RESEARCH ARTICLE

DEPRESSION, ANXIETY AND STRESS AMONG SAUDI SECONDARY SCHOOL STUDENTS IN JIZAN CITY, KINGDOM OF SAUDI ARABIA

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ARTICLE INFO	ABSTRACT
	Background: The appropriate identification and treatment of mental disorders in adolescence provide teenagers with immediate positive benefits, and serve to counteract consequences such as poor academic performance, substance abuse and suicidal behavior. **Objective:** To screen for symptoms of negative emotional states among Saudi secondary school students in Jizan City. **Subjects and Methods:** Four secondary schools (two for boys and two for girls) were randomly selected. A total of 772 students were included (350 boys and 402 for girls). A personal characteristics questionnaire and the Arabic version of the Depression, Anxiety and Stress Scale were used for data collection. **Results:** Half of students had symptoms of depression 59.7% had symptoms of anxiety, while 39% had symptoms of stress (39%). Mean scores for depression, anxiety and stress were higher among older than younger students. Female students had significantly higher mean scores for depression, anxiety and stress (p=0.002, p<0.001 and p<0.001, respectively). Mean scores for depression, anxiety and stress were higher among smokers than nonsmokers. Students with a present history of chronic diseases had significantly higher scores for negative emotional status (p<0.001, for all). Mothers' higher educational status was significantly associated with higher scores of anxiety (p=0.034). Students whose mothers were employed had significantly higher scores for anxiety and stress (p=0.001 and p=0.004, respectively). Students with a positive family history of psychiatric problems had significantly higher mean scores for negative emotional states. There were significantly positive correlation among the studied three negative emotional states (p<0.001 for all). **Conclusions:** Prevalence rates for negative emotional states are high among secondary schools students in Jizan City; Anxiety is the most prevalent negative emotional state among secondary school students followed by depression and then stress; Prevalence rates of negative emotional syndromes are significantly higher among older students, female students, students with chronic diseases and students with positive family history of psychiatric diseases. Mothers' personal characteristics have significant impact on their son's and daughter's emotional status. School health care providers should be trained to screen students for negative emotions.

INTRODUCTION

Adolescence is a transitional stage from childhood to adulthood. During this stage, many psychological changes take place. Psychiatric disorders in this period constitute a major public health concern and can result in serious consequences. Research has shown that the majority of adult sufferers of mental disorders indicate that their symptoms began in childhood and adolescence (Beautraise, 2000; Ringeisen *et al.*, 2002). Adolescents, especially those aged between 14 and 18

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years, face an extremely vulnerable time. Violent behavior and emotional problems may worsen during this period (Spear and Kulbok, 2001). Epidemiological studies have shown a substantial growth in depressive disorders during adolescence (Kessler *et al.*, 2001). 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 behavior (Brooks *et al.*, 2002; Gregory *et al.*, 2007). Concern is also raised because findings indicate that young people who report more distress symptoms or depression are at greater risk for psychiatric illness in adulthood (Oppedal and Røysam, 2004). The mental health of adolescents has

received increasing attention over the last few decades (Virta *et al.*, 2004). In New Zealand, Piekarska (2000) noted that students at high schools commonly suffer from stress and anxiety. In Germany, Manz *et al.* (2001) reported that up to 30% of students of the 9th and 10th grades (equivalent to secondary school students in Saudi Arabia) suffer from anxiety disorders. Several studies on mental health status of adolescents have been conducted in Saudi Arabia. In Taif City, Abdel-Fattah *et al.* (2004) reported that, 8.3% of male pupils in primary and secondary schools were emotionally disturbed. In Abha City, Al-Gelban (2007) reported that symptoms of anxiety among Saudi male adolescents were the most prevalent (48.9%), followed by symptoms of depression (38.2%), then symptoms of stress (35.5%). On the other hand, Al-Gelban (2009) found higher prevalence rates for psychiatric disorders among adolescent females in Abha City. He noted that about three-quarters of Saudi secondary school female students reported the symptoms of at least one psychiatric disorder. Of the individual disorders, anxiety was the most prevalent (66.2%), followed by stress (52.5%) then depression (41.5%). Very few programs have been developed to highlight the mental health needs of adolescents (Persson and Rousseau, 2009). To address the gap between adolescents' mental health needs and the availability of resources, there has been a call to develop and assess efficacious mental health interventions for minors who have witnessed organized violence [15]. Leckman and Leventhal [16] outlined the need to develop preventative and efficacious interventions that can be implemented by non-specialist health care workers, such as school and community based programs. This study aimed to estimate the prevalence and associated factors of depression, anxiety and stress among Saudi secondary school students in Jizan City.

