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Prevalence of Depression, Anxiety and Stress as Measured by the Depression, Anxiety, and Stress Scale (DASS-42) among Secondary School Girls in Abha, Saudi Arabia

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مدى انتشار الاكتئاب والقلق والكرب النفسي (طبقا لمقياس داس - 42) بين طالبات المرحلة الثانوية في مدينة أبها بالمملكة العربية السعودية

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الملخص: الهدف: قياس مدى انتشار أعراض الاكتئاب والقلق والكرب النفسي بين طالبات المرحلة الثانوية. **الطريقة:** أجريت دراسة مقطعية على طالبات المرحلة الثانوية في مدينة أبها، بمنطقة عسير، بالمملكة العربية السعودية باستخدام النسخة العربية من مقياس داس-42 لقياس الاكتئاب والقلق والكرب النفسي. **النتائج :** تم إدراج 545 طالبة في هذه الدراسة، التي أظهرت أن 73% من الطالبات لديهن أعراض أحد الاعتلالات الثلاثة تحت الدراسة على الأقل، بينما 50.1% منهن لديهن أعراض لاعتلالين أو أكثر. كانت نسبة انتشار أعراض الاكتئاب والقلق والكرب 41.5%، 66.2% و 52.5% على التوالي. كانت درجات هذه الاعتلالات في معظمها من بسيط إلى متوسط الشدة. أظهرت الدراسة أن الاكتئاب والقلق والكرب مترابطة مع بعضها إيجابيا بدرجة إحصائية ذات قيمة عالية. لم تظهر الدراسة ارتباطا بين الخصائص الاجتماعية للطالبات ومدى انتشار أعراض الاعتلالات الثلاثة التي تمت دراستها. **الخلاصة:** أظهرت هذه الدراسة أن القدرة على تشخيص وعلاج الأمراض النفسية الشائعة بين طالبات المرحلة الثانوية يجب أن تكون من أولويات أطباء الرعاية الصحية الأولية.

مفتاح الكلمات: داس -42 ، اكتئاب ، قلق ، كرب نفسي، مراهقين ، بنات المدارس الثانوية ، المملكة العربية السعودية.

ABSTRACT: ***Objectives:*** To determine the prevalence of symptoms of depression, anxiety and stress among secondary school girls. ***Methods:*** A cross- sectional study was carried out on secondary school girls in Abha city, Aseer Region, Saudi Arabia, using the Arabic version of the Depression, Anxiety, and Stress Scale (DASS-42). ***Results:*** Of 545 female students recruited in this study, 73.4% had the symptoms of at least one of the three studied disorders; 50.1% had at least two disorders. The prevalence of symptoms of depression, anxiety and stress was 41.5 %, 66.2% and 52.5% respectively. The majority of symptoms were mild to moderate in severity. The scores for depression, anxiety, and stress were positively and significantly correlated. No significant association was found between the girls' sociodemographic characteristics and the scores of the three studied disorders. ***Conclusion:*** One of the most important aspects of a primary care physician's care of females is to screen for and treat common mental disorders.

Keywords: DASS-42; Depression; Anxiety; Stress; Adolescent; Secondary school girls; Saudi Arabia.

Advances in Knowledge

1. *Symptoms of negative emotional syndromes (depression, anxiety and stress) are highly prevalent among Saudi female secondary school students.*
2. *These symptoms are higher among female than male secondary school students and do not differ significantly according to girls' sociodemographic characteristics.*

Application to Patient Care

1. *It is important to screen adolescents for negative emotional syndromes and to refer those with morbid symptoms for psychiatric consultation.*
2. *School health unit staff and primary health care physicians can play a major role in the diagnosis and management of mental disorders.*

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Adolescence (11-21 years old) is a transitional stage from childhood to adulthood.[1,2] During this stage, many psychological changes take place.[1-3] Psychiatric disorders in this period constitute a major public health concern and can result in serious consequences.[1,2] Research has shown that the majority of adult sufferers of mental disorders indicate that their symptoms began in childhood and adolescence.[1-3] The appropriate identification and treatment of mental disorders in this period provide teenagers with immediate positive benefits, and serve to counteract consequences such as poor academic performance, substance abuse and suicidal behaviour.[3-6]

