Prevalence, symptomatology, and risk factors for depression among high school students in Saudi Arabia

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ABSTRACT

Objectives: To assess the prevalence and pattern of depression in a secondary school sample of Saudi Arabia adolescents.

Methods: Four hundred and ninety secondary school students, comprising 306 males (62.4%) and 184 females (37.6%), in the age group 16-20, were surveyed from January to May, 2005 in Taif, Saudi Arabia, using the Arabic Beck's Depression Inventory (BDI) by a team consisting of a psychiatrist and psychologist.

Results: The prevalence of depression according to the Beck Depression Inventory (CBDI) (cut-off point: 19) was 110 (22.4%) for moderate (19-29), 36 (7.3%) for severe (30-40), and 18 (3.7%) as very severe (>40) in this study group, with a clear predominance of prevalence of depression in girls than in boys (1.5 times). Multivariate logistic regression analysis demonstrated that the most significant risk factors involved were: gender, birth order, history of psychiatric illness, history of relative loss, and familial history of chronic diseases. Factor analysis revealed that self-criticalness, agitation, and loss of energy had the highest scores in the total sample. In the male subgroup, loss of energy, self-criticalness, punishment feeling, and agitation had the highest score while in the female subgroup, self-criticalness, agitation, and crying had the highest scores.

Conclusions: Our findings provide gender differences in the prevalence and presentation of depressive symptoms. The experience of stressful life events increases the risk of depression. Assessment using screening is recommended. The increased risk for the onset of depression in adolescents reinforces the importance of early recognition and intervention.

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Depression has been considered to be the major psychiatric disease of the 20th century.[1] The World Health Organization identified major depression as the fourth leading cause of worldwide disease in 1990.[2] Recent studies have shown that greater than 20% of adolescents in the general population have emotional problems and one-third of adolescents attending psychiatric clinics suffer from depression.[3] Numerous outcome studies have documented several negative effects of depression.[4-6] Major depression often appears for the first time during the teenage years, and early onset depression interferes with a child's psychological, social, and academic functioning, placing him or her at greater risk for problems such as substance abuse and suicidal behavior.[4,5] Significant changes in social functioning, the adolescent's environment, and gender-differentiated social support concerning sexuality, as well as the experience of a severe life event have been significantly related to the onset of major depression in adolescence.[7] Despite the host of new literature on depression in adolescence appearing in the last decade, the magnitude of child and adolescent depression is clearly a major mental health problem.[5] There have been several efforts to improve the early detection of depression and to develop programs to prevent and treat it as soon as possible.[8] This study was undertaken to determine the prevalence and pattern of depression among secondary school students in Saudi Arabia as well as to clarify the degree to which stressful life events lead to depression.

Methods. ***Study design.*** This study was conducted in 2 phases implemented at the same time from January to May, 2005 at Taif city, Saudi Arabia: 1. A cross-sectional study for a representative sample of high school students aimed at screening for depression using the Beck Depression Inventory scale (BDI). 2. A case-control study aimed at looking for risk factors of depression based on a cut-off level of BDI scale (BDI scale of 19 was chosen as a cut-off point). The research protocol was approved by the Research and Ethics Committee at Al-Hada Armed Forces Hospital

and an informed consent was obtained from all study participants.

Study area. Taif "means encompassing" is a city located at 1700-2500 meters above sea level in the western mountains of Saudi Arabia (Hejaz area) with a population of 885474 according to the 2000 census.[9]

Sampling. There are 12 secondary schools (7 for males and 5 for females) in Taif (public and private). A 2-stage stratified sample of 490 students from 6 out of 12 secondary schools in Taif was randomly selected for the study. The sample constituted approximately 15% of the secondary school population of 3267 students in all the secondary schools. In the first sampling stage, all 12 secondary schools were classified into 4 groups according to gender and socioeconomic level (categorized into male public, female public, male private and female private groups). Then, using the appropriate allocation method of sampling, 2 schools were randomly selected from the first 2 groups and one school was selected from the private schools (a total of 6 schools were selected). In the second sampling stage, 6 classes were selected randomly from each of the selected public schools and 3 classes from each of the private schools to represent the different grades (1-3). Thus, a total of 18 classes were included in the sample. Each class was considered to be a cluster, and all students in the selected classes constituted the target group of the present study.

