

Prevalence and Determinants of Depression among Qatari Adolescents in Secondary Schools

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Received date: September 20, 2017; Accepted date: September 28, 2017; Published date: October 09, 2017

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Abstract

Adolescence is an important period for the development of a socially integrated self-concept, which may affect future decisions through depression and anxiety. It is estimated that 20% of adolescents have some type of psychological disorder, and the most common disorder is depression [1].

Methodology: A cross sectional descriptive study conducted among Qatari adolescents in secondary Schools in Qatar. Multistage sampling technique was applied, 823 Qatari adolescent students were approached of which 797 agreed to participate giving a response rate of 96.8%. Using a self-administered Arabic version of Beck's Depression Inventory – II (BDI-II) [2], which measures the depression over the last two weeks in adults and adolescents aged 13 years and older.

Results: Almost one third of Qatari adolescents in secondary schools have depression 34.5%, Female adolescents were more likely to have depression than male. Bad relationship with peers, parents and teachers were among the most significant predictors of depression (OR=14.0, 95%CI=1.55-124), (OR=9.4, 95%CI=1.04-85.4), (OR=5.0, 95%CI=1.41-18.26) consecutively.

Recommendation: Adopting holistic approach in dealing with adolescent's wellbeing, through incorporating preventive psychological interventions, such as early screening for depressive symptoms, counseling and psychological support should be available to adolescent students with depressive symptoms.

Keywords: Depression; Adolescents; Secondary; School

Introduction

Adolescence is an important period for the development of a socially integrated self-concept, while a negative self-concept may affect the future decisions through depression and anxiety [1]. It is estimated that 20% of adolescents have some type of psychological disorder and the most common disorder is depression [2].

Depression is a serious mental disorder among adolescents; it's associated with an increase in family problems, academic difficulties, substance abuse and absenteeism. These problems can become chronic or recurrent which leads to substantial impairments in an individual's ability to take care of his or her everyday responsibilities. At its worst, depression can lead to suicide [3].

By 2020, depression will be the second leading cause of world disability and by 2030, it is expected to be the largest contributor to disease burden [4]. Many tools are available to measure depression among adolescents but the Beck Depression Inventory (BDI-II) has become one of the most useful measures for depression in many countries as it has been translated and validated into several languages

[5]. It is a 21 item inventory which measures the depression over the last two weeks in adults and adolescents aged 13 years and older.

Its item content corresponds to criteria for the diagnosis of depressive disorders as specified in the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) [6]. School is an extraordinarily effective setting for improving health, it provides the most effective and efficient way to reach portions of adolescents. Promoting health through schools enhances both health and capacity of students to learn, schooling has been shown to be a powerful way to influence health both within and outside the school.

The appropriate identification and treatment of mental disorders in this period provide adolescents with immediate positive benefits and serves to counteract consequences such as poor academic performance, substance abuse and suicidal behavior [7]. In Qatar, there is no available information that describes the magnitude of depression among adolescents; therefore, descriptive baseline studies are necessary for planning adolescents' mental health program.

Methodology

Study design and sample size

A cross sectional descriptive study conducted among Qatari adolescents in secondary Schools in Qatar. Multistage sampling technique was applied. All secondary schools in Qatar (total number 66) was stratified into private and independent schools and then into boys and girls schools.

The calculated sample size (823 Qatari students) was allocated proportionately according to the weight of Qatari students between the private and independent schools as well as their gender distribution. Schools were randomly selected according to the distribution of Qatari students to the stratum and then classes were randomly selected using random generator. All Qatari students from the selected classes' academic year 2014/2015 and who are willing to participate in the study were enrolled.

The estimated sample size was 823 Qatari students was calculated taking into consideration the known prevalence of depression (46.9% ± 5%) detected in a similar population (18), to achieve 80% power and a significance level <0.05 (95% Confidence Level) and 10% was added to compensate for non-response.

Data collection

Self-administered Arabic version questionnaire was developed by the researcher based on previous studies in the same field and consultation of experts, which include questions about the following: The first part: socio demographic and risk factors about the student and parents. The 2nd section contained questions of The Arabic Version of Beck's Depression Inventory-II (BDI-II): It is a 21 item inventory which measures the depression over the last two weeks in adults and adolescents aged 13 years and older.

