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Screening for depression, anxiety, and obsessive–compulsive disorders among secondary school students in Al-Hasa Region, Saudi Arabia

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Abstract:

BACKGROUND: The purpose of this study was to determine the prevalence of anxiety, depression, and obsessive-compulsive disorder (OCD) and assess their severity in both male and female secondary school students.

MATERIALS AND METHODS: This cross-sectional study was conducted among secondary school students in Al Hasa region. A sample of student was selected using multi-stage sampling technique. Data were collected using valid self administered questionnaires (Patient Health Questionnaire 9, Anxiety Disorder 7, and Yale–Brown Obsessive–Compulsive scale). Study was approved by institutional ethical review committee, and informed consent was obtained from each participant. SPSS used for data entry and analysis. Chi-square test was used to test for statistical significance.

RESULTS: A total of 1783 of students, 930 males and 853 females, were enrolled in the study. The prevalence of depression, anxiety, and OCD was 76.2%, 49.9%, and 61.6%, respectively. Most of the diagnosed students had mild forms of the diseases, fewer had moderate form, and very few had severe forms. The most significant risk factor was gender, but other risk factors were significant for some of the diseases.

CONCLUSION: The prevalence of the three diseases is high and significantly associated with gender. Further work is needed to evaluate this high prevalence and assess the severity of the diseases and other risk factors.

Keywords:

Adolescents, anxiety, depression, high school, obsessive–compulsive disorder

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Introduction

A lot of psychiatric disorders begin to manifest in adolescence (10–19 years).[1,2] Unfortunately, these disorders often remain undiagnosed and unresolved for many years,[1] sometimes resulting in complications. These complications that could lead to many biopsychosocial problems eventually have a high socio-economic impact. The prevalence of mental disorders in children and adolescents is between 1% and 51%, globally, with a mean of 15.8% in adolescents.[3] A study reported the prevalence of mental disorders as estimated between 10% and 36% in the Eastern Mediterranean region.[1]

The first of the three main mental disorders reported frequently among adolescents is depression More than 264 million people have depression, worldwide.[1,4] Depression is assessed by the World Health Organization as a leading cause of disability

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worldwide and a major contributor of the global burden of disease.[4] The second is anxiety, the prevalence of which is estimated to be between 15% and 20%. Anxiety disorders often have comorbidity with depressive disorders.[5] Due to their chronicity and association with other comorbidities, anxiety disorders tend to cause significant disability.[6] The third psychiatric disorder in our focus is obsessive–compulsive disorder (OCD), which is considered one of the most common psychiatric disorders, with more than 50 million sufferers worldwide.[7] It is classified as one of the top ten leading causes of disability in the world.[8] Adolescents do not report their OCD symptoms until they are asked about them because of embarrassment. As a result, it remains undiagnosed at this age.[7] Most adults who suffer from mental disorders would have experienced symptoms from childhood or early adolescence, as demonstrated by some research. These three main mental disorders are often reported.[1,3] Symptoms of the disorders can be reduced in adolescents and adaptive functioning is improved by proper identification and treatment in childhood.[9]

Diverse studies done on the prevalence of the three disorders in various parts of the world show the prevalence of depression in adolescents in Brazil as 10%[10] and 55% in India;[11] the prevalence of anxiety as 34.1% in Malaysia[12] and 50.8% in Nigeria.[13] The global prevalence of OCD was much lower than that of depression and anxiety, its prevalence being 8.87% in Iran,[14] 3.3% in India,[15] and 4.2% in Turkey.[16]

A study done in Qatar in the Gulf region on a similar population showed the prevalence of depression as 34.5%.[17] Another study showed the prevalence of anxiety as 21.6% in the United Arab Emirates.[18]

A study in Saudi Arabia in Taif city on 1024 female secondary school students reported that 42.9%, 54.9%, and 23.1% of the students had depression, anxiety, and OCD, respectively. In 64.7% of the students, the criteria for the three diseases had been met.[1] Another study conducted in Abha city on female secondary school students showed that 14.3%, 13.9%, and 12.3% of the participants had anxiety, depression and OCD respectively.[19] Another study in Abha on 545 secondary school girls reported that 41.5% and 66.2% of the students had depression and anxiety, respectively.[3] There is an obvious disparity in the results of the two studies, both of which were done in Abha in 2009. Studies have been done in all parts of Saudi Arabia except the Al-Hasa region[1,2,20,21] on the prevalence of these disorders. Therefore, the aim of this study was to screen for depression7, anxiety, and OCDs in secondary school students in the Al-Hasa region, Saudi Arabia.