Globally, Roberts *et al*.[7] reported that the prevalence rates of mental disorders among children and adolescents range from 1% to 51% with a mean rate of 15.8% for adolescents. In the USA and Australia, one in five teenagers suffers from mental health problems.[8, 9] In developing countries, the prevalence of mental disorders among adolescents attending primary health care facilities ranges between 12% and 29%.[10] Several studies indicate that prevalence rates of the individual disorders: depression, anxiety and stress are growing among adolescents.[8, 9, 11] Harrington and Clark[12] reported that 60% of adolescents experience depressive symptoms. An earlier study on Saudi secondary school boys indicated that 38.2% had depression, while 48.9% experienced anxiety and 35.5% suffered from stress.[13]

The Saudi community is undergoing great economic and social changes. It has a young population, with 60% under 30 years old, and 47% under 15 years;[14] however, very little is known about the extent of psychiatric illnesses among Saudi female adolescents. Therefore, this study aimed to evaluate the extent of depression, anxiety, and stress among secondary school girls in Abha City, Saudi Arabia.

Methods

This cross-sectional study was conducted during the school year, in October 2007, in Abha, the capital city of Aseer Region, in the southwest of Saudi Arabia with a total population of 300,000.

Through the School Health Unit for Girls (SHU-G), all secondary schools for girls located in Abha City (n=10) were invited to participate in this study. Principals and directors of these schools were provided with the important information about this study. All of them agreed to cooperate and to participate.

In Saudi Arabia, general education of children starts at 7 years old. Girls have separate schools from boys. Each secondary school has three teaching levels, which represent the 10th, 11th, and 12th years of education.

Data were collected using the Arabic version of the Depression Anxiety Stress Scale (DASS),[15] while demographic and environmental data, as well as the presence of associated psychological factors, were collected via a questionnaire devised for the study. The DASS-42 is used for data collection to assess the negative emotional symptoms among students. It is a 42-item self-report inventory designed to measure the presence and severity of symptoms of depression, anxiety and stress among people as young as 12 years of age.[15] This scale was psychometrically validated to the Arabic culture by Taouk *et al*.[16] This screening and outcome measure reflects the experience of the person over the previous 7 days. Gamma coefficients that represent the loading of each scale on the overall factor (total score) are 0.71 for depression, 0.86 for anxiety, and 0.88 for stress. One would expect anxiety and stress to load higher than depression on the common factors as they are more highly correlated and, therefore, dominate the definition of this common factor. The reliability of the test is considered adequate and test-retest reliability is likewise considered adequate with 0.71

Table 1: Scoring and grading of the Depression, Anxiety and Stress Scale (DASS)[15]

Category	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

Table 2: Distribution of secondary school girls in Abha, Saudi Arabia according to their age, scholastic year and type of study (n=545)

Student characteristics	No.	%
Age groups (in years)		
14-15	22	4
16- 17	333	61.1
18- 20	190	34.9
School year		
First year	219	40.2
Second year	163	29.9
Third year	163	29.9
Total	**545**	**100**

for depression and 0.79 for anxiety. Exploratory and confirmatory factor analyses have sustained the proposition of its factors (p <0.05).[15] Table 1 shows the scoring and grading of the DASS.

At each school, one classroom from each year level was selected by simple random sampling. Prior to administration of the questionnaire, the purpose of the study was briefly and clearly described to the students. They were informed that they could choose not to participate and were assured of the full confidentiality of their data. A total of 545 secondary school girls participated in this study, their age ranged from 14-20 years with an average of 17.13 ±1.12 years and a median of 17.0 years.

Data were collected by 4th year trained female medical students (n=20), under the supervision of their college professors (n=5). These medical students were trained on practical research methodology, as a part of their community medicine course.

Statistical analysis was conducted by the staff of the Department of Family and Community Medicine, College of Medicine, King Khalid University, using the Statistical Package for the Social Sciences (SPSS, Version 15 for Windows). The significance of differences was tested using the $\chi 2$ test at the 5% level of probability significance. Students who obtained high DASS scores (i.e. severe or extremely severe symptoms) were referred to the research psychiatrist to confirm the diagnosis and to provide proper psychiatric consultation and management.

