cross-sectional study in Saudi Arabia. Journal of family medicine and primary care. 2019;8(10):3334.

11.   Hasan R. Awareness of Internet Plagiarism Among The Secondary School Students in Gombak, Selangor, Malaysia. IAMURE. 2012:205.

12.   Wu P, Goodwin RD, Fuller C, Liu X, Comer JS, Cohen P, et al. The relationship between anxiety disorders and substance use among adolescents in the community: specificity and gender differences. Journal of youth and adolescence. 2010;39(2):177-88.

13.   Silva EAd, Gomes CAdB. Psychiatric comorbidities among adolescents with and without anxiety disorders: a community study. Jornal Brasileiro de Psiquiatria. 2015;64:181-6.

14.   Frigerio A, Rucci P, Goodman R, Ammaniti M, Carlet O, Cavolina P, et al. Prevalence and correlates of mental disorders among adolescents in Italy: the PrISMA study. European child & adolescent psychiatry. 2009;18(4):217-26.

15.   Al Bahnasy RA, Abdel-Rasoul GM, Mohamed OA, Mohamed NR, Ibrahem RA. Prevalence of depression, anxiety, and obsessive–compulsive disorders among secondary school students in Menoufia Governorate, Egypt. Menoufia Medical Journal. 2013;26(1):44.

16. Al-Turkait FA, Ohaeri JU. Psychopathological status, behavior problems, and family adjustment of Kuwaiti children whose fathers were involved in the first gulf war. Child and adolescent psychiatry and mental health. 2008;2(1):1-12.

17. Hakamy M, Bahri I, Ghazwani E. Depression, anxiety and stress among Saudi secondary school students in Jizan City, Kingdom of Saudi Arabia. Int J Curr Res. 2017;9:59290-7.

18. Al Gelban KS. Prevalence of psychological symptoms in Saudi secondary school girls in Abha, Saudi Arabia. Annals of Saudi medicine. 2009;29(4):275-9.

19. Sawaya H, Atoui M, Hamadeh A, Zeinoun P, Nahas Z. Adaptation and initial validation of the Patient Health Questionnaire–9 (PHQ-9) and the Generalized Anxiety Disorder–7 Questionnaire (GAD-7) in an Arabic speaking Lebanese psychiatric outpatient sample. Psychiatry research. 2016;239:245-52.

20. Suleiman KH, Yates BC, Berger AM, Pozehl B, Meza J. Translating the Pittsburgh sleep quality index into Arabic. Western Journal of Nursing Research. 2010;32(2):250-68.

21. Essau CA. Comorbidity of anxiety disorders in adolescents. Depression and anxiety. 2003;18(1):1-6.

22. Racine N, McArthur BA, Cooke JE, Eirich R, Zhu J, Madigan S. Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19: a meta-analysis. JAMA pediatrics. 2021;175(11):1142-50.

23. Al Salman ZH, Al Debel FA, Al Zakaria FM, Shafey MM, Darwish MA. Anxiety and depression and their relation to the use of electronic devices among secondary school students in Al-Khobar, Saudi Arabia, 2018–2019. Journal of Family & Community Medicine. 2020;27(1):53.

24. Khan AS, Alalawi AH, Alalawi MH, Alsahaf HA, Albahrani MS, Alhasawi FA. Screening for depression, anxiety, and obsessive–compulsive disorders among secondary school students in Al-Hasa Region, Saudi Arabia. Journal of Family & Community Medicine. 2021;28(1):28.

25. Amr M, Amin T, El-Wasify M. P-468-Prevalence and correlates of depression and anxiety among high school students in eastern region, saudi arabia. European Psychiatry. 2012;27(S1):1-.

26. Mohammed A, Alghamdi KS. Prevalence of anxiety among high school male students in Al-Medina, KSA, 2020 during (COVID-19) panedemic. 2021.

27. Alghadir A, Manzar MD, Anwer S, Albougami A, Salahuddin M. Psychometric properties of the generalized anxiety disorder scale among Saudi University male students. Neuropsychiatric disease and treatment. 2020;16:1427.

