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Research Article

Prevalence of Eating Disorders and Obsessive-Compulsive Disorder among Adolescent Schoolgirls: Abha City Southern Saudi Arabia

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Abstract

Background: Adolescents concern about their bodyweight and shape can lead to disturbed eating behaviors. Eating disorders (EDs) commonly coexist with other conditions, such as Obsessive-Compulsive Disorder (OCD).

Objectives: The main aims of the current study are to estimate the prevalence of both EDs and OCD among adolescent females, to explore if there is any association in between these disorders, and to correlate the results with different factors.

Materials and Methods: We conducted a descriptive cross-sectional study among 224 girl students at six schools in Abha, southern Saudi Arabia. The main tool of the study was a self-administered questionnaire including socio-demographic, behavioral questions, other important associated factors, Eating Attitude Test 26 (EAT-26) and Obsessive-Compulsive Inventory - Revised short form (OCI-R).

Results: The average age (15.9 ± 3.7 years). One third of the sample (34%) had high score of EAT-26. OCD were prevalent in 69.6% of the sample. Older age students, obese, secondary grade, wishing to wear small clothes, and obsessed or preoccupied by watching a fashion models news had higher EAT-26 score with statistically significant differences p value (0.03, 0.05, 0.01, 0.001, 0.01) respectively. In relating eating disorder with eating behavior, it was significant with use laxative, diuretics to control weight 7% (P = 0.04) and 18.8% (P = 0.01) with thought for attempt suicide. The association rate between OCD and EDs was 40.2% (P = 0.002).

Conclusion: There were very high association between having OCDs and EDs for all age groups and significant association with suicidal thought or attempt. Further research is needed to explore the magnitude and impact of OCD and EDs, and to identify potential supporting counseling and cognition-behavior therapy of this problem at the national level.

Keywords: *Eating Disorders; Obsessive Compulsive Disorders; Prevalence; Association; Saudi Arabia*

Introduction

Adolescents passed through some physical, emotional, and cognitive changes during their adolescence period. Adolescents passed through some physical, emotional, and cognitive changes during their adolescence period. Adolescents concern about their weight and

physical appearance can lead to disturbed eating behaviors and/or using diet pills, laxatives, and diuretics and excessive exercising. Eating disorders EDs have a continuous negative effect of eating or eating behavior that leads to the disturbances which considerably impair physical health or psychosocial functioning [1]. Common EDs appear usually during the teen years or young adulthood [2,3]. They are now being recognized in many other parts of the world and among on-European migrants and their children living in the West [4-6]. EDs generally co-morbid with other psychiatric disorders, such as anxiety disorders, substance abuse, or depression [7,8]. One study reported that fifth of the eating disorder patients had comorbid Obsessive-Compulsive Disorder (OCD) and more than a third of anorexia nervosa patients had comorbid OCD [9]. The possibility of self-mutilation among OCD and EDs patient was reported [10,11]. In the past decades, our kingdom as other Arabic gulf countries passed through sociocultural changes and the increasing westernization of their society. The literature on EDs and OCD in Arab countries including Saudi Arabia is more limited.

Aim of the Study

The main aims of our study are to evaluate the prevalence of both EDs and OCDs among adolescent females, to explore if there is any association in between these disorders, and to correlate the results with different demographic data and other important associated factors.

Materials and Methods

In Abha, there are 15578 girl students distributed as follows: thirty-one governmental secondary schools with a total number of 5760 students, forty-nine governmental intermediate schools with a total number of 7931 students, and five private schools with a total number of 1877 of students. The study design was a cross-sectional to select a sample of 270 females using a two- stage stratified sampling technique. At the first stage, four governmental (two intermediate and two secondary) and two private schools (one intermediate and one secondary) were randomly selected after having the schools list from ministry of education website. At the second stage, a systematic random sample was selected from each grade using a proportional allocation technique. The sample size was calculated by Raosoft website for sample size calculation. It was 224 students (based on 16% [12] expected prevalence, 5% margins of error, and 95%confidence level). The sample was increased by 20% to compensate for non-response rate. The study obtained all required ethical approval from Research Ethics Committee, Armed Forces Hospital, Southern Region (AFHSR), Khamis Mushayt, Saudi Arabia. Informed consent was obtained from all participants included in the study before data collection was done.