Results

Table 2 shows the distribution of students' age groups and scholastic years. About 60% of the students were enrolled in the 2nd and 3rd year, while 40.2% were enrolled in the first year.

Table 3: Socio-demographic characteristics of secondary school girls, Abha, Saudi Arabia (n=545)

Characteristics	No.	%
Parents' status		
Living within the family	485	89.0
Divorced/separated	24	4.4
Deceased father	28	5.1
Deceased mother	5	0.9
Both parents deceased	3	0.6
Father's education		
Illiterate	43	7.9
Primary	87	16.0
Intermediate	93	17.1
Secondary	107	19.6
University	149	27.3
Postgraduate	66	12.1
Father's employment		
Unemployed	25	4.6
Military	89	16.3
Governmental employee	162	29.7
Private business	106	19.5
Retired	163	29.9
Mother education		
Illiterate	154	28.3
Primary	163	29.9
Intermediate	88	16.1
Secondary	69	12.7
University	54	9.90
Post graduate	17	3.10
Mother's employment		
Housewife	479	87.9
Employed	66	12.1

Table 3 shows that the majority of girls lived with both their parents (89.0%). The most frequent level of education among fathers was university education (39.4%), while only 7.9% were illiterate. On the other hand, the most frequent mothers' education level was primary education (29.9%) followed by illiterates (28.3%). The most frequent fathers' occupations of the studied sample were retired or currently not working (34.5%) followed by governmental civil employee (29.7%), while most mothers were housewives (87.9%).

Table 4 shows that 73.4% of the girls had at least one of the three studied disorders (depression, anxiety or stress). Moreover, 50.1% of subjects had at least two disorders, and more than one-third of the

Table 4: Prevalence and intensity of Depression, Anxiety, and stress among secondary school girls, Abha, Saudi Arabia. (n=545)

Psychological traits	No.	%
Depression	**226**	**41.5**
Mild	92	16.9
Moderate	77	14.1
Severe	39	7.20
Extremely severe	18	3.30
Anxiety	**361**	**66.2**
Mild	75	13.8
Moderate	144	26.4
Severe	81	14.8
Extremely severe	61	11.2
Stress	**286**	**52.5**
Mild	108	19.8
Moderate	114	20.9
Severe	50	9.20
Extremely severe	14	2.60
Morbidity		
One symptom or more	400	73.4
More than one symptom	273	50.1
Free of symptoms*	**145**	**26.60**
Total	**545**	**100**

**Depression, anxiety or stress*

students (35.5%) had all the three disorders under study. Depression, anxiety, and stress were found in 41.5 %, 66.2% and 52.5% of the subjects respectively. Table 5 reveals that depression, anxiety, and stress were positively and significantly correlated. Table 6 shows that the prevalence of symptoms of depression, anxiety and stress among secondary school girls did not differ significantly according to their sociodemographic characteristics.

Discussion

DASS-42 was utilised in this research.[15,16] It has the advantage that it can discriminate between the negative emotional symptoms of depression, anxiety, and stress; it is suitable for screening adolescents as young as 12 years of age; it is freely available in the public domain, and it is a short and easily answered questionnaire.

The present study indicated high prevalence rates for symptoms of depression, anxiety and stress among Saudi secondary school girls. About 10% of students showed severe or extremely severe symptoms of depression and stress while 25% of them showed severe or extremely severe symptoms of anxiety.

Moreover, results revealed that about 75% of the female Saudi secondary school students reported the symptoms of at least one of the three studied disorders. This is higher than those reported by several national, regional and international studies[7-10,12,13,17,18] A review of the literature reveals a considerable disparity in figures on the prevalence of psychiatric disorders in adolescents. This could be due to the diversity in methods, definitions used, or geographical locations.[7] In 1998, Robert *et al*.,[7] reviewed 52 studies carried out in over 20 countries over the past four decades, and found that prevalence estimates of psychopathology ranged from 1 to 51%, (mean 15.8%), with a median rate of 15% among adolescents. In Taif City, Saudi Arabia, Abdel-Fattah *et al*.[17] reported that 8.3% of male pupils in primary and secondary schools (5.6% of the sample was adolescent) were emotionally disturbed as measured by the Child Behavior Checklist "parent form". Using the "Child Behavior Checklist", Eapen *et al*.[18] conducted a study on schoolchildren aged 6 to 15 years in the United Arab Emirates, a neighbouring country which has a similar culture to Saudi Arabia, and found that 23.9% of children had a mental health problem. The prevalence estimate for behavioural disorders was 16.5%.