Table (5): Association between respondents' characteristics and anxiety

Characteristics	Anxiety among the students		Chi-square	P value
	Not anxious	**Mildly to severely anxious**		
Gender				
Male	98	117	14.5	<0.001*
	45.6%	54.4%		
Female	155	349		
	30.8%	69.2%		
Academic year				
First year	51	112	1.8	0.401
	31.3%	68.7%		
Second year	113	188		
	37.5%	62.5%		
Third year	89	166		
	34.9%	65.1%		
Type of school				
Government school	249	462	6.0	0.049
	35.0%	65.0%		
Private school	3	0		
	100.0%	0.0%		
Quran school	1	4		
	20.0%	80.0%		
Marital status				
Single	239	434	3.0	0.389
	35.5%	64.5%		
Married	13	23		
	36.1%	63.9%		
Divorced	0	3		
	0.0%	100.0%		
Widowed	1	6		
	14.3%	85.7%		

Table (6): Association between family characteristics and anxiety

Characteristics	Anxiety among the students		Chi-square	P value
	Not anxious	**Mildly to severely anxious**		
Dose the mother employed?				
Yes	32	107	11.2	0.001*
	23.0%	77.0%		
No	221	359		
	38.1%	61.9%		
Dose the father employed?				
Yes	195	335	2.3	0.131
	36.8%	63.2%		
No	58	131		
	30.7%	69.3%		
Family income				
<5,000 SAR	66	124	0.19	0.980
	34.7%	65.3%		
5,000-10,000 SAR	64	118		
	35.2%	64.8%		
> 10000 to 15000 SAR	67	117		
	36.4%	63.6%		
>15,000 SAR	56	107		
	34.4%	65.6%		
Father education				
Illiterate	5	18	12.6	0.006*
	21.7%	78.3%		
Some school	72	82		
	46.8%	53.2%		
secondary school or diploma	89	183		
	32.7%	67.3%		
University or postgraduate level	87	183		
	32.2%	67.8%		
Mother education				
Illiterate	8	31	4.5	0.212
	20.5%	79.5%		
Some school	75	125		
	37.5%	62.5%		
secondary school or diploma	99	172		
	36.5%	63.5%		
University or postgraduate level	71	138		
	34.0%	66.0%		

Table (7): Association between anxiety among the students and clinical and life style factors

Factors	Anxiety among the students		Chi-square	P value
	Not anxious	**Mildly to severely anxious**		
Do you exercise weekly?				
Yes	142	220	5.2	0.022*
	39.2%	60.8%		
No	111	246		
	31.1%	68.9%		
Do you have a chronic illness?				
Yes	21	58	2.9	0.090
	26.6%	73.4%		
No	232	408		
	36.3%	63.7%		
Smoking				
Never smoke	240	439	7.1	0.070
	35.3%	64.7%		
Quit less than 6 months	0	5		
	0.0%	100.0%		
Quit more than 6 months	2	11		
	15.4%	84.6%		
Current smoker	11	11		
	50.0%	50.0%		
Do you have a stressful event in the past 6 months?				
Yes	63	343	158.2	<0.001*
	15.5%	84.5%		
No	190	123		
	60.7%	39.3%		
Do you think you have adequate sleep?				
Yes	164	121	103.5	<0.001*
	57.5%	42.5%		
No	89	345		
	20.5%	79.5%		

Table (8): Findings of logistic regression for determinants of anxiety among the students

Predictor	Comparison group	Reference group	Lower limit (95% C.I)	Odds ratio	Upper limit (95% C.I)	p value
Gender	Male	Female	0.396	0.583	0.860	0.007
Dose the mother employed?	Yes	No	1.102	1.864	3.152	0.020
Do you have a stressful event in the past 6 months	Yes	No	4.017	5.885	8.621	<0.001
Do you think you have adequate sleep?	Yes	No	0.230	0.336	0.491	<0.001
Constant	-	-	-	1.132	-	0.686