Its item content corresponds to criteria for the diagnosis of depressive disorders as specified in the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV). It's the items that are structured on a 4-point scale ranging from 0 (Symptom not present) to 3 (Symptom strongly present).

The BDI-II total scores ranging from 0 to 13 are normal; total scores from 14 to 19 are mild; total scores from 20 to 28 are moderate; and total scores from 29 to 63 are severe [8]. The Arabic version was prepared by Ghareeb [9] and psychometric properties were assessed in 17 Arabic countries. They have reported acceptable validity and reliability for BDI-II in Arabic countries. Alpha Cronbach ranged from 0.82 to 0.93 in these countries [10].

Anthropometric measurements

BMI Measured as continuous variable using the equation: weight (kg)/height² (m). The WHO school age Children Growth References 2007 [11] was used to assess the growth problems by comparing the obtained value of BMI with the Z-score on the child growth.

Data management

SPSS version 18 was used for data entry and analysis. Proportions, means and standard deviations were calculated. Chi-square test was used to assess differences between two or more categorical variables. Student t test was used to compare between continuous variables. Multivariate regression analysis was performed to identify the most

influential risk factors. An Alpha (p) value of ≤ 0.05 was the cut-off level of significance and all variables regardless of their level of significance in the univariate analysis were introduced.

Ethical considerations

This study was funded by the research department and approval of IRB at Hamad Medical Corporation was obtained. Waiver signed informed consent from the parents was obtained before data collection & confidentiality of all collected data was assured.

Results

A total of 823 Qatari adolescent students were approached of which 797 agreed to participate giving a response rate of 96.8%. The mean age of the participant was 16.9 ± 1.2 years, gender distribution was almost equal, 49.2% males and 50.8% females.

Approximately half of the participants (55.1%) had six to ten (6-10) family members. Near half of the participants (46.9%) had >50,000 Q Riyals as average monthly income for participants family, as shown in Table 1. About (14.6%) of the participants reported family history of depression, as shown in Figure 1.

Socio-demographic characteristics	Number	Percent (%)
Age (years)		
14-15	88	11
16-17	438	55.2
18-19	269	33.8
Total	797	100
Mean ± SD	16.9 ± 1.2	
Gender		
Male	392	49.2
Female	405	50.8
Total	797	100
Students Grade		
Grade 10	264	33.1
Grade 11	249	31.3
Grade 12	284	35.6
Total	797	100
Number of family member		
<6	205	25.7
10-Jun	439	55.1
≥11	153	19.2
Total	797	100
Average monthly income in Qatari riyals for family		
<30,000 Q Riyals	157	19.7

30,000-50,000 Q Riyals	266	33.4
>50,000 Q Riyals	374	46.9
Total	797	100
Parents marital status		
Married	649	81.4
Divorced	69	8.7
Deceased father	51	6.4
Deceased mother	19	2.4
Both parents are deceased	9	1.1
Total	797	100

Table 1: Distribution of Qatari adolescents in secondary schools according to socio-demographic characteristics, 2015 (N=797).

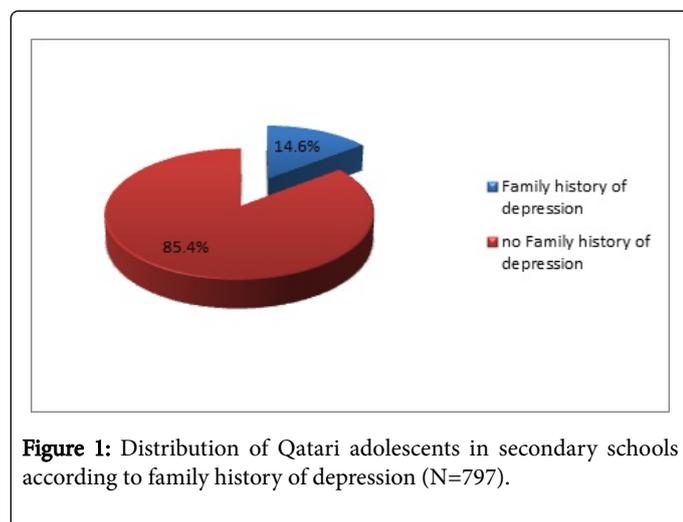


Figure 1: Distribution of Qatari adolescents in secondary schools according to family history of depression (N=797).