Materials and Methods

A cross-sectional study was carried out in the Al-Hasa region. Male and female government secondary school students in Al-Hasa enrolled in the academic year 2019–2020 participated in the study. Cluster sampling technique was used to divide the region into three clusters: Hofuf city, Mubarraz city, and Omran city; 24 schools were selected, 4 schools each per city for males and for females.

A simple random selection method was applied for the selection of schools from each city cluster. All students from the selected schools were included. Classes chosen by simple random sampling to be included in the study were the three high secondary school grades 10th, 11th, and 12th. All students from all three classes were included except those who refused to participate.

The study was approved by the institutional ethics committee vide Letter No. 8/1/2019 dated 23/01/2019. Informed written consent was taken from all the participants.

The total number of students enrolled in the study was 1783, comprising 930 males and 853 females. Validated questionnaires were used and translated into Arabic and checked for reliability co-efficient which turned out to be 0.78. The questionnaires were distributed among the secondary school; the participants were instructed on the aim and importance of the study and were informed that participation was optional. Participants were informed that their data would be confidential and would be used for a research purpose only. Secondary school students with pre-existing psychiatric disorders were excluded from the sampling.

The scores of Patient Health Questionnaire-9, which is a self-reported questionnaire consisting of 10 questions for the assessment of depression and determination of the severity of depression for patients recently diagnosed with depression or receiving treatment for depression was used as the preliminary diagnosis tool. It had a total score of 27 and based on the scale, a score of 5–9 was considered mild depression, a score of 10–14 was considered moderate, a score of 15–19 was moderately severe, and a score of 20 or more was considered severe.[22] With regard to diagnostic criteria for depression, five or more of the symptoms should be met. These symptoms include loss of interest or low mood. Low mood, loss of interest, substantial weight change or change in appetite, agitation or retardation, difficulty sleeping, fatigue, difficulty in concentration, feeling of worthlessness and suicidal ideation. These symptoms, not explained by substance abuse or other mental or medical problems, interfere with daily

activities.[23]

Generalized Anxiety Disorder 7 (GAD 7) scale, a screening tool for assessment of GAD and assessment of the severity of GAD, was used. This tool is also considered a good tool for screening common anxiety disorders such as panic disorder, social anxiety disorder, and posttraumatic stress disorder. This tool has total 21 scores, for the classification of GAD, a score of 5 to less than 10 was considered mild anxiety, while 10 to less than 15 was considered as moderate anxiety, and finally 15 or more score was labeled as severe anxiety.[24] The criteria for diagnosing GA had to include persistent worry about many things lasting for 6 months or more which is difficult to control. Patients present with three or more of the following symptoms: restlessness, tiring easily, difficulty in concentration, irritability, increased muscle pain, or difficulty sleeping. These symptoms that do not interfere with daily activities cannot be explained by other mental or medical problems and are not related to substance abuse.[25]

Yale–Brown Obsessive–Compulsive (YBOC) Scale, a self-reporting scale used for the assessment of the presence, severity, and type of OCD, was employed. This scale consisting of 10 questions, half of which is for obsession and the other half for compulsion.[26] It has a total score of 40; a score of 8–15 was considered mild OCD, a score of 16–23 considered moderate OCD, a score of 24–31 was considered severe OCD, and a score of 32–40 was extreme OCD. Diagnostic criteria for OCD are patients should have obsessions or compulsions or both. Obsessions are the experience of unwanted intrusive persistent recurrent thoughts, urges or impulses, while compulsions are behaviors or mental acts which are done repeatedly by an individual in response to an obsession. The obsessions or compulsions interfere with daily activities but not explained by substance abuse or another medical or mental problem.[25]

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) program version 16 (New York, USA). Chi-square test was used, $P < 0.05$ was considered significant for the assessment of any association among different variables.