Of the individual disorders, anxiety was the most prevalent (66.2%), followed by stress (52.5 %), then depression (41.5%). This finding is in agreement with that of Pelcovitz *et al*.,[19] who found that anxiety disorders are the main psychiatric

Table 5: Correlation matrix between severities of depression, anxiety, and stress among secondary school girls, Abha, Saudi Arabia (n =545)

	Depression		Anxiety		Stress	
	r	***p*-value**	**r**	***p*-value**	**r**	***p*-value**
Depression	--	--	0.693	< 0.001	0.691	< 0.001
Anxiety	0.691	< 0.001	--	--	0.728	< 0.001
Stress	0.694	< 0.001	0.728	< 0.001	--	--

Table 6: Prevalence of depression, anxiety and stress among secondary school girls according to their sociodemographic characteristics (n=545)

	Depression						
	Normal		Depression		*p* Value	Normal	
	No.	%	No.	%		No.	%
Age groups (in years)							
14-15	15	68.2	7	31.8	-	7	33.3
16-17	195	59.3	134	40.7	-	106	32.2
18-19	109	58.9	76	41.1	0.697	71	38.6
School year							
First	126	58.3	90	41.7	-	71	32.9
Second	93	57.4	69	42.6	-	55	34.6
Third	100	63.3	58	36.7	0.507	58	36.5
Parents' status							
Living within the family	288	60.4	189	39.6	-	163	34.3
Divorced/separated	10	43.5	13	56.5	-	11	47.8
Deceased father	15	53.6	13	46.4	-	7	25.0
Deceased mother	4	80.0	1	20.0	-	1	20.0
Both parents deceased	2	66.7	1	33.3	0.413	2	66.7
Father's education							
Illiterate	26	60.5	17	39.5	-	19	44.2
Primary	37	43.0	49	57.0	-	22	25.9
Intermediate	53	58.2	38	41.8	-	19	20.7
Secondary	68	65.4	36	34.6	-	43	41.7
University	94	63.9	53	36.1	-	58	39.5
Postgraduate	41	63.1	24	36.9	0.125	23	35.9
Mother's education							
Illiterate	56	36.6	97	63.4	-	76	49.7
Primary	52	32.5	108	67.5	-	89	55.3
Intermediate	25	29.1	61	70.9	-	37	42.5
Secondary	25	36.2	44	63.8	-	26	38.2
University	20	40.0	30	60.0	-	22	43.1
Postgraduate	6	37.5	10	62.5	0.772	9	56.3
Father's occupation							
Unemployed	11	45.8	13	54.2	-	8	32.0
Military	49	55.1	40	44.9	-	31	35.2
Governmental employee	88	55.3	71	44.7	-	52	33.1
Private business	65	61.9	40	38.1	-	39	37.1
Retired	106	66.7	53	33.3	0.118	54	34.0
Mother's employment							
Housewife	289	61.4	182	38.6	-	165	35.0
Employed	30	46.2	35	53.8	0.119	19	30.2

diagnosis in adolescents. In a previous study on Saudi male adolescents, symptoms of anxiety were the most prevalent (48.9%), followed by depression (38.2%), then symptoms of stress (35.5%).[13] These high prevalence rates of symptoms of depression, anxiety and stress among Saudi female students can be attributed to the increasing stresses on Saudi females related to the social and cultural transformations in Saudi society. In addition, choosing a career has grown more difficult as the job market for women has become more complex. Furthermore, high psychological distress among students can be related to their study problems during the secondary school study period.