Subjects and methods

A cross sectional study was carried out among governmental secondary school students in Jizan city, Saudi Arabia. It is the capital of Jazan Area. It lies in the southwestern part of Saudi Arabia, at the northern border of Yemen. There are 68 governmental secondary schools for boys, in which there are 14048 registered Saudi students and 52 governmental secondary schools for girls, in which there are 11749 registered Saudi students (Jizan Directorate of Education, 2011).

The minimum sample size for this study has been decided according to Dahiru *et al.* (2006), as follows:

$$n = \frac{Z\alpha^2 \ X \ P \ X \ Q}{D^2}$$

where:

- n: Calculated sample size
- $Z\alpha$: The z-value for the selected level of confidence (1-α) = 1.96.
- P: The proportion of negative emotional states among study groups (estimated to be 0.3 for boys and 0.5 for girls).
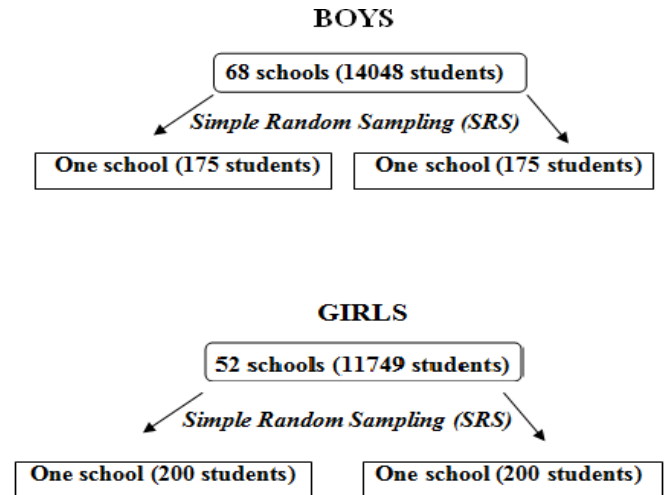- Q: (1 – P).
- D: The maximum acceptable error = 0.05.

The calculated minimum sample size for boys is:

$$n = \frac{(1.96)^2 \ X \ 0.3 \ X \ 0.7}{(0.05)^2} = 323.$$

For girls, the calculated minimum sample size is:

$$n = \frac{(1.96)^2 \ X \ 0.5 \ X \ 0.5}{(0.05)^2} = 384.$$

To fulfill the required sample size, the researcher followed a simple random sample (SRS) to select four secondary schools (two for boys and two for girls). All students in the four selected schools were included in the present study, as follows:

BOYS

68 schools (14048 students)

Simple Random Sampling (SRS)

One school (175 students)   One school (175 students)

GIRLS

52 schools (11749 students)

Simple Random Sampling (SRS)

One school (200 students)   One school (200 students)

Data were collected through

1. Personal characteristics questionnaire: this included student's age, gender, scholastic year, family size, birth order, type of study (Literature or Science), smoking status, presence of any chronic disease, family history of psychological problems.
2. The Arabic version of the Depression, Anxiety and Stress Scale (DASS): This study tool was used to screen the secondary school students for negative emotional states (i.e., symptoms of depression, anxiety and stress). The DASS is a self-report questionnaire that was specifically designed to distinguish between, and provide relatively pure measures of, the three related and clinically significant negative emotional states of depression, anxiety, and stress. It provides a quantitative (dimensional) measure of the severity of each syndrome. Factor analytic studies have confirmed that the DASS items can be reliably grouped into three scales, namely Depression, Anxiety, and Stress, in both non-clinical and clinical samples (Antony *et al.*, 1998). The DASS, therefore, reflects contemporary thinking on the nature of negative emotion, has good psychometric properties that are well established, and provides a measure of stress as well as depression and anxiety (Brown *et al.*, 1997).