A total of (14.9%) of the participants reported that they are currently smokers, while (19.1%) reported substance abuse e.g. soueckh (soueckh: mixtures of powdered tobacco ash and additives) and glue sniffing and (1.3%) reported that they drink alcohol, while more than one third (41.4%) reported psychological abuse, however one quarter (24.9%) reported physical abuse as shown in Table 2.

Variable	Number	Percent (%)
Smoking status		
Tried cigarette smoking even for once	126	15.8
Current smoker	119	14.9
Ex-smoker	18	2.3
Never smoked	534	67
Total	797	100
Substance abuse		
Yes	152	19.1
No	645	80.9

Total	797	100
Alcohol use		
Yes	11	1.3
No	786	98.7
Total	797	100
Psychological abuse		
Never happened	467	58.6
Occasionally	264	33.1
Always	66	8.3
Total	797	100
Physical abuse		
Never happened	598	75.1
Occasionally	150	18.8
Always	49	6.1
Total	797	100

Table 2: Distribution of Qatari adolescents in secondary schools according to behavioral characteristics & according to history of abuse, 2015 (N=797).

Relationship with the parents were very good to good in 93.8%. Around one quarter 26.5% of the participants' reported that they have family conflicts.

Approximately one sixth 17.1% of participants' reported that their parents never speak to him/her about their daily or personal life.

A total of 17.2 % of the participants' reported that they have peer conflicts, while 6.5% of them had bad relationships with their teachers as shown in Table 3.

Variable	Number	Percent (%)
Relationship with the parents		
Very good	508	63.7
Good	240	30.1
Bad	42	5.3
Very bad	7	0.9
Total	797	100
Family conflicts		
Yes	211	26.5
No	586	73.5
Total	797	100
Parents speak to him/her about daily or personal life		
Never happened	136	17.1
occasionally	488	61.2

Always	173	21.7
Total	797	100
Peer conflicts		
Yes	137	17.2
No	660	82.8
Total	797	100
Relationship with teacher		
Very good	408	51.2
Good	337	42.3
Bad	37	4.6
Very bad	15	1.9
Total	797	100

Table 3: Distribution of Qatari adolescents in secondary schools according to relationship with parents, peer and teachers 2015 (N=797).

Approximately half 42.5% of the participants were overweight, nearly one third of the participants were normal weight 38.0%, while around one fifth were obese (19.1%) and (0.4%) were wasted as shown in Table 4.

Prevalence of depression among the participants were (34.5%), of which (14.9%) were mildly depressed, (11.2%) were moderately depressed and (8.4%) were severely depressed as shown in Figure 2.

Determinants of depression were studied and showed that: The relation of depression among Qatari adolescents in secondary school according to their age was not statistically significant.

Concerning gender, a lower proportion of males suffer from depression as compared to females (24.5% vs. 44.2%) and this difference was statistically significant (p=0.001).

Variable	Number	Percent (%)
Body mass index		
Wasted	3	0.4
Normal weight	303	38
Over weight	339	42.5
Obese	152	19.1
Total	797	100

Table 4: Distribution of Qatari adolescents in secondary schools according to body mass index, 2015 (N=797).

There was statistically significant relation between participants parents marital status and depression, where the prevalence of depression was (58%) in participants' parents were divorced in comparison to (43%) and (31%) in participants' parents were deceased mother/father & both and married, respectively, showing trend pattern (p=0.001).