In agreement with previous studies, where comorbidity among adolescents ranged from 25%

Anxiety			Stress				
Anxiety		*p* Value	Normal		Stress		*p* Value
No.	%		No.	%	No.	%	
14	66.7	-	12	54.5	10	45.5	-
223	67.8	-	153	46.8	174	53.2	-
113	61.4	0.345	94	50.3	93	49.7	0.627
145	67.1	-	103	48.1	111	51.9	-
104	65.4	-	70	42.9	93	57.1	-
101	63.5	0.767	86	54.1	73	45.9	0.135
312	65.7	-	234	49.1	243	50.9	-
12	52.2	-	9	39.1	14	60.9	-
21	75.0	-	13	46.4	15	53.6	-
4	80.0	-	1	20.0	4	80.0	-
1	33.3	0.311	2	66.7	1	33.3	0.569
24	55.8	-	24	57.1	18	42.9	-
63	74.1	-	36	41.4	51	58.6	-
73	79.3	-	40	43.5	52	56.5	-
60	58.3	-	54	52.4	49	47.6	-
89	60.5	-	73	49.7	74	50.3	-
41	64.1	0.106	32	49.2	33	50.8	0.457
77	50.3	-	11	45.8	13	54.2	-
72	44.7	-	49	55.1	40	44.9	-
50	57.5	-	88	55.3	71	44.7	-
42	61.8	-	65	61.9	40	38.1	-
29	56.9	-	106	66.7	53	33.3	-
7	43.8	0.150	319	59.5	217	40.5	0.118
17	68.0	-	13	52.0	12	48.0	-
57	64.8	-	45	51.7	42	48.3	-
105	66.9	-	66	41.5	93	58.5	-
66	62.9	-	54	51.4	51	48.6	-
105	66.0	0.967	81	50.6	79	49.4	0.375
306	65.0	-	236	50.1	235	49.9	-
44	69.8	0.483	23	35.4	42	64.6	0.126

to 68 %,[20,21] the comorbidity in this study was 50.1%. Psychiatric morbidity and comorbidity among girls in this study is higher than that reported in a study of 1,723 Saudi secondary school boys in the same region using the same methodology where 59.4% had at least one of the three disorders, (38.2%) had depression, while 48.9% had anxiety and 35.5% had stress.[13] In a study conducted at four primary care clinics affiliated to university hospitals throughout the eastern United States, women were more likely than men to have at least one mental disorder (43% versus 33%; p <0.05). Psychiatric comorbidity was also more common in women (26% of women had two or more mental disorders versus 15% of men, p <0.05).[22]

Unlike previous studies[19,23,24] this research

failed to find any association between psychiatric morbidity and the socio-demographic characteristics of the participants. In a study of 8,934 Norwegian adolescents, those with a family history of divorce and parental distress were more vulnerable to symptoms of anxiety than those without such distress.[24] Vazsony looked at 6,935 adolescents from Hungary, Switzerland and the United States and found that increased anxiety occurred in the presence of extreme maternal and paternal closeness to the adolescents, possibly caused by parental over intrusiveness.

The World Health Organization (WHO)[25] noted that there are increasing numbers of people in the Eastern Mediterranean Region, who are now entering the age of risk for development of mental disorders, i.e. adolescence/early adulthood and old age. Existing conditions of social and physical strife provide fertile grounds for an upsurge in mental health problems and their consequences such as suicide and substance dependence. The school environment can offer an excellent opportunity to promote sound principles of mental health and healthy lifestyles. Consequently, further national studies are needed to explore the ability of school health unit staff and primary health care physicians to diagnose and manage mental disorders.

LIMITATIONS

This study has the following limitations: it was performed exclusively in the City of Abha, hence, its results exclusively reflect the psychiatric status of urban adolescents; it was restricted to female students only, which prevented the determination of sex-specific prevalence rates; it was a school-based study, which might therefore miss adolescents in the community who do not attend school. In addition, there is no built-in lie scale in DASS, as it is just a self-reporting data collection tool (with triangulation). Finally, no information on suicidal ideation can be picked up in DASS.

Conclusion

The present study confirms the high prevalence of depression, anxiety, and stress among Saudi female adolescent students. The challenges ahead include the need to carry out extensive further research, and to develop national intervention programmes to promote mental health.

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Conflict of Interest

The authors report no conflit of interest.

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