The Arabic version of the DASS has been validated (Al-Gelban, 2007). The reliability scores of the scales in terms of Cronbach's alpha scores rate the depression scale at 0.91, the anxiety scale at 0.84 and the stress scale at 0.90 (Lovibond, 1998). DASS comprises 42 questions whose rating scale for responses extends from: Did not apply to me at all (0); Applied to me to some degree, or some of the time (1); Applied to me to a considerable degree, or a good part of time (2); or Applied to me very much, or most of the time (3).

Number of questions according to negative emotion

Negative emotional states	Question numbers
Stress	1,6,8,11,12,14,18,22,27,29,32,33,35,39
Anxiety	2,4,7,9,15,19,20,23,25,28,30,36,40,41
Depression	3,5,10,13,16,17,21,24,26,31,34,37,38,42

Scoring of DASS (Lewinsohn et al., 2000)

Severity	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+

All the necessary official permissions were fully secured before data collection. The personal consent of the students was asked prior to distribution of the data collection tools. The researchers performed the data collection at the two schools for boys. Although the DASS is being assessed using a self-reported questionnaire, the data collector was well aware of all statements within the questionnaire so as to be ready for any inquiry during data collection. Consequently, the researcher trained two Saudi nurses to help in data collection at the two schools for girls. Training of these female data collectors aimed to avoid data collector bias. The Statistical Package for Social Sciences (SPSS version 16.0) was used for that purpose. Descriptive statistics was calculated and the appropriate tests of significance were applied accordingly. P-values less than 0.05 were considered as statistically significant.

RESULTS

Table (1) shows that more than half of the students (58.5%) were in the age group 16-17 years. More than half of students were girls (53.5%). The majority of students were nonsmokers (96.9%). Almost two-thirds of students were currently studying scientific studies (61%). Almost equal percentages of students were enrolled at the first, second or the third scholastic years (33.6%, 33.1% and 33.2%, respectively). Present history of chronic diseases was positive in 86 students (11.4%). These diseases were mainly bronchial asthma (2.8%), anemia (1.6%), diabetes mellitus (0.9%) or hypertension (0.3%). Table (2) shows majority of the students (73.9%) had family size ranged between 5 and 10 persons. Secondary level of education was the highest frequency for fathers' education (27.7%), while 11.7% were illiterate, 17.6% had university education and 4.8% had postgraduate education. Primary level of education was the highest frequency for mothers' education (28.73%), while 24.9% were illiterate, 12.4% had university education and 2% had postgraduate education. Almost one third of students' fathers were governmentally employed (31.1%), while 12.9% were unemployed and 31.4% were retired. Most mothers were employed (88.2%). Most students' parents were living together (86.3%), while 5% of parents were divorced, 7.7% of students had one of their parents dead and 1.1% of had both of their parents dead. There was positive family history of psychiatric diseases in 4.9% of students. Figures (1) show that 50% of students had symptoms of depression. Most of the symptoms were either of mild (17.3%), or moderate grades (16.5%). However, severe and extremely severe grades were present in 11.3% and 4.9% of students, respectively. The mean scores for depression was 11.2±8.3. More than half of students had symptoms of anxiety (59.7%). Most of the symptoms were of moderate grade (22.7%). However, severe and extremely severe grades were present in

13.2% and 14.6% of students, respectively. The mean scores for anxiety was 11.0±7.7. More than one third of students had symptoms of stress (39%). Most of the symptoms were either of mild or moderate grades (13.7%) for both). However, severe and extremely severe grades were present in 9.7% and 1.9% of students, respectively. The mean scores for stress was 13.0±8.9.