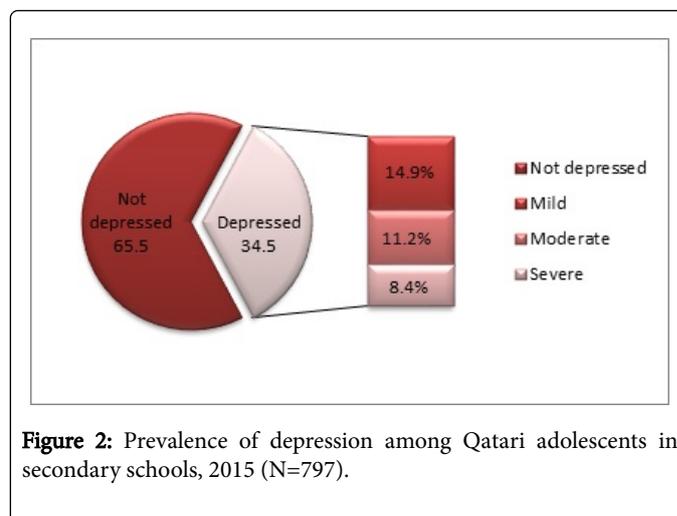


Figure 2: Prevalence of depression among Qatari adolescents in secondary schools, 2015 (N=797).

Regarding the relation between depression and smoking status, substance & alcohol abuse, physical abuse showed statistically significant relation with the depression (p=0.001). Depression among the participants was statistically significantly affected by their peer as well as teachers' relationship (p=0.001).

There is a statistical significant relation between body mass index and depression as it was 77.6% among those who are obese in comparison to 66.7%, 27.7% and 20.1% among those who are wasted, overweight and normal weight average, respectively (p=0.001), as shown in Table 5.

The determinants that have been found to be significantly associated with depression using the Pearson's chi-square test are reanalyzed again using the multivariate binary logistic regression to adjust for the confounding effect between independent variables (determinants of depression) and the dependent variable (depression). Participants who had bad peer relationship are 14.0 times more likely to have depression (OR=14.0, 95% CI=1.55-124) than those who did not.

Participants who have bad relationships with the parents are 9.4 times more likely to have depression (OR=9.4, 95% CI=1.04-85.4) than those with good relationship with the parents.

Regarding gender; being a female increase the chance of having depression as they are 8.0 times more likely to have depression than males (OR=8.0, 95% CI= 4.42-14.40). On the other hand, participants who had family history of depression are 6.67 times more likely to have depression (OR=6.67, 95% CI=3.14-13.51) than those who did not have family history of depression. Adjusted odds of having depression was 6.33 times higher in participants with family conflicts than those without family conflicts (OR=6.33, 95% CI= 3.58-11.24). The adjusted odds of having depression was 5.0 times higher in participants having bad relationships with their teacher as compared to the participants who had a good relationship with their teacher (OR=5.0, 95% CI= 1.41-18.26). Adjusted odds of having depression was 3.60 times higher in participants having psychological abuse than those who did not have psychological abuse (OR=3.60, 95% CI= 2.14-6.0) as shown on (Table 6).

Socio-demographic characteristics	Depression among Qatari adolescents				Significance
	Not Depressed		Depressed		
	Number	Percent (%)	Number	Percent (%)	
Age (years)					
14-15	60	68.2	28	31.8	X ² =3.554; df=3; p=0.314
16-17	294	67.1	144	32.9	
18-19	166	61.7	103	38.3	
Gender					
Male	296	75.5	96	24.5	X ² =34.235; df=1; p=0.001
Female	226	55.8	179	44.2	
Parents marital status					
Married	448	69	201	31	X ² =22.945; df=2; p=0.001
Divorced	29	42	40	58	
Deceased mother/father & Both	45	57	34	43	
Smoking status					
Tried cigarette smoking even for once	85	67.5	41	32.5	X ² =50.985; df=2; p=0.001
Current smoker	44	37	75	63	
Ex-smoker & Never smoked	393	71.2	159	28.8	
Substance abuse					
Yes	25	16.4	127	83.6	X ² =199.941; df=1; p=0.001
No	497	77.1	148	22.9	
Alcohol use					
Yes	0	0	11	100	X ² =21.2 [*] ; df=1; p=0.0001
No	522	66.4	264	33.6	
Psychological abuse					
Happened	129	39.1	201	60.9	X ² =173.753; df=1; p=0.001
Never happened	393	84.2	74	15.8	
Physical abuse					
Happened	51	25.6	148	74.4	X ² =186.535; df=1; p=0.001
Never happened	471	78.8	127	21.2	
Peer relationship					
Good	521	70.6	217	29.4	X ² =114.767 [*] ; df=1; p=0.001
Bad	1	1.7	58	98.3	
Relationship with teacher					
Good	511	68.6	234	31.4	X ² =48.400; df=1; p=0.001
Bad	11	21.2	41	78.8	

Body mass index					
Wasted	1	33.3	2	66.7	X ² =161.057*; df=4; p=0.001
Normal weight	242	79.9	61	20.1	
Overweight	245	72.3	94	27.7	
Obese	34	22.4	118	77.6	
* x ² of a fisher exact test; **Independent t - test					

Table 5: Depression among Qatari adolescents in secondary school according to their socio-demographic characteristics, 2015 (N=797).