Results

This study enrolled 1783 students from secondary schools in the Al-Hasa region, Saudi Arabia. Table 1 shows that 52% were males and 48% were females and were classified according to their age into 15, 16, 17, and 18 years and above with the mean age of 16.70. About 58.5% of students were enrolled in the first and third secondary years and 41.5% were enrolled in the second secondary year. For approximately 64% of students, the academic performance was more than 90 and that of 34% of students was below 90. Figure 1 shows that 35.7%, 23.3%, 12.6%, and 4.5% of students had mild, moderate, moderate-to-severe, and severe depression, respectively, and only 23.8% of students were normal. In addition, 28.4%, 14.8%, and 6.8% of students had mild, moderate, and severe depression, respectively, and 50% of students were normal. Figure 2 shows that 36.9%, 18.7%, 4.9%, and 0.9% of students had mild, moderate, severe, and extreme OCD, respectively, and 38.3% of students were normal. Based on Figures 1 and 2, the prevalence of depression among secondary school students was the highest at a rate of 76.2%, followed by OCD with a rate of 61.6% and the lowest was anxiety with a rate of 49.9%.

Figure 3 shows that 82.2% of the female students, as against 70.7% of the males had depression. Regarding anxiety, 58.8% of females and 41.8% of males suffered from anxiety. About 66% of the females suffered from OCD, as against 57.6% of males.

Table 1: Sociodemographic characteristics of secondary school students in Al Hasa region (*n*=1783)

Sociodemographic characteristics	*N* (%)
Age (years) Mean±SD	16.70±0.820
15	121 (6.8)
16	559 (31.4)
17	805 (45.1)
18 and more	298 (16.7)
Gender	
Male	930 (52.2)
Female	853 (47.8)
Year of study	
First secondary	611 (34.3)
Second secondary	740 (41.5)
Third secondary	432 (24.2)
Academic performance	
<80	217 (12.2)
80-89.9	426 (23.9)
90-95	360 (20.2)
>95	780 (43.7)

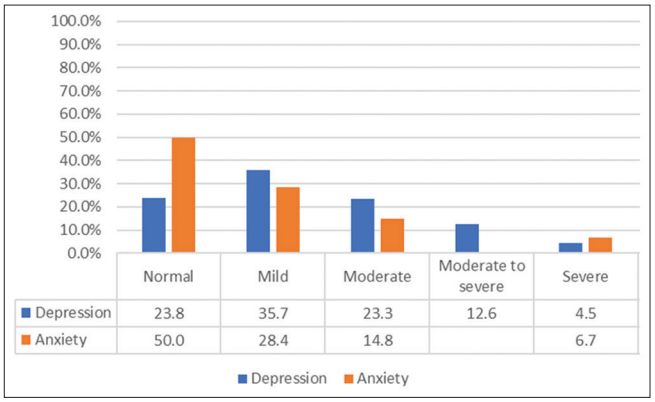

Figure 1: Percentage of depression and anxiety among secondary school students (n = 1783)

Table 2 shows the correlation between anxiety and sociodemographic variables. With the exception of gender, there was no significant relationship between anxiety and other sociodemographic variables. The anxiety levels for females were more than males.

Table 3 shows the correlation between depression and sociodemographic variables. Students aged 17 had higher levels of depression. Depression levels were higher in females than males. Students in the second secondary year had higher levels of anxiety than the first and third secondary years. Finally, students whose academic performance was more than 95 had the highest levels of depression.