Table 1. Personal characteristics of study school students, Jazan city, 2011

Personal characteristics	No.	%
Age groups		
• <16 years	106	14.1
• 16-17 years	440	58.5
• 18 + years	206	27.4
Sex		
• Boys	350	46.5
• Girls	402	53.5
Smoking status		
• Smoker	23	3.1
• Nonsmoker	729	96.9
Type of current study		
• General	251	33.4
• Scientific	459	61.0
• Literature	42	5.6
Scholastic years		
• First	253	33.6
• Second	249	33.1
• Third	250	33.2
Present history of chronic diseases		
• Negative	710	94.4
• Positive	86	5.6
• Bronchial asthma	21	2.8
• Anemia	12	1.6
• Diabetes mellitus	7	0.9
• Hypertension	2	0.3

Table 2. Characteristics of students' families, Jazan city, 2011

Characteristics	No.	%
Family size		
• <5	33	4.4
• 5-10	556	73.9
• >10	163	21.7
Fathers' education		
• Illiterate	88	11.7
• Primary	152	20.2
• Intermediate	136	18.1
• Secondary	208	27.7
• University	132	17.6
• Postgraduate	36	4.8
Mothers' education		
• Illiterate	187	24.9
• Primary	213	28.3
• Intermediate	140	18.6
• Secondary	104	13.8
• University	93	12.4
• Postgraduate	15	2.0
Fathers' occupation		
• Unemployed	97	12.9
• Military	125	16.6
• Governmental	234	31.1
• Private	60	8.0
• Retired	236	31.4
Mothers' employment		
• Unemployed	89	11.8
• Employed	663	88.2
Family status		
• Student is living with both parents	649	86.3
• Parents are divorced	37	5.0
• One of the parents is dead	58	7.7
• Both parents are dead	8	1.1
Family history of psychiatric diseases		
• Positive	37	4.9
• Negative	715	95.1

Table (3a). Scores of depression (Mean+SD) according to personal characteristics of secondary school students

Personal Characteristics	No.	Mean	SD	p-values
Age group				
• <16 years	106	9.45	7.32	
• 16-17 years	440	11.20	8.45	
• 18 + years	206	12.00	8.48	0.038
Gender				
• Males	350	10.2	8.0	
• Females	402	12.0	8.6	0.002
Type of current study				
• General	251	10.7	7.9	
• Science	459	11.2	8.5	
• Literature	42	14.0	8.8	0.054
Scholastic year				
• First	253	10.69	7.82	
• Second	249	11.15	8.85	
• Third	250	11.68	8.32	0.410
Smoking status				
• Smoker	23	17.30	10.58	
• Nonsmoker	729	10.98	8.19	<0.001
Present history of chronic diseases				
• None	710	10.36	7.72	
• Diabetes mellitus	7	16.00	10.47	
• Bronchial asthma	21	17.48	11.28	
• Anemia	12	10.58	5.71	
• Hypertension	2	12.00	0.00	<0.001

Table (3b). Scores of anxiety (Mean+SD) according to personal characteristics of secondary school students

Personal Characteristics	No.	Mean	SD	p-values
Age group				
• <16 years	106	10.80	7.13	
• 16-17 years	440	10.93	7.86	
• 18 + years	206	11.16	7.70	0.915
Gender				
• Males	350	9.1	7.0	
• Females	402	12.6	7.9	<0.001
Type of current study				
• General	251	11.3	7.5	
• Science	459	10.7	7.8	
• Literature	42	11.7	8.0	0.502
Scholastic year				
• First	253	11.33	7.50	
• Second	249	10.63	8.23	
• Third	250	10.96	7.31	0.602
Smoking status				
• Smoker	23	13.57	8.32	
• Nonsmoker	729	10.89	7.68	0.102
Present history of chronic diseases				
• None	710	10.22	7.29	
• Diabetes mellitus	7	13.86	5.30	
• Bronchial asthma	21	19.10	8.21	
• Anemia	12	10.00	5.26	
• Hypertension	2	11.00	1.41	<0.001