A self-administered questionnaire was used and anthropometric measurements of weight and height for students was taken. Participants was interviewed using structured checklist by collection the following data including socio-demographic, Behavioral Questions, and other important associated factors, Eating Attitude Test 26 (EAT-26) [13,14], Obsessive-Compulsive Inventory - Revised short form (OCI-R) [15]. The main tool of the study was a self-administered questionnaire with a cover letter explaining the purpose of the study; anthropometric measurement of weight and height of each student was taken by a trained assistant to calculate body mass index (BMI) for each student. The same weighing machine was used for all participants.

After data were collected it was revised, coded and fed to statistical software IBM SPSS version 20. The given graph was constructed using Microsoft excel software. All statistical analysis was done using two tailed tests and alpha error of 0.05. P value less than or equal to 0.05 was considered to be statistically significant. Regarding scoring system, the items discrete scores for each scale (EDs and coping OCDs) were summed together then the sum of scores for each dimension and total score was calculated by summing the scores given for its responses. For OCI- R scale, scores are generated by adding the item scores. The possible range of scores is 0-72. Mean score for persons with OCD is 28.0 (SD = 13.53). Recommended cutoff score is 21, with scores at or above this level indicating the likely presence of OCD [15]. While Eating Attitudes Test (EAT-26), cutoff value was 20 as score of 20 or higher was considered high otherwise low eating

attitude was considered [13]. Descriptive statistics was done by showing frequencies and percentages for categorical variables. Chi-square or exact tests were used to test for association between EDs or OCDs and different sample characteristics and behaviors. All tests were two tailed with P value less than or equal to 0.05 was considered significant.

Results

A sample of 224 female students were included whose ages ranged from 12 to 19 years old with an average age of 15.9 ± 3.7. Regarding body mass index, 19.2% of the sampled females were below the average of their normal weights for age and about 20% were either overweighed or obese. About 6% of the included females had a history of mental health problem and 11.6% had a family history. Also, about 35% of the females wishing if they can wear small clothes and 46% were unsatisfied about their body feature (Table 1). Regarding magnitude of eating disorders among the sampled females, one third of the sample (34%) had high eating attitude which means having some degree of eating disorder. Table 2 illustrates that older age females (17 - 19 years old) had significantly higher score of EAT-26 (43.8%) than younger age group (29.4%). Also, about 60% of obese females recorded significantly higher score of EAT-26 than normal weighted (32.5%) and underweighted girls (27.1%). Secondary grade female students were of higher rate of EAT-26 compared to intermediate grade students (42.3% and 26%, respectively) with statistically significant difference. Furthermore, EAT-26 were significantly more recorded among female wishing to wear small clothes (47.7%) than those who did not (26.5%). Girls who are obsessed or preoccupied by watching a fashion models news had higher EAT-26 score (42.2%) with statistically significant difference. Other studied characteristics including personal or family history of having mental disorders were not of great importance in having eating disorders. In relating eating disorder with eating behavior (Table 3) it was clear that 32.9% of females who had high eating attitude had also eat more with difficulty to stop compared to 31.5% of those who had low eating attitude. Also 20% of females with high eating attitude vomit to control shape compared to 13.9% of those with low eating attitude. About 7% of the females with high eating attitude use laxative, diuretics to control weight compared to 1.8% of others with statically significant difference. Also 18.8% of the female students with high eating attitude thought for attempt suicide compared to 7.3% of those with low attitude ($P < 0.05$). Considering prevalence of OCDs, 69.6% of the sampled female students had OCDs. OCDs rate was significantly higher among secondary grade female students (78%) than intermediate grade students (61.4%) with statistical significance. Also 79.3% of the females who were obsessed about their shape had OCDs compared to 62.2% of those who did not with significant difference. All other factors including age, body mass index, personal or family history of having mental problems were of no role in having OCDs (Table 4). On studding relation between having OCDs and eating behavior (Table 5), it was found that 33% of females with OCDs cannot stop eating on need compared to 28.9% of those who were free. Also 5.2% of the female students with OCDs use laxatives and diuretics to control weight compared to none of normal females. About 14% of females with OCDs tried to suicide compared to 5.3% of normal females. Finally, table 6 shows that there is significant association between having OCDs and eating disorders as 40.2% of the female students who had OCDs also had EDS compared to 19.7% of normal females ($P < 0.05$) and also these association was of intermediate degree at both grades (Figure 1).