Sample size. It was determined with the prior knowledge that the lowest prevalence rate of severe depression among this age group is approximately 5%. Allowing an error of 2.5% and level of significance (type 1 error) of 1%, it was believed that a sample size of 490 was adequate to achieve a high degree of precision in estimating the true prevalence rate of severe depression in the target population. Therefore, on computing for 99% confidence limits and with 2.5% error bound, it yielded the required sample size of 486.

Study tool. The BDI scale, Arabic version,[10] has been used for screening of depression among the study population. It is a 21-item self-reported measure, and one of the most widely used screening instruments for detecting symptoms of depression. It can be administered to assess normal adults, adolescents, and individuals with psychiatric disorders (≥13 years of age).[11] It was designed to document a variety of depressive symptoms the individual experienced over the preceding week. Responses to the 21 items are made on a 4-point scale, ranging from 0 to 3 (total scores can range from 0 to 63). A self-administrated questionnaire was utilized including information regarding sociodemographic characteristics, history of psychiatric illness, family history of psychiatric illness, chronic diseases, parental or relative loss, as well as history of debts.

Statistical analysis. Data were analyzed using SPSS 11.0 for windows. Bivariate data analysis was performed and the chi square test was used to test for the association between BDI scale and gender. The second step of analysis consisted of a logistic regression, where significant variables from the bivariate analysis, and other important categories (age and paternal marriage) were included in the model as independent variables and where the dependent variable was BDI scale <19 versus ≥19. Another multiple regression analysis was applied upon the most significant variables, with a total BDI score as the dependent variable to calculate the coefficient of determination (r^2). A correlation matrix for all variables of BDI scale was computed. Bartlett's test of sphericity was performed to test the hypothesis that all-off diagonal terms of the matrix are zero. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was carried out. The value of KMO should >0.5 if the sample is adequate. Principal components factor analysis with varimax rotation was performed to assess the factor structure of the scale on the total sample and by gender.

Results. The study included 490 secondary school students (306 males [62.4%] and 184 females [37.6%]). Their age ranged from 16-20 with a mean of 17.3 ± 1 years. **Table 1** presents BDI score according to gender. Gender differences were significant with female students having higher scores than males (except in very severe depression, 4.6% against 2.2%) (x^2=18.3, p=0.001). **Table 2** shows BDI individual item mean scores and SDs for total sample and by gender. "Self-criticism" had the highest score in both of the total sample and female subgroup and had one of the highest scores among males. In the total sample, self-criticism, agitation, and loss of energy had the highest scores. In the male subgroup, loss of energy, self-criticism, punishment feeling and agitation had the highest score while in the female subgroup, self-criticism, agitation, and crying had the highest scores. The lowest scores, in the total sample and in both of the male and female subgroups, were for loss of interest in sex, suicidal thoughts or wishes, and self-dislike. Female students had significantly higher scores than male students for the items sadness, punishment feelings, self-criticism, crying, agitation, indecisiveness, loss of energy, changes in sleeping pattern, and concentration difficulty while male students had significantly higher scores than female students for the items loss of interest, and loss of interest in sex. According to the BDI factor analysis for the total sample, the first unrotated factor accounted for 28.9% of the variance, and the second accounted for 6.7% of additional variability. Kaiser-Meyer-Olkin measure for sampling adequacy was 0.88, a value considered high

and desirable. Chi square value of Bartlett's test of sphericity was 2732.2, $p<0.0001$. When we considered loadings >0.40 (when 2 loadings were similar, the item was considered to be part of both factors; when different, the highest loading was chosen), principal component analysis with varimax rotation suggested that the BDI factors that could be extracted were related to the following item: for factor 1, item 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 13, 14, 17, 18, 20, 21, and for factor 2, items 1, 4, 8, 10, 11, and 16. Based on the items related to factors 1 and 2, Cronbach's alpha coefficients for the subscales were 0.78 and 0.43. Factor 1 represents the cognitive-affective dimension, while factor 2 represents items more related to a somatic nonspecific dimension. Two factors from the factor analysis for the female' subgroup were extracted (unrotated factors accounted for 23.09% and 8.97% of the variance). Principal component analysis with varimax rotation showed that the factors were related to the following items: for factor 1, items 1, 3, 4, 5, 7, 8, 9, 10, 13, 14, 16, 17, 18, 20, and 21; and for factor 2, items 1, 4, 8, 10, 11, 16, and 18 (Cronbach's alpha coefficients for the subscales were

Table 1 - Distribution of the study population (n=490) according to their gender and Beck depression inventory (BDI) score.