Table (3c). Scores of stress (Mean+SD) according to personal characteristics of secondary school students

Personal Characteristics	No.	Mean	SD	p-values
Age group				
• <16 years	106	12.74	8.08	
• 16-17 years	440	12.88	8.90	
• 18 + years	206	13.33	9.27	0.799
Gender				
• Males	350	11.0	8.1	
• Females	402	14.7	9.1	<0.001
Type of current study				
• General	251	12.9	8.7	
• Science	459	13.0	9.0	
• Literature	42	13.9	9.6	0.785
Scholastic year				
• First	253	12.95	8.65	
• Second	249	12.92	9.32	

• Third	250	13.08	8.71	0.976
Smoking status				
• Smoker	23	19.22	10.57	
• Nonsmoker	729	12.79	8.76	<0.001
Present history of chronic diseases				
• None	710	12.23	8.45	
• Diabetes mellitus	7	15.00	7.02	
• Bronchial asthma	21	18.52	10.06	
• Anemia	12	13.92	6.46	
• Hypertension	2	9.50	6.36	<0.001

Table (4a). Scores of depression (Mean+SD) according to family characteristics of secondary school students

Characteristics	No.	Mean	SD	p-values
Father's education				
• Illiterate	88	12.25	9.69	
• Primary	152	10.99	8.54	
• Intermediate	136	10.40	7.55	
• Secondary	208	10.83	8.14	
• University	132	11.15	7.37	
• Postgraduate	36	14.28	10.55	0.152
Mother's education				
• Illiterate	187	10.58	8.30	
• Primary	213	11.36	8.13	
• Intermediate	140	11.99	9.17	
• Secondary	104	10.64	8.46	
• University	93	10.87	7.38	
• Postgraduate	15	13.80	8.29	0.491
Father's occupation				
• Unemployed	97	11.03	8.85	
• Military	125	11.48	9.04	
• Governmental	234	11.18	7.86	
• Private	60	10.75	8.06	
• Retired	236	11.17	8.33	
• Postgraduate	36	14.28	10.55	0.986
Mother's employment				
• Unemployed	89	11.4	8.0	
• Employed	663	11.1	8.4	0.789
Parents' status				
• Living together	649	11.02	8.35	
• Divorced	37	13.43	8.06	
• One parents died	58	11.12	8.14	
• Both are dead	8	13.13	9.93	0.339
Family size				
• <5	33	14.06	8.13	
• 5-10	556	11.19	8.32	
• >10	163	10.54	8.37	0.086
Family history of psychiatric problem				
• Positive	37	14.7	8.0	
• Negative	715	11.0	8.3	0.009

Table (4b). Scores of anxiety (Mean+SD) according to family characteristics of secondary school students

Characteristics	No.	Mean	SD	p-values
Father's education				
• Illiterate	88	12.02	8.44	
• Primary	152	10.28	8.27	
• Intermediate	136	10.64	7.17	
• Secondary	208	10.63	7.25	
• University	132	11.30	7.21	
• Postgraduate	36	13.42	9.29	0.193
Mother's education				
• Illiterate	187	10.30	8.14	
• Primary	213	10.85	7.65	
• Intermediate	140	10.28	6.91	
• Secondary	104	11.04	7.43	
• University	93	12.53	7.60	
• Postgraduate	15	15.80	9.52	0.034
Father's occupation				
• Unemployed	97	12.10	8.42	
• Military	125	10.14	7.32	
• Governmental	234	11.38	7.13	
• Private	60	10.55	7.37	

	No.	Mean	SD	p-values
• Retired	236	10.66	8.20	
• Postgraduate	36	13.42	9.29	0.314
Mother's employment				
• Unemployed	89	10.6	7.6	
• Employed	663	13.6	8.2	0.001
Parents' status				
• Living together	649	10.82	7.74	
• Divorced	37	12.86	7.26	
• One parents died	58	11.17	7.68	
• Both are dead	8	13.13	6.75	0.372
Family size				
• <5	33	11.76	6.69	
• 5-10	556	11.05	7.66	
• >10	163	10.56	8.09	0.647
Family history of psychiatric problem				
• Positive	37	16.2	8.1	
• Negative	715	10.7	7.6	<0.001