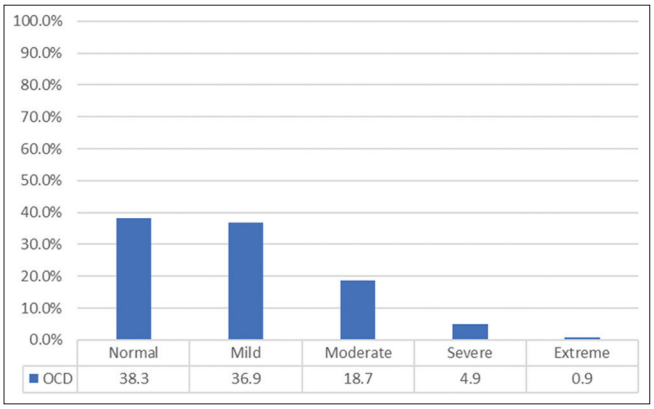

Figure 2: Percentage of obsessive–compulsive disorder among secondary school students (n = 1783)

Table 4 shows the correlation between OCD and sociodemographic variables. OCD was more prevalent in students aged 17, second secondary year, and females. Unlike depression, there was no significant relationship between OCD and academic performance.

Discussion

In this study, the prevalence of depression (76%) was significantly higher than that of many studies conducted in the Kingdom.[1,3,19] Three studies were done on secondary school girls, one in Taif City[1] which gave a prevalence of 42.9% and two in Abha City,[3,19] with a resulting prevalence of 41.5% and 13.9%, respectively. Another study done in Qassim City[20] in 2018 showed a 74% prevalence of depression, which was nearly the

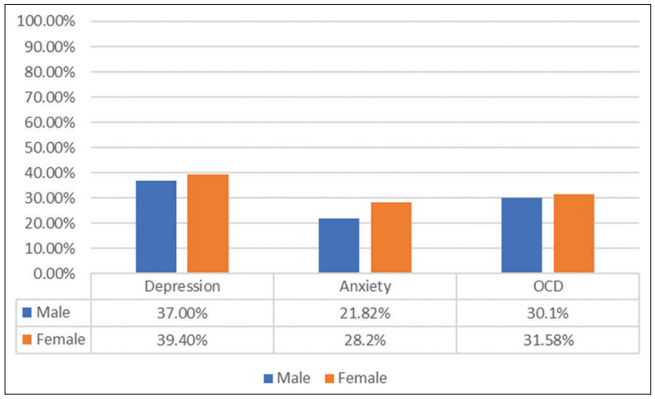

Figure 3: Total percentage of the three disorders among males and females

Table 2: Association between socio-demographic characteristics and different levels of anxiety (*n*=1783)

Sociodemographic characteristics	Normal *N* (%)	Anxiety			*P*-Value
		Mild *N* (%)	Moderate *N* (%)	Severe *N* (%)	
Age (in years)					
15	64(3.6)	36(2.0)	17(1.0)	4(2.0)	
16	296(16.6)	150(8.4)	78(4.4)	35(2.0)	
17	383(21.5)	241(13.5)	122(6.8)	59(3.3)	0.628
18 and more	149(8.4)	80(4.5)	47(2.6)	22(1.2)	
Total	892(50.0)	507(28.4)	264(14.8)	120(8.5)	
Gender					
Male	541(30.3)	260(14.6)	94(5.2)	35(2.0)	
Female	351(19.7)	247(13.9)	170(9.5)	85(4.8)	0.000
Total	892(50.0)	507(28.5)	264(14.7)	120(6.8)	
Year of study					
First secondary	323(18.1)	156(8.8)	90(5.0)	42(2.4)	
Second secondary	356(20.0)	227(12.7)	110(6.2)	47(2.6)	0.543
Third secondary	213(11.9)	124(7.0)	64(3.6)	31(1.7)	
Total	892(50.0)	507(28.5)	264(14.8)	120(6.7)	
Academic performance					
Less than 80	86(4.8)	72(4.0)	38(2.1)	21(1.2)	
80 to 89.9	208(11.7)	125(7.0)	64(3.6)	29(1.6)	
90 to 95	185(10.4)	94(5.3)	58(3.3)	23(1.3)	0.090
More than 95	413(23.2)	216(12.1)	104(5.8)	47(2.6)	
Total	892(50.1)	507(28.4)	264(14.8)	120(6.7)	