Sample characteristics		No	%
Age in years	12 - 16	170	68.0%
	17 - 19	80	32.0%
Body mass index	Underweight	48	19.2%
	Normal	154	61.6%
	Overweight	31	12.4%
	Obese	17	6.8%
School grade	7-9	127	50.8%
	10-12	123	49.2%
History of mental health problem	Yes	14	5.6%
	No	236	94.4%
Family history of mental health	Yes	29	11.6%
	No	221	88.4%
Wishing small clothes	Yes	88	35.2%
	No	162	64.8%
Preoccupied or obsessed by watching a fashion models news	Yes	116	46.4%
	No	134	53.6%

Table 1: *Characteristics and history of sampled Adolescent Schoolgirls in Abha city Southern Saudi Arabia, 2017.*

Sample characteristics		Eating attitude				P
		Low (< 20)		High (20+)		
		No	%	No	%	
Age in years	12 - 16	120	70.6%	50	29.4%	0.026*
	17 - 19	45	56.3%	35	43.8%	
Body mass index	Underweight	35	72.9%	13	27.1%	0.048*
	Normal	104	67.5%	50	32.5%	
	Overweight	19	61.3%	12	38.7%	
	Obese	7	41.2%	10	58.8%	
school grade	7 - 9	94	74.0%	33	26.0%	0.007*
	10 - 12	71	57.7%	52	42.3%	
History of mental health problem	Yes	9	64.3%	5	35.7%	0.889
	No	156	66.1%	80	33.9%	
Family history of mental health	Yes	18	62.1%	11	37.9%	0.635
	No	147	66.5%	74	33.5%	
Wishing small clothes	Yes	46	52.3%	42	47.7%	0.001*
	No	119	73.5%	43	26.5%	
Preoccupied or obsessed by watching a fashion models news	Yes	67	57.8%	49	42.2%	0.010*
	No	98	73.1%	36	26.9%	

Table 2: *Distribution of eating disorder among Adolescent Schoolgirls in Abha city Southern Saudi Arabia by their characteristics, 2017.*

** P < 0.05 (significant).*

Eating behaviour	Eating attitude				P
	Low (<20)		High (20+)		
	No	%	No	%	
Gone on eating binges where you feel that you may not be able to stop? (Eating	52	31.5%	28	32.9%	0.819
Ever made yourself sick (vomited) to control your weight or shape?	23	13.9%	17	20.0%	0.216
Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape?	3	1.8%	6	7.1%	0.035*
Ever been treated for an eating disorder?	9	5.5%	6	7.1%	0.613
Have you recently thought of or attempted sui-cide?	12	7.3%	16	18.8%	0.006*

Table 3: *Relation between eating disorder among Adolescent Schoolgirls in Abha city Southern Saudi Arabia and their eating behaviour, 2017.*

** P < 0.05 (significant).*

Sample characteristics		Obsessive-Compulsive disorder				P
	Negative		Positive			
	No	%	No	%		
Age in years	12 - 16	55	32.4%	115	67.6%	0.328
	17 - 19	21	26.3%	59	73.8%	
Body mass index	Underweight	16	33.3%	32	66.7%	0.915
	Normal	45	29.2%	109	70.8%	
	Overweight	9	29.0%	22	71.0%	
	Obese	6	35.3%	11	64.7%	
school grade	7 - 9	49	38.6%	78	61.4%	0.004*
	10 - 12	27	22.0%	96	78.0%	
History of mental health problem	Yes	4	28.6%	10	71.4%	0.878
	No	72	30.5%	164	69.5%	
Family history of mental health	Yes	7	24.1%	22	75.9%	0.436
	No	69	31.2%	152	68.8%	
Wishing small clothes	Yes	24	27.3%	64	72.7%	0.428
	No	52	32.1%	110	67.9%	
Preoccupied or obsessed by watching a fashion models news	Yes	24	20.7%	92	79.3%	0.002*
	No	52	38.8%	82	61.2%	

Table 4: *Distribution of OCD among Adolescent Schoolgirls in Abha city Southern Saudi Arabia by their characteristics, 2017.*