Table (4c). Scores of stress (Mean±SD) according to family characteristics of secondary school students

Characteristics	No.	Mean	SD	p-values
Father's education				
• Illiterate	88	13.95	10.54	
• Primary	152	11.91	9.32	
• Intermediate	136	13.14	8.49	
• Secondary	208	12.64	8.24	
• University	132	13.56	8.07	
• Postgraduate	36	14.42	10.39	0.406
Mother's education				
• Illiterate	187	12.25	9.35	
• Primary	213	12.27	8.48	
• Intermediate	140	13.52	9.26	
• Secondary	104	12.93	8.89	
• University	93	15.19	8.20	
• Postgraduate	15	13.93	8.58	0.104
Father's occupation				
• Unemployed	97	13.49	9.99	
• Military	125	12.72	9.07	
• Governmental	234	13.28	8.24	
• Private	60	13.08	8.63	
• Retired	236	12.60	9.05	
• Postgraduate	36	14.42	10.39	0.887
Mother's employment				
• Unemployed	89	12.6	8.8	
• Employed	663	15.5	9.1	0.004
Parents' status				
• Living together	649	12.86	8.95	
• Divorced	37	15.27	8.45	
• One parents died	58	12.64	8.10	
• Both are dead	8	14.88	10.96	0.389
Family size				
• <5	33	14.06	9.22	
• 5-10	556	13.15	8.83	
• >10	163	12.22	9.02	0.393
Family history of psychiatric problem				
• Positive	37	18.1	9.5	
• Negative	715	12.7	8.8	<0.001

Table (5). Correlation matrix between different negative emotional states

Negative emotional	Depression		Anxiety		Stress	
States	r	p	r	p	r	P
Depression	--	--	0.685	<0.001	0.752	<0.001
Anxiety	0.685	<0.001	--	--	0.748	<0.001
Stress	0.752	<0.001	0.748	<0.001	--	--

Tables (3 a,b,c) show that mean scores for depression, anxiety and stress were higher among older than younger students. However, differences were statistically significantly only for depression (p=0.038). Female students had significantly higher mean scores for depression, anxiety and stress (p=0.002, p<0.001, and p<0.001, respectively). On the other hand,

differences in scores for negative emotional states were not statistically significant according to type of study, or scholastic year. Mean scores for depression, anxiety and stress were higher among smokers than nonsmokers. Differences were statistically significant regarding depression and stress (p<0.001 and p=0.001, respectively). Students with a present history of chronic diseases had significantly higher scores for negative emotional status (p<0.001, for all), especially those who have bronchial asthma or diabetes mellitus. Tables (4 a,b,c) show that students' mean scores for depression, anxiety and stress were not significantly different according to their fathers' educational status or occupation. On the other hand, mothers' higher educational status was significantly associated with higher scores of anxiety (p=0.034). Students whose mothers were employed had significantly higher scores for anxiety and stress (p=0.001 and p=0.004, respectively). Students whose parents are divorced or dead had higher scores for negative emotional states. However, differences were not statistically significant. Students within families with smaller size had higher mean scores for negative emotional states. However, differences were not statistically significant. Students with a positive family history of psychiatric problems had significantly higher mean scores for negative emotional states (p=0.009, p<0.001 and p<0.001, respectively). Table (5) showed significantly positive correlation among the studied three negative emotional states (p<0.001 for all correlations).
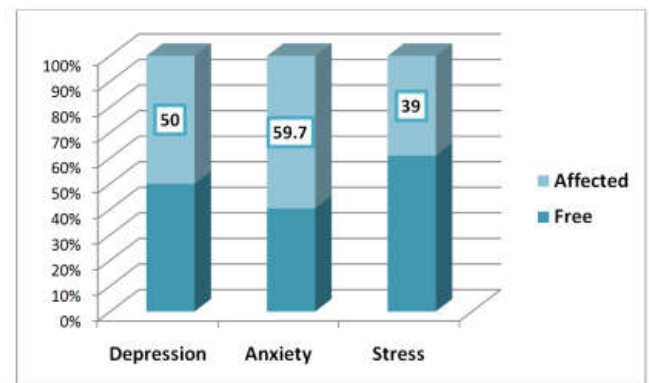