BDI score	Male (n=306)		Female (n=184)		Total	
	n	(%)	n	(%)		
Normal (0-9)	118	(38.6)	42	(22.8)	**160**	(**32.7**)
Mild (10-18)	98	(32.0)	68	(37.0)	**166**	(**33.9**)
Moderate (19-29)	56	(18.3)	54	(29.3)	**110**	(**22.4**)
Severe (30-40)	20	(6.5)	16	(8.7)	**36**	(**7.3**)
Very severe (>40)	14	(4.6)	4	(2.2)	**18**	(**3.7**)
Range	5-59		0-43		-	
Mean±SD	14.19 ±11.81		16.88 ± 9.73		**15.20 ± 11.14**	
x^2=18.3, p=0.001						

Table 2 - Beck Depression Inventory (BDI) mean and SD scores according to gender.

BDI items	Total sample Mean ± SD	Female students Mean ± SD	Male students Mean ± SD	*P*-value
1. Sadness	0.74 ± 0.82	0.84 ± 0.90	0.68 ± 0.77	0.040
2. Pessimism	0.73 ± 1.01	0.67 ± 0.97	0.76 ± 1.03	0.371
3. Past failure	0.52 ± 1.00	0.48 ± 0.99	0.55 ± 1.00	0.447
4. Loss of pleasure	0.85 ± 1.00	0.89 ± 0.94	0.82 ± 1.03	0.467
5. Guilty feelings	0.49 ± 0.89	0.40 ± 0.80	0.54 ± 0.94	0.107
6. Punishment feelings	0.91 ± 1.21	1.05 ± 1.27	0.83 ± 1.17	0.047
7. Self-dislike	0.42 ± 0.78	0.36 ± 0.69	0.46 ± 0.83	0.147
8. Self-criticism	1.08 ± 1.11	1.48 ± 1.12	0.84 ± 1.03	0.000
9. Suicidal thoughts or wishes	0.38 ± 0.80	0.35 ± 0.76	0.41 ± 0.82	0.442
10. Crying	0.91 ± 1.22	1.33 ± 1.23	0.66 ± 1.15	0.000
11. Agitation	1.03 ± 1.20	1.36 ± 1.22	0.83 ± 1.15	0.000
12. Loss of interest	0.53 ± 0.87	0.39 ± 0.75	0.62 ± 0.92	0.005
13. Indecisiveness	0.85 ± 1.19	1.02 ± 1.27	0.75 ± 1.12	0.012
14. Worthlessness	0.73 ± 0.99	0.64 ± 0.98	0.78 ± 0.99	0.139
15. Loss of energy	0.98 ± 1.15	1.14 ± 1.21	0.88 ± 1.10	0.016
16. Changes in sleeping pattern	0.92 ± 1.11	1.11± 1.17	0.80 ± 1.06	0.003
17. Irritability	0.81 ± 1.04	0.90 ± 1.07	0.75 ± 1.01	0.119
18. Changes in appetite	0.77 ± 0.96	0.87 ± 0.97	0.71 ± 0.95	0.079
19. Concentration difficulty	0.71 ± 0.90	0.83 ± 0.95	0.65 ± 0.85	0.032
20. Tiredness or fatigue	0.56 ± 0.87	0.63 ± 0.82	0.52 ± 0.90	0.159
21. Loss of interest in sex	0.28 ± 0.73	0.14 ± 0.58	0.36 ± 0.79	0.001
*p<0.05 between males and females				

0.82 and 0.31) (**Table 3**). Also, 2 factors for the male' subgroup were extracted (accounting for 33.24% and 6.95% of the variance). Principal component analysis with varimax rotation suggested that they were related to the following items: for factor 1, items 1, 2, 3, 5, 7, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, and 21; and for factor 2, items 4, 6, 8, 10, 11, and 16 (Cronbach's alpha coefficients for the subscales were 0.75 and 0.59). Among examined risk factors for depression, significant factors in bivariate analysis were: gender, birth order, number of brothers, history of psychiatric illness, history of relative loss, and familial history of chronic diseases (**Table 4**). In multivariate analysis, females were 1.5 times more likely to have depression than males. First birth order students and those in between birth order (between first and last) were less likely to have depression than last birth order students. Students with history of psychiatric illness were 7.5 times more likely to have depression than those without history of psychiatric illness. Families with history of chronic diseases were 2.4 times more likely to have students with depression as compared to those without this history. The prevalence of depression was significantly higher among students with a history of loss of relative than among those without history of relative loss. Depressed students showed no significant differences from non-depressed students as regards number of brothers. The combined effect of the 5 most significant variables, namely, gender, birth order, history of psychiatric illness, history of relative loss, and family history of chronic diseases, was examined by means of multiple regression analysis with BDI score as the dependent variable. They jointly contributed 36.6% of the variance in the total score (**Table 5**).