Variable	Depression		
	Adjusted OR	95% CI	P-Value
Peer relationship			
Good	1	-	-
Bad	14	1.55-124	0.01
Relationship with parents			
Good	1	-	-
Bad	9.4	1.04-85.4	0.04
Gender			
Male	1	-	-
Female	8	4.42-14.40	0.001
Family History of depression			
No	1	-	-
Yes	6.67	3.14-13.51	0.001
Family conflicts			
No	1	-	-
Yes	6.33	3.58-11.24	0.001
Relationship with teacher			
Good	1	-	-
Bad	5	1.41-18.26	0.001
Psychological abuse			
Never happened	1	-	-
Happened	3.6	2.14-6.0	0.001
1=Reference Group Model; P=0.000; OR=Odds Ratio; CI=Confidence Interval			

Table 6: the most significant predictors associated with depression among Qatari adolescents in secondary schools using the binary logistic regression analysis 2015.

Discussion

This cross-sectional study explored the prevalence of depression among Qatari adolescents in secondary schools in Qatar with response

rate (96.8%). Almost one third of the Qatari adolescents in secondary schools had depression (34.5%), and this comes in agreement with many international studies conducted among adolescents as in the Malaysian study, which found that the prevalence of depression were 39.7% [12] and Iranian study, which found that the prevalence of depression were 31.30% [13]. On the other hand some other studies reported a much lower prevalence as Study conducted in Armenia (2013) reported that the prevalence of depression were 16.7% [14] and El-Missiry (2012) showed that depression among Egyptian secondary school female students was estimated to be 15.3% [15]. Ali S (2011) showed that the prevalence rate of depressive symptoms among Secondary School Students in Dubai was 17.5% [16]. Other studies found a much higher prevalence, like the Indian study which reported a prevalence of depression to reach as high as 57.7% [17]. While in Saudi Arabia, in (2012), depression among adolescents was found to register a prevalence of 46.9% [18].

This study did not show a significant relationship between age of students and depression and this is in agreement with Ekundayo et al. [19] which did not find any increase in prevalence of depression with age. While there are other studies that found significant relationship between age and depression [20,21]. This finding should be interpreted with caution, as this was because the participants were in one secondary grade and they were close in their ages.

Gender: were among the most significant predictors of depression in this study as it has been found that females were more likely to have depression than males and this comes in agreement with many studies [14,22] and the fact that females are more susceptible to depression maybe explained by the theory that the biological and physical make up of females automatically puts them more at risk of developing depression, as from puberty onwards, fluctuating hormone levels affects their body both physically and emotionally [23,24]. In addition to biological factors, psychological factors may play a substantial role in the predisposition of females to depression. Although times are indeed changing, young women are still nevertheless being raised to be subordinate to men in the sense that they are still schooled to be careers and nurturers. They also tend to be more affected by the environment around them, and strive for perfection both physically and otherwise. This predefined social role, both increases the pressure, which they place on themselves to please others and increases the likelihood that they will be subjected to some form of abuse during their lifetime. Socially, females tend to approach tasks very differently to the manner in which way their male counterparts do. In addition, the manner in which way females deal with stressful situations differs in the sense that females are more likely to blame themselves for failings any task, by becoming more withdrawn and critical of their own actions [25].

Obesity: expressed by BMI were significantly related to depression in this study and this come in agreement with many studies, but the evidence for the direct causal pathway from obesity to depression is not substantial. Obesity might not directly cause depression in adolescents, but other pathways and experiences may lead to depression indirectly as stressful life events such as peer victimization and weight-based teasing might biologically predispose youth to depression and may be a factor that leads to depression in obese youth. Further research studies exploring these factors in youth will increase our understanding of obesity/depression associations and might then be a venue for intervention studies. The importance of recognizing these pathways and factors are to know when to intervene to prevent depression in obese adolescents [26,27].