** P < 0.05 (significant).*

Eating behaviour	Obsessive-Compulsive disorder				P
	Negative		Positive		
	No	%	No	%	
Gone on eating binges where you feel that you may not be able to stop? (Eating	22	28.9%	58	33.3%	0.494
Ever made yourself sick (vomited) to control your weight or shape?	11	14.5%	29	16.7%	0.664
Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape?	0	0.0%	9	5.2%	0.043*
Ever been treated for an eating disorder?	4	5.3%	11	6.3%	0.746
Have you recently thought of or attempted suicide?	4	5.3%	24	13.8%	0.049*

Table 5: *Relation between OCD among Adolescent Schoolgirls in Abha city Southern Saudi Arabia and their eating behaviour, 2017.*

** P < 0.05 (significant).*

Eating disorder	Obsessive-Compulsive disorder				P
	Negative		Positive		
	No	%	No	%	
Low (< 20)	61	80.3%	104	59.8%	0.002*
High (20+)	15	19.7%	70	40.2%	

Table 6: *Relation between having OCD and eating disorders among Adolescent Schoolgirls in Abha city Southern Saudi Arabia, 2017.*
** P < 0.05 (significant).*

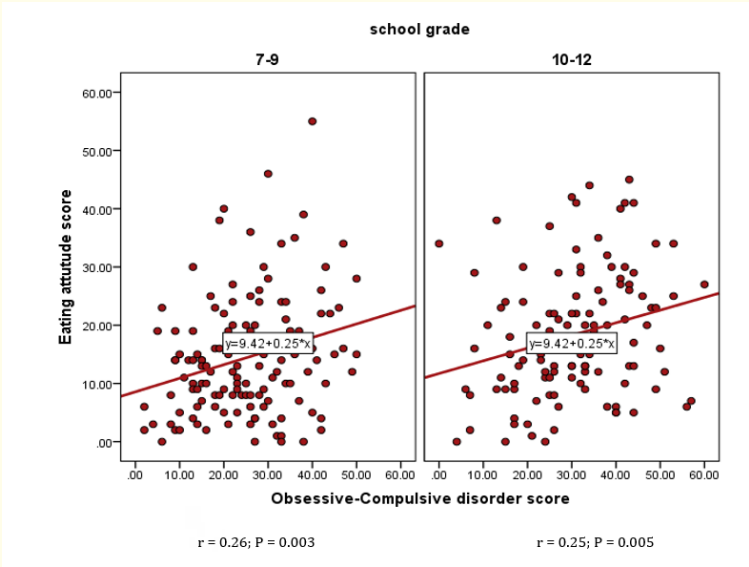

Figure 1: *Correlation between OCD and eating disorders scores among Adolescent Schoolgirls in Abha city Southern Saudi Arabia according to educational grade, 2017.*

Discussion

The primary goal was to examine the prevalence of EDs and OCDs among adolescent females. We found that approximately 34% of the sample scored above the recommended cut-off point on EAT-26 which higher than the percentage found in studies done at other parts of our country ranging from 24.6% schoolgirls in Riyadh [16] and 26.1% adolescent girls in Makkah [17]. Also, it is higher than what was done in other parts of Gulf and Middle East countries [18-21]. In Jordan, 40.5% of a population sample of adolescent girls (10 - 16 years) has experienced negative eating behavior [22]. The prevalence of EDs in some Arab countries was variant among female adolescents (16.2% to 42.7%), as Musaiger A., *et al.* (2013) reported [23]. Our study showed that OCD symptoms were prevalent in 69.6% of the sample, however, Khalid S. Gelban, KS (2009) discovered obsessive-compulsive behavior in 12.3% of Saudi Secondary School girls in Abha by using the Arabic version of the symptom-revised checklist 90 (SCL 90-R) [24]. El- Sayed Desouky D., *et al*. (2015) reported OC

symptoms in 23.1% out of 1024 secondary school girls in Taif, Saudi Arabia [25]. In Egypt, Okasha A (1998) found that the percentage of OCD in outpatient psychiatric clinics was about 3% [26]. These variations of OCD prevalence due to the administration of different questionnaires.

The second goal of the study was to explore if there is a link between EDs and OCDs. We found that there is a statistical significant association between having OCDs and eating disorders as 40.2% of the female students who had OCDs also had EDs compared to 19.7% of normal females (P = 0.002) and also this association was of intermediate degree at both grades. As recently as 2004, Kaye., *et al*. reported that 41% of individuals with eating disorders have OCD compared to non-clinical group [27]. Another study reported that a fifth of the EDs was found to have comorbid OCD [9].