Discussion. Many researchers believe that mood disorders in children and adolescents represent one of the most under diagnosed groups of illness in psychiatry. This is due to several factors: (1) children and young adolescents are not always able to express how they feel, (2) the symptoms of mood disorders take on different forms in adolescents than in adults, (3) mood disorders are often accompanied by other psychiatric disorders which can mask depressive symptoms, and (4) many physicians tend to think of depression and bipolar disorder as an illness of adulthood.[12] A recently published longitudinal prospective study found that early-onset depression often persists, recurs, and continues in to adulthood, and indicates that depression in youth may also predict severer illness in adult life.[13] There have been several efforts to improve the early detection of depression and to develop programs to prevent and treat it as soon as possible.[14] In the current study, the BDI was utilized to detect the prevalence of depressive symptomatology and its expression in a non clinical

Table 3 - Beck Depression Inventory (BDI) items factor loadings after varimax rotation for the total sample and according to gender.

BDI items	Total sample		Female students		Male students	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
1. Sadness	0.484	0.465	0.433	0.511	0.540	0.376
2. Pessimism	0.402	0.200	0.281	0.171	0.556	0.239
3. Past failure	0.492	0.293	0.534	0.274	0.459	0.315
4. Loss of pleasure	0.450	0.488	0.580	0.462	0.350	0.497
5. Guilty feelings	0.563	-0.037	0.512	-0.034	0.621	-0.039
6. Punishment feelings	0.351	0.397	0.380	0.375	0.310	0.411
7. Self-dislike	0.531	-0.029	0.536	-0.046	0.547	-0.012
8. Self-criticism	0.418	0.611	0.495	0.568	0.388	0.626
9. Suicidal thoughts or wishes	0.561	0.217	0.591	0.205	0.546	0.221
10. Crying	0.507	0.607	0.420	0.632	0.521	0.584
11. Agitation	0.424	0.607	0.312	0.644	0.470	0.563
12. Loss of interest	0.354	0.225	0.316	0.245	0.388	0.208
13. Indecisiveness	0.492	0.236	0.573	0.214	0.482	0.254
14. Worthlessness	0.517	-0.022	0.466	-0.017	0.724	-0.025
15. Loss of energy	0.392	0.365	0.331	0.392	0.426	0.335
16. Changes in sleeping pattern	0.395	0.535	0.437	0.578	0.515	0.513
17. Irritability	0.523	0.194	0.481	0.156	0.535	0.223
18. Changes in appetite	0.594	0.379	0.635	0.435	0.535	0.331
19. Concentration difficulty	0.393	0.336	0.320	0.310	0.446	0.362
20. Tiredness or fatigue	0.491	0.115	0.534	0.098	0.412	0.135
21. Loss of interest in sex	0.609	-0.198	0.628	-0.158	0.595	-0.223

Only loadings above 0.40 were considered to contribute significantly to a factor

Table 4 - Risk Factors for depression According to Beck Depression Inventory (BDI): bivariate analysis.