Figure 1. Prevalence of depression, anxiety and stress among secondary school students

DISCUSSION

There is a greater probability of mental health disorders during adolescence (Apóstolo *et al.*, 2011). The World Health Organization identified depression as the fourth leading cause of worldwide disease, causing more disability than either ischemic heart disease or cerebrovascular disease (Murray and Lopez, 1996). Depressive disorders are relatively common in younger persons, with estimated prevalence of 4.5% in adolescents (Rushton *et al.*, 2000). The present study showed that secondary school students in Jizan City sustain high prevalence rates of negative emotional syndromes, in the form of depression, anxiety and stress. This finding is in agreement with that of Al-Gelban *et al.* (2009) in Abha City, who stated that, among secondary school students' anxiety was the most prevalent (66.2%), followed by stress (52.5%) then depression (41.5%). AL-Gelban (2007) reported that, among male secondary school students in Abha City, symptoms of anxiety were the most prevalent (48.9%), followed by symptoms of depression (38.2%), then symptoms of stress (35.5%). In Taif City, Saudi Arabia Abdel-Fattah *et al.* (2004) reported that,

8.3% of male students in primary and secondary schools were emotionally disturbed. In the United Arab Emirates, Eapen *et al*. (2004), reported that 23.9% of school children had symptoms of a mental health problem. Nevala *et al*. (1996) reported that reasons for high levels of stress include student's psychological traits, such as competitiveness and meticulousness. Students felt that the most stressful aspect in their studies was the fear of making mistakes, feelings of inadequacy, and fear of unemployment after graduation. Responsibilities cause distress to students during the stage of instruction (Ellickson *et al*., 1993). The high prevalence of negative emotional states among students has been explained by Malath and Damodara (Malathi and Damodaran, 1999), who stated that the potential negative effects of emotional distress on students include impairment of functioning in classroom performance, stress-induced disorders and deteriorating performance. Students in extreme stress or depression need serious attention (Shapiro *et al*., 1998), otherwise inability to cope successfully with the enormous stress of education may lead to a cascade of consequences at both personal and professional levels (Shapiro *et al*., 1998). Poor treatment of students at school can affect students' wellbeing (Singh *et al*., 2004).

The National Institute of Mental Health estimated the prevalence of depression among children aged 9 to 17-year is more than 6% (Shaffer *et al*., 2004). In the US, Nair *et al*., (2004) stated that up to 2.5% of children and up to 8.3% of adolescents suffer from depression. Sawyer *et al*. (2000) added that depression has its peak incidence in mid-to-late adolescence. Although there are undoubtedly major opportunities for prevention and early intervention right across the life cycle, a focus on young people within the school environment is relevant. Roberts *et al*. (1998) noted that, there is a considerable disparity in figures on the prevalence of symptoms of negative emotional states in adolescents. This could be due to the diversity in methods, definitions used, or geographical location. The present study showed that mean scores for depression were significantly higher among older students than younger ones. This finding is in agreement with that of Rowe *et al*. (2004), who reported that depression is a common disorder among adolescents, and it is increasing with their age. This finding may be due to the relatively worse scholastic performance of older students compared with younger ones, as those who may have experience repeated scholastic failures are usually older than those who pass their scholastic year without any repetition. Results of this study revealed that female students had significantly higher mean scores for all studied negative emotional states than male students. This finding is in agreement with that of Aalto-Setälä *et al*. (2001) in USA, who reported that negative emotional states were all significantly more common in women than men. 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).