The last goal of our study was to examine demographic variables, eating behavior, and other important associated factors related to EDs and OCDs. The results showed several factors to be associated with a high score of EAT-26 with some statistical significant differences including older age schoolgirls, obese, secondary school students, wishing to wear small clothes and obsession or preoccupation by watching fashion models. The age and BMI were significant predictors of negative eating attitudes that are consistent with findings from other studies from different countries [21-23,28-30], however they were contrary to findings from other studies done in Saudi Arabia [12,17]. The wishing to wear small clothes and obsession or preoccupation by watching fashion models were statistically significant with high score of EAT-26. The similar findings were reported in some studies [17,21,22,31,32], the justification is that adolescents' choices and attitudes for food get affected by peer pressure [33]. The body weight is very important to female adolescents which may increase the possibility of developing EDs [34]. They skip some meals in order to be thin and socially acceptable which may lead to nutritional problems and eventually EDs [35]. Also, adolescents become conscious about their bodies and may perceive their weight in a negative way [36]. The students eating behavior results revealed the only statistically significant association of using laxatives, diet pills or diuretics to control weight or shape during the past 6 months with a high score of EAT-26 (P = 0.035) as mentioned by 7.1% of schoolgirls which is not similar to results reported in other studies [17]. History of continuous eating with inability to stop during the past 6 months not significant and not consistent with the study by Fortes., *et al* [29]. Regarding OCDs, we found statically significant difference association among secondary grade female students (78%) (P = 0.004) which were similar to other studies in Saudi Arabia that examined the pattern of OCD in Saudi Arabia and found to be similar to those reported in Western studies [24,37,38]. Furthermore, we reported 79.3% of the student were obsessed about their shape had OCDs compared to 62.2% of those who did not with a significant difference (P = 0.004), however, we did not find in literature any studies to compare them with this finding. Thought of or attempting suicide was another significant finding in the current study. It was reported by 18.8% (P = 0.006) of students with a high score of EAT-26 whereas OCD subjects showed 13.8% (P = 0.05) had thought of or attempting suicide. Jose A., *et al.* 1995 examined female patients with OCD, anorexia and dysmenorrhea. They found 70% of the participants were sexually abused during childhood [10]. The prevalence of self-injury among eating disorder patients is approximately 25% regardless of the type of eating disorder, which double the risk of suicide [39]. Dudova I., *et al.* 2016 discovered 60% of 47 hospitalized girls with EDs had suicidal behavior [40]. In a study done in China, 12.22% of anorexic patients had suicidal thoughts [41]. Similar to our finding, Cruz L., *et al.* 2016 found 11.68% of 36788 cases of OCD had attempted suicide at least once [42].

To our knowledge, this is the first study examine the association between EDs and OCDs in the Middle East. We found a number of statistically significant findings that need to be addressed in a biopsychosocial context. There were limitations to this study that need to be acknowledged. The first limitation concerns about the self-rated questionnaire. Self-reported answers may be exaggerated, therefore, using a clinician-rated scale or structural clinical interview would be better to reflect and know the number of participants who might have mental illnesses. The second limitation is the use of convenience sampling which means one gender and limited age may limit the generalizability of our findings.

Conclusion

It was clear that there were some girls below the normal level of normal weight for age (underweight). The prevalence of having OCDs was very high (7 out of each 10 were positive) especially secondary school girls who have some obsessions regarding their body feature. Also, 1 out of each three girls recorded some degree of eating disorders especially secondary school girls who had high BMI and they were unsatisfied of their feature. There was a very high association between having OCDs and EDs for all age groups and significant association with suicidal thought or attempt. The researchers recommend to focus mainly on secondary stage girls by applying sessions concerning with healthy nutrition and lifestyle to avoid any health problems associated with EDs and OCDs. Also, females with OCDs should be learned how to modify their eating behavior and to be more trusted about their features. Further research is recommended to explore the impact of OCDs and EDs and to identify potential supporting counseling and cognition-behavior therapy of this problem. To reach this, a national program for mental health in this area is crucial.

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Conflicts of Interest

There are no conflicts of interest.

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