Risk Factors	BDI <19 (n=326) n	(%)	BDI ≥ 19 (n= 164) n	(%)	Odds ratio	95% confidence interval
Gender						
Male*	216	(70.6)	90	(59.8)	1.0	
Female	110	(29.4)	74	(40.2)	1.62	1.10-2.37†
Age in years						
16-18*	296	(67.6)	142	(32.4)	1.0	
19-20	30	(57.7)	22	(42.3)	1.53	0.85-2.75
Birth order						
Last*	8	(33.3)	16	(66.7)	1.0	
First	65	(69.6)	28	(30.1)	0.22	0.07-0.61†
In between	253	(67.8)	120	(32.2)	0.24	0.09-0.61†
Number of brothers						
<5*	58	(55.8)	46	(44.2)	1.0	
5-10	232	(72.0)	90	(28.0)	0.99	0.30-0.79†
>10	36	(56.3)	28	(43.7)	9.98	0.50-1.93
Paternal occupation						
Military*	66	(63.5)	38	(36.5)	1.0	
Civilian professional	54	(57.4)	40	(42.6)	1.29	0.70-2.37
Civilian non professional	70	(68.6)	32	(31.4)	0.79	0.43-1.47
Retired	136	(71.6)	54	(28.4)	0.69	0.40-1.18
Maternal occupation						
Housewife*	288	(66.4)	146	(33.6)	1.0	
Professional	28	(66.7)	14	(33.3)	0.99	0.48-2.02
Non professional	10	(71.4)	4	(28.6)	0.79	0.20-2.79
Paternal education						
Illiterate*	74	(74.0)	26	(26.0)	1.0	
Read and write	30	(55.6)	24	(44.4)	2.28	1.07-4.86†
Primary school	40	(64.5)	22	(35.5)	1.57	0.75-3.29
Secondary	92	(63.0)	54	(37.0)	1.67	0.92-3.04
High education	90	(70.3)	38	(29.7)	1.20	0.64-2.25
Maternal education						
Illiterate*	120	(68.2)	56	(31.8)	1.0	
Read and write	62	(66.0)	32	(34.0)	1.11	0.63-1.95
Primary school	48	(64.9)	26	(35.1)	1.16	0.63-2.14
Secondary	68	(68.0)	32	(32.0)	1.01	0.58-1.76
High education	28	(60.4)	18	(39.1)	1.38	0.67-2.84
Paternal-maternal relationship						
Non divorced*	298	(66.5)	150	(33.5)	1.0	
Divorced	28	(66.7)	14	(33.3)	0.99	0.51-1.94
Paternal marriage						
Not married*	250	(68.3)	116	(31.7)	1.0	
Married	76	(61.3)	48	(38.7)	1.36	0.89-2.08
Number of marriages						
1*	52	(65.4)	28	(34.6)	1.0	
2	14	(50.0)	14	(50.0)	1.86	0.71-4.86
>2	10	(62.5)	6	(37.5)	1.11	0.32-3.81
Parental loss						
No*	304	(67.3)	148	(32.7)	1.0	
Yes	22	(57.9)	16	(42.1)	1.49	0.76-2.93
Age at parental loss						
≤ 10 years*	13	(68.4)	6	(31.6)	1.0	
> 10 years	9	(47.4)	10	(52.6)	2.41	0.64-9.03
Relative loss						
No*	298	(68.0)	140	(32.0)	1.0	
Yes	28	(53.8)	24	(46.2)	1.82	1.02-3.26†
Psychiatric illness						
No*	322	(68.5)	148	(31.5)	1.0	
Yes	4	(20.0)	16	(80.0)	8.70	2.86-26.48†
Family history of psychiatric illness						
No*	298	(66.2)	152	(33.8)	1.0	
Yes	28	(70.0)	12	(30.0)	0.84	0.42-1.70
History of family chronic diseases						
No*	308	(68.8)	140	(31.3)	1.0	
Yes	18	(42.9)	24	(57.1)	2.93	1.54-5.58†
Debts						
No*	278	(68.1)	130	(31.9)	1.0	
Yes	48	(58.5)	34	(41.5)	1.52	0.93-2.46