In addition, Al-Gelban *et al*. (2009) attributed the high grades for symptoms of negative emotional states among Saudi female students to the increased stresses on Saudi females related to the social and cultural transformations in the Saudi society. In addition, choosing a career has grown more difficult as the job market for women becomes more complex. Furthermore, high psychological distress among students can be related to their difficult study problems. Results of this

study showed that differences in mean scores for negative emotional states were not statistically significant according to type of study or scholastic year. On the other hand, mean scores for depression, anxiety and stress were higher among smokers than nonsmokers. These results are similar to those of Al-Gelban (2007) and Al-Gelban *et al*. (2009), in Abha, who found no statistically significant difference in negative emotional states according to secondary school students' type of study or scholastic year. In USA, Richardson *et al*. (2012) found that rates of depression and anxiety were higher among adolescent smokers compared with non-smokers (OR=3.9, and OR=10.6, respectively). Moreover, Jamal *et al*. (2011) noted that smoking is a known risk indicator for depression and some of the anxiety disorders. Age at smoking onset predicted age at psychopathology onset. The lack of a significant impact for students' type of study or scholastic on their negative emotional state may be explained by that study by itself, regardless of its type, is a source for challenge and competition. Ellickson *et al*. (1993) reported that students usually suffer the feeling the fear of making mistakes, feelings of inadequacy, and fear of unemployment after graduation, which frequently cause distress to students during the whole stage of instruction. This study indicated that students with a present history of chronic diseases had significantly higher mean scores for negative emotional status, especially those who have bronchial asthma or diabetes mellitus. Rao *et al*. (2011) stated that chronic illness can lead to anxiety and depression in adolescents. Findings indicate that type of illness affected the score significantly. Pinquart and Shen (2011) added that adolescents with chronic illness have higher levels of depressive symptoms than their healthy peers. They recommended that physicians working with children with chronic illnesses should screen adolescents with chronic physical illness for symptoms of psychological distress and make appropriate referrals for mental health services, when needed.

Results of the present study showed that mean scores for depression, anxiety and stress were not significantly different according to students' fathers educational status or occupation. On the other hand, mothers' higher educational status was significantly associated with higher scores of anxiety. Moreover, students whose mothers were employed had significantly higher scores for anxiety and stress. This study also showed that students whose parents are divorced or dead had higher scores for negative emotional states. However, differences were not statistically significant. Al-Gelban *et al*. (2009), who found no association between fathers' education or occupation with negative emotional status among secondary school students. In addition, they reported no association between mothers' education or employment with negative emotional status among secondary school students. Students' parents status (whether living with the student, divorced, or death of one or both of them) was not significantly associated with any of the negative emotional states. However, Maughan and McCarthy (1997) reported that life events, e.g., loss of a nearby family member, are specifically associated with depression. Results of the present study indicated that students within smaller size families had higher mean scores for negative emotional states. Moreover, students with a positive family history of psychiatric problems had significantly higher mean scores for negative emotional states. Wiersma and Berg (Wiersma and Berg, 1991) explained this finding by that the family climate decides the psychological state of the members.

They observed that the higher the size of a family the more social and psychological problems among family members.

Moreover, Eapen *et al.* (2004) reported significantly higher prevalence of depression and anxiety among those with family history of psychiatric disorders. Results of this study showed significantly positive correlation among the three studied negative emotional states. The same finding has been reported by Al-Gelban *et al.* (2009). They stated that this may indicate that the personal vulnerability is universal, i.e., if a person is susceptible to depression, he/she is also susceptible to anxiety and stress as well. Burns *et al.* (2002) stressed that as the causes of depression are complex, the identification of modifiable risk and protective factors, and understanding the processes through which they operate is crucial. A protective factor may affect risk, either directly by operating on the antecedent risk factor itself, or indirectly by affecting the strength of the relationship between the risk factor and the development of depression, anxiety or stress. In conclusion, Prevalence rates for negative emotional states are high among secondary schools students in Jizan city. Therefore, school health care providers should be trained to screen students for negative emotions, to identify students at high risk, those who need appropriate care and those who need to be referred for specialist treatment.

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