Table 3: Association between socio-demographic characteristics and different levels of depression (*n*=1783)

Sociodemographic characteristics	Normal *N* (%)	Depression				*P*- Value
		Mild *N* (%)	Moderate *N* (%)	Moderate to severe *N* (%)	Severe *N* (%)	
Age(in years)						
15	39(2.2)	40(2.2)	30(1.7)	10(0.6)	2(0.1)	
16	162(9.1)	207(11.6)	117(6.6)	55(3.1)	18(1.0)	0.001
17	165(9.3)	289(16.2)	192(10.7)	117(6.5)	42(2.4)	
18 and more	58(3.3)	102(5.7)	77(4.3)	43(2.4)	18(1.0)	
Total	424(23.9)	638(35.7)	416(23.3)	225(12.6)	80(5.4)	
Gender						
Male	272(15.3)	365(20.5)	181(10.2)	85(4.7)	27(1.5)	
Female	152(8.5)	273(15.3)	235(13.2)	140(7.8)	53(3.0)	0.000
Total	424(23.8)	638(35.8)	416(23.4)	225(12.5)	80(4.5)	
Year of study						
First secondary	178(10.0)	223(12.5)	122(6.9)	65(3.7)	23(1.3)	
Second secondary	156(8.7)	270(15.1)	178(10.0)	106(5.9)	30(1.7)	0.002
Third secondary	90(5.0)	145(8.2)	116(6.5)	54(3.0)	27(1.5)	
Total	424(23.7)	638(35.8)	416(23.4)	225(12.6)	80(4.5)	
Academic performance						
Less than 80	41(2.3)	68(3.8)	55(3.1)	42(2.4)	11(0.6)	
80 to 89.9	111(6.2)	140(7.9)	89(5.0)	62(3.5)	24(1.3)	
90 to 95	77(4.3)	128(7.2)	95(5.3)	43(2.4)	17(1.0)	0.006
More than 95	195(10.9)	302(16.9)	177(9.9)	78(4.4)	28(1.6)	
Total	424(23.7)	638(35.8)	416(23.3)	225(12.7)	80(4.5)	

Table 4: Association between socio-demographic variables and different levels of obsessive-compulsive Disorder (n=1783)

Sociodemographic characteristics	Normal *N* (%)	Obsessive-Compulsive Disorder				*P*- Value
		Mild *N* (%)	Moderate *N* (%)	Severe *N* (%)	Extreme *N* (%)	
Age (in years)						
15	52 (2.9)	45 (2.5)	19 (1.1)	5 (0.3)	0 (0.0)	
16	259 (14.5)	180 (10.1)	95 (5.3)	19 (1.1)	6 (0.3)	0.001
17	287 (16.1)	308 (17.3)	165 (9.3)	37 (2.1)	8 (0.4)	
18 and more	86 (4.8)	126 (7.1)	55 (3.1)	27 (1.5)	4 (0.2)	
Total	684(38.3)	659(37.0)	334(18.8)	88(5.0)	18(0.9)	
Gender						
Male	394 (22.1)	347 (19.5)	147 (8.2)	33 (1.9)	9 (0.5)	0.001
Female	290 (16.2)	312 (17.5)	187 (10.5)	55 (3.1)	9 (0.5)	
Total	684(38.3)	659(37.0)	334(18.7)	88(5.0)	18(1.0)	
Year of study						
First secondary	280 (15.7)	197 (11.1)	104 (5.8)	23 (1.3)	7 (0.4)	
Second secondary	271 (15.2)	278 (15.6)	149 (8.3)	35 (2.0)	7 (0.4)	0.001
Third secondary	133 (7.5)	184 (10.3)	81 (4.5)	30 (1.7)	4 (0.2)	
Total	684(38.4)	659(37.0)	334(18.6)	88(5.0)	18(1.0)	
Academic performance						
Less than 80	70 (3.9)	83 (4.7)	48 (2.7)	14 (0.8)	2 (0.1)	
80 to 89.9	152 (8.5)	153 (8.6)	89 (5.0)	27 (1.5)	5 (0.3)	0.272
90 to 95	139 (7.8)	136 (7.6)	64 (3.6)	16 (0.9)	5 (0.3)	
More than 95	323 (18.1)	287 (16.1)	133 (7.5)	31 (1.7)	6 (0.3)	
Total	684(38.3)	659(37.0)	334(18.8)	88(4.9)	18(1.0)	