*Reference category, †p-value ≤ 0.05

adolescent student sample. Although it is not designed for diagnostic purposes, its epidemiologic utility has been evaluated in several studies, which concluded that it is a reliable and valid instrument for detecting depressive disorders in non-clinical populations. Several studies support the BDI's usefulness in measuring and predicting depression in adolescent samples.[15,16] The scale's format is clear; it is simple to administer; and it is easily understood by this population.[17] Prevalence rates of actual depression are estimated to range from 15-25%.[18] In our study, according to the Beck cut off scores, approximately one third of the sample has moderate to severe depression and approximately 11% has severe to very severe depression. Comparable findings have been reported by others; the 1986 study of Minnesota high school students revealed that 39% suffer from mild to severe depression and 9% of high school students are severely depressed.[19] The lifetime prevalence of major depression in adolescents and young adults (15-24 years of age) in the United States general population has been reported as 20.6% for females and 10.5% for males.[20] Cubis et al[21] reported that approximately 20% of young people suffer from depressed mood, with up to 43% reporting feeling sad for at least 2 weeks in the past year.[21] Lewinsohn et al,[22] found that approximately 28% of adolescents will have experienced a major depressive episode by age 19 (35% of young women and 19% of young men). Another epidemiological study has reported that up to 8.3% of adolescents in US suffer from depression.[5] An National Institute of Mental Health-sponsored study of 9 to 17-year-olds estimated that the prevalence of any depression is more than 6% in a 6-month-period, with 4.9% having major depression.[23] Also, epidemiological utility and characteristics of the BDI were examined in a sample of 304 non-clinical adolescents in Indian schools and revealed that 22.4% of school going girls and 12.8% of school going boys had depression of various grades.[24]

Rutter[25] suggested a variety of explanations for increasing prevalence of depression at adolescence, and that increasing level may be genetically determined and these genes are triggered in late childhood or adolescence. Shane et al[26] indicated that single risk factors can rarely be conceived as resulting in depressive outcomes. Instead, the biological, psychological, and social systems may be considered within a larger framework for explaining the etiology of depression.[26] Our findings proved that more than one etiological perspective was associated with depressive outcomes. The gender differences found in BDI scores, pointing to significantly higher scores for female subjects (1.5:1 ratio), are in line with data observed in other studies of adolescents as well as adults.[11,27] Community studies showed that, for girls, there is a progressive rise in depressive symptoms from menarche, so that by the mid-teens girls exhibit at least twice the prevalence rate of males.[28,29] The finding that female students, in contrast to male students, had scores compatible with depression also agrees with reports of a higher prevalence

Table 5 - Results of the multiple logistic regression analysis of factors affecting Beck Depression Inventory scale (BDI).

Independent variables	B	Standard Error (B)	*P*-value of (B)	Odds ratio	95% confidence interval
Gender					
Male*	-	-	-	1.00	-
Female	0.433	0.211	0.041	1.54	1.02-2.33
Birth order					
Last*	-	-	-	1.00	-
First	-1.087	0.516	0.036	0.34	0.12-0.93
In between	-1.095	0.475	0.021	0.33	0.13-0.85
History of psychiatric illness					
No*	-	-	-	1.00	-
Yes	2.009	0.589	0.001	7.46	2.35-23.65
Family history of chronic diseases					
No*	-	-	-	1.00	-
Yes	0.856	0.347	0.014	2.35	1.19- 4.65
Relative loss					
No*	-	-	-	1.00	-
Yes	0.620	0.310	0.045	1.80	1.59- 3.99

Logistic regression model includes terms of age, gender, birth order, number of brothers, paternal marriage, history of psychiatric illness, family history of chronic diseases, and history of relative loss. Multiple r=0.605, r^2 =0.366, adjusted r^2= 0.290, SE= 7.65, F=4.77, *P*=0.004, *Reference category

of depression in women.[30,31] Also Birmaher et al,[5] reviewed the literature published over the last decade on issues pertaining to early onset depression, and noted that MDD is twice more common in females than in males during their adolescent years. One study reported even more dramatic gender differences for adolescent depression finding that girls were 4 times more likely to suffer from depression than boys (base rates were 13% and 4%).[32] The cause of this striking rise in the incidence of depressive symptoms in adolescent females is as yet unknown, but hypotheses include the influence of female gonadal hormones, psychological changes that accompany puberty and changes in social roles. In the current study, only very severe depression was more reported among males. This could be attributed to gender and cultural background, where males usually try to accommodate the depressive symptoms unless they are very severe, contrary to females who usually express their depressive feeling at earlier stages.