Regarding the number of family member, it was noticed that the majority of students have more than six family members. This is an important factor in family constitution that can affect mental status of the students and this study showed a significant relationship between number of family member and depression and this is in agreement with Abdullah AK et al. [28]. Despite some researches did not find direct relations between number of siblings and depression [29].

The current study showed a significant relationship between being currently smoking and depression and this is in agreement with Boden et al. [30], while some studies indicate that smoking predict depression, there are some other studies which indicate the reverse. In relation to this controversy, a systematic review of longitudinal studies on the association between depression and smoking in adolescents denoted that the link is bidirectional [31].

The study showed that there is relationship between substance abuse and having depression and this was in agreement with studies addressing this issue such as Curry et al. [32] and Clark et al. [33]. Alcohol use have been reported by the current study to increase the likelihood of having depression and this finding are in agreement with many studies [33,34].

The current study showed no significant relationship between family monthly income and depression which is in contrast to many studies that showed that low income individuals are at increased risk of depression such as Lin et al. [35], Addressing such factor in the Arab culture might be difficult as people are reluctant to report their true income and they are more biased toward reporting a lower income, which might partly explain the insignificant result.

In addition this study showed a significant relationship between family history of depression and depression as those with positive family history of depression are 6.6 times more likely to have depression and this is in agreement with Daryanavard et al. [13,36]. Family environment is a very strong place that can affect the development and wellbeing of adolescent. The current study showed a significant relationship between whether or not the participant is living with both of their parents and depression and this is in agreement with many studies [13].

In regards to parents' status, it was found that half of adolescents of divorced parents are suffering from depression. Such symptoms were found also to be elevated in case of deceased mothers and father or both. The difference was statistically significant. The results signify the importance of family context for adolescents, including the stability and linkage of parents. Such results were found to be supported by many related studies [23,37,38].

Family conflicts: as verbal and physical quarrels of parents have bad effect on mental health of students. The current study showed a significant relationship between Participants whom were having conflicts in their families and depression, these factors were among the most significant predictor of depression in the logistic regression and this comes in agreement with many studies, where these findings reflect the conflict within the family environment which leads to depression [39,40].

Parent-Adolescent relationships: characterized by high warmth and involvement may protect youth from adjustment problems. The study showed that bad relationships with parents were significantly related to depression among adolescents and as those with bad relationships with parents are 9.4 times more likely to have depression, this comes in agreement with many studies conducted in the literature addressing this issue such as Branje et al. [41]. Presence of harmonious relationships can ensure the stability of the family and be a protective factor against life stresses.

Conclusion and Recommendations

Almost one third of Qatari adolescents in secondary schools have depression 34.5%, Female adolescents were more likely to have depression than male . Bad relationships with peers, parents and teachers were among the most significant predictors of depression. Adopting holistic approach in dealing with adolescent's wellbeing, through incorporating preventive psychological interventions, such as early screening for depressive symptoms, counseling and psychological support for students. Teachers, school social workers, nurses and parents should be educated about the symptoms of depression to assist in early recognition. Counseling, support and guidance services should be available to adolescent students with depressive symptoms. Further, qualitative data through individual interviews, exploring adolescents' life experiences, may provide deeper insight to the social and cultural factors contributing to depression.

Strengths and Limitations

This study has some limitations, as the study design does not allow for ascertaining temporality, and as in any mental health screening using a self-administered questionnaire, one cannot rule-out the social desirability bias although the researcher insured anonymity of the questionnaire and confidentiality of information. However, this study has its strengths, as although it is targeting a sensitive issue in the Arab world it manages to achieve a high response rate (96.8%), and the proportional allocation of subjects in the selected sample insures a good representation of the Qatari adolescents in secondary schools also the investigator used a simple inexpensive validated tool, which can be used in future. In addition this study can act as a baseline for the planning of preventive psychological health services for Qatari adolescents.

Conflict of Interest

The authors have no conflicts of interest.

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