same as depicted in our study. Many studies conducted in the United Arab Emirates[27] of the Gulf region on depression demonstrated a wide range of prevalence from 12.5% to 28.6%, whereas a study done in Qatar[17] on a similar population showed a prevalence of 34.5%. Globally, there is a huge diversity in the prevalence of depression, recording lower than 10% in Brazil[10] and higher than 55% in India[11] in adolescents. The

reasons for the variation of prevalence of depression in the different regions in the Kingdom of Saudi Arabia could be the difference in the screening tools and the assessment methods and the difference in stressors and genetic and environmental factors.

Almost half of the participants in our study had anxiety, whereas other studies depicted almost similar results, however, it varies from 40% to 60% in different cities of Saudi Arabia like Tafi has 55%, Abha among girls has 66.2%, and Abha among boys has 48.9%.[28] On the other hand, a national study done in Abha reported significantly lower rates of anxiety than in this study.[17] Only a few studies on anxiety in the Gulf region have been found, one of which was done in the United Arab Emirates (21.6%)[18] and another done in Iraq (0.7%)[29] showing a wide-range of results, the latter being significantly lower than the results of our study and the other studies in Saudi Arabia. Scores on anxiety vary throughout the world. A study done in Malaysia showed a moderately low prevalence of anxiety (34.1%)[12] than this study, while another study done in Nigeria showed a similar prevalence of 50.8%.[13] This difference between our study and other studies is the result of several factors, most importantly, the variety of screening tools used. Other factors that can play a role are the diversity of assessment methods and the genetic and environmental differences.

As regards OCD, it was observed in every third participant in this study, a finding which is almost triple that of the Taif study (23.1%)[1] and significantly higher than in the Abha study (12.3%).[20] Globally, the prevalence of OCD in this age group is low in many studies such as the one in Iran (8.9%),[14] India (3.3%),[15] Turkey (4.2%),[16] and other countries.[30,31] In our study, the high prevalence rate of these disorders could be due to the following: first, students' lack of comprehension of the questions in the questionnaires though they had been explained; another confounding factor could have been the proximity of the data collection to their examination, which might have put extra stress on the students, and finally, since the questionnaire was long, some students might have got bored with the completion of the questionnaire and hurried through them without a careful reading of the questions. In addition, a review of 52 studies from 20 countries to study the prevalence of psychiatric disorders in childhood and adulthood revealed a difference in the prevalence rate ranging from 1% to 51%. The disparity in the rate was attributed to the different methods of data collection, methods of diagnosis, and geographical locations.[32]

Gender is considered the most significant risk factor in these three disorders. It could be explained by the hormonal changes in girls of this age that might contribute to the symptoms manifested by these three disorders.[17] Female predominance in these disorders concurs with the results of a previous study.[2] One study explained the difference in depression in the genders by intimating that the lack of empowerment of women in most communities makes them more prone to depression than men. They also have different biological responses, even if exposed to the same stressors as men.[33] The age was significant in OCD and depression. This can be attributed mostly to one or two factors: the increased number of people screened at this age or the increased stressors for these students who were at levels when examinations would determine their future. The level of anxiety and the number of students who had anxiety could also be on the rise at this stage. The year of study was also significant for OCD and depression since students in the second secondary year were the most vulnerable for both the conditions.

Conclusion

The prevalence of depression, anxiety, and OCD was very high in secondary school students in the Al-Hasa region and was higher in females than males. Further assessment is needed to evaluate this high prevalence, evaluate the severity of diseases, and investigate other risk factors.

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Conflicts of interest

There are no conflicts of interest.

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