The interaction of genetics and environment is strongly implicated in the onset of MDD.[26] In our study, it is found that students with history of psychiatric illness were 7.5 times more likely to have depression than those without history of psychiatric illness. Kandel et al[33] reported that adolescents with depression are also likely to have a family history of depression. There has been a tremendous body of literature that has demonstrated that mood disorders occur more commonly among the relatives of depressed persons than in the general population. In a review of longitudinal data it was estimated that, by the age of 20 years, a child with an affectively ill parent has a 40% chance of experiencing an episode of major depression.[8] Based on a study of pubertal twins, there is evidence of increased heritability for depression in adolescent girls.[34] According to Kaslow et al,[6] family variables associated with depression are parental psychopathology, divorce, low SES, negative life circumstances including loss, abuse, or neglect, and low levels of social support. In our study, it was found that parental loss among adolescents was less significant than the effect of relative (loved one) loss, and this may be unique in this kind of culture and may be due to the predominance of extended families and remarriage. Wells et al,[35] reported that loss of a parent or loved one is one of the important risk factor for developing depression among adolescents and this finding is in agreement with our study. In agreement with another study,[19] high school students revealed that serious illness or injury of family member is one of the most common risk factor for developing depression among adolescents. It is reported that siblings play a role in the development of depression, as problematic sibling relationships have been associated with greater depression, and a positive sibling relationship may mediate depression.[26] The Kingdom of Saudi Arabia (KSA) is one of the unique countries to study the effect of siblings on depression as most of the families have many siblings so their effect should be handled. The 1986 study of Minnesota high school students revealed that trouble with a brother or sister is one of the most common risk factors for developing depression among adolescents.[19] Also, in the KSA culture, men may have more than one wife, so it is important to study the role of remarriage in adolescents. We found that the effect of this is minimal and may be explained on the basis that most of the adolescents are sharing the social circumstances that lead to dissolve its stigmatizing effect and also and more important that it is well accepted from the religious and culture point of view. Conclusively, since many different factors can lead to psychopathology for different individuals and the etiology of a given disorder is perhaps best understood by looking at the interaction or transaction between these multiple variables over time.[7] There is a general agreement that the clinical features of depression are more similar than different in adolescents and adults, with the exception of a higher frequency of irritable mood in the adolescent presentation. Research suggests that women more frequently present with somatic symptoms of depression (namely, fatigue, appetite and sleep disturbance, and body aches), which has been linked to the onset of major depression in early adolescence.[36] Negative body image, low self-esteem, and recent stressful events have been highly correlated with depression in samples of high school students.[37,38] Compared with depressed boys, depressed girls more frequently exhibit problems with poor self-esteem, worthlessness, guilt feelings, and suicidal ideation.[22,39] Low social support has also been correlated with depression in girls.[22] In the current study, factor analysis shows different symptom patterns between genders. In our study, the total sample, self-criticism, agitation, and loss of energy had the highest scores. This finding is in agreement with Beck's views on depression, which associates depression with "low self-esteem, high self-criticism, significant cognitive distortions, and a feeling of lack of control over negative events."[5] Our findings also are in agreement with Bennett et al[16] who stress the importance of negative

Related topics

Afifi M. Depression, aggression and suicide ideation among adolescents in Alexandria. ***Neurosciences*** 2004; 9: 207-213.

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Al-Banna MA, Shaltout TE, Al-Gassem AM. Socio-demographic study of major depression in Qatar. ***Neurosciences*** 2002; 7: 115-119.

self-attitude and somatic symptoms in a sample of 328 adolescents with depressive and/or anxiety disorders. Also, Chartier and Ranieri,[40] reported that one-half to two-thirds of depressed adolescents, both inpatients and outpatients, complain of fatigue and lack of energy. Similarly, Weiner,[41] reported that early adolescents are more apt to exhibit the following triad of symptoms: fatigue, hypochondria, and concentration difficulty. This is accepted from the cultural point of view due to the authoritarian effect of society with its burden on people in general and on adolescence in particular. This authoritarian effect takes different patterns such as religion, family and school (teachers). This also can explain the increased level of punishment feeling and somatization level (loss of energy and agitation) among both genders that allow less expression of feeling in an appropriate way. The increased level of sadness and crying in the female group compared with the male group could be explained by the fact that crying is more accepted among females than males, as in males it means weakness of their personalities. This finding is also reported in different studies.[28] In contrast to others,[42] our findings failed to prove an association between lower levels of paternal occupation and maternal education and occupation with elevated depression. Our findings, in agreement with another study,[19] revealed that change in parents' financial status is one of the most common risk factors for developing depression among adolescents.

Conclusively, our results indicate a high rate of depression among high school students. Also, our findings provided gender differences in the prevalence and presentation of depressive symptoms. The findings suggest that the experience of stressful life events increases the risk of depression. Assessment using screening is recommended. The increased risk for the onset of depression in adolescents reinforces the importance of early recognition and intervention.

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