Research Article

Disordered eating attitudes among secondary schoolgirls in Al-Iskan sector, Makkah Al-Mukarramah, Saudi Arabia

Malak M. Allihaibi

Alnwarryah Primary Health Care Center, Ministry of Health, Makkah Al-Mukarramah, Saudi Arabia
Correspondence to: Malak M. Allihaibi, E-mail: mezo106@yahoo.com

Received March 12, 2015. Accepted March 12, 2015

Abstract

Background: A growing number of individuals are showing inappropriate eating behaviors and attitudes without having severe forms. Early and prompt recognition of mild forms can prevent the severe ones.

Objective: To estimate the prevalence and associated factors of disordered eating attitudes among secondary schoolgirls in Al-Iskan sector, Makkah Al-Mukarramah, Saudi Arabia.

Materials and Methods: A cross-sectional study design was adopted among a representative random sample of female secondary school students in Al-Iskan sector, Makkah Al-Mukarramah, Saudi Arabia. A self-administered questionnaire, the Arabic version of Eating Attitude Test–26 (EAT-26), was used. Anthropometric measurements of weight and height for students were taken.

Results: The study included 180 female secondary school students. Their age ranged between 15 and 19 years with a mean of 16.83 and standard deviation of 0.94 years. Majority of them were Saudi (95.6%). Mean EAT-26 score for participants was 16.01±8.88. More than a quarter (26.1%) of adolescent girls scored 20 or above, which is the cutoff point of EAT-26, indicating negative eating attitudes. Almost two-thirds of them (61.7%) were normal weight whereas 18.9% of them were underweight. Overweight and obesity were observed among 11.7% and 7.8% of them, respectively. The highest rate of eating disorder (ED) was reported among underweight students (29.4%) whereas the lowest rate was reported among obese students (7.1%). However, the association between student's body mass index and ED was not statistically significant (p = 0.405). EDs are more prevalent in females who believe that others are comparing them with slimmer people; media has an impact on their efforts toward slimness and world fashion and style has a role on their trial to lose weight.

Conclusion: The high prevalence of disordered eating attitudes among schoolgirls in Al-Iskan sector in Makkah Al-Mukarramah is of great concern. It indicated that adolescent girls in this study had experience weight and shape concerns similar to those in Western populations.

Keywords: Eating disorder, schoolgirls, Eating Attitude Test–26, Saudi Arabia

Access this article online	
Website: http://www.ijmsph.com	Quick Response Code:
DOI: 10.5455/ijmsph.2015.12032015191	

Introduction

Eating disorders (EDs) are psychological and nutritional disorders. Their common features are disturbance of eating behaviors and attitudes. Their psychological and nutritional sequels are various. They can lead to malnutrition, osteoporosis, amenorrhea, cardiovascular disease, and depression. Their severe clinical forms include anorexia nervosa and bulimia nervous.[1–3] Body dissatisfaction and disturbances in body image

are regarded as the central issues in EDs, and such affected people consider themselves as obese, even if they are thin.[4]

A growing number of people are showing inappropriate eating behaviors and attitudes without having severe forms. Early and prompt recognition of mild forms can prevent the severe ones.[1–3]

Adolescent girls are at high risk for disordered eating attitudes.[3] In adolescent girls, they are considered as the most prevalent diseases next to obesity and asthma.[1–3]

Eating disorders were known as a phenomenon of Western culture, especially among women;[5] however, over recent years, EDs are increasing in Eastern cultures as well.[6–8] The prevalence of EDs in Western countries was reported to be approximately 0.3%–1% among young females.[5] In Eastern countries, the frequency of EDs is different. The prevalence of subclinical types of EDs is higher than the EDs in the clinical setting.[9] Many researchers have found similarities between EDs in the West and some Asian cultures such as China.[10] EDs have been reported about 3%–10% among Chinese females.[11] In the southwestern region of Asia, there are a few researches about the prevalence of EDs; for instance, in the United Arab Emirates, 2% of adolescent girls met the diagnostic criteria for EDs.[12] Regarding the eating behavior investment study, 33% of Omani teenagers had vulnerability for expression of anorexic behavior and 12.3% for binge eating or bulimia.[13] In Jordan, adolescent girls also had bulimia nervosa (0.6%), binge ED (1.8%) and ED not otherwise specified (31%). Although in this study, no anorexia nervosa was reported.[14]

Various variables were known risk factors in developing EDs but the role of sociocultural variables in developing EDs is very prominent.[5,7,8] Introducing an ideal body as a need for success and acceptability would elicit one to achieve an ideal body.[6,12,15] Peers, parents, and media are the most important sociocultural factors that could act as potential risk factors for body image disturbances. These factors would influence body satisfaction via two mechanisms including social comparison and ideal body internalization.[4] The family emphasis on beauty, body shape, and eating behaviors could result in EDs; this aforementioned role was shown in young females.[16] In addition, media plays a great role in body dissatisfaction. Exposures to the Western ideal body can change ideal body images via internalizing specific body types in both genders.[4,12,15]

Asian cultures include many different cultures and considering combining of various ethnic groups under a single "Asian" category obscures important group differences.[17]

This study aimed to estimate the prevalence and associated factors of disordered eating attitudes among secondary schoolgirls in Al-Iskan sector, Makkah Al-Mukarramah, Saudi Arabia, 2013.

Materials and Methods

This was a cross-sectional study conducted among females' secondary schools students in Al-Iskan sector in Makkah Al-Mukarramah. Makkah Al-Mukarramah is the holy capital located in Makkah region, in the western region of the Kingdom of Saudi Arabia. Total population in Makkah city in the last census conducted at 2010 was approximately 1,675,368.[18] There are 758 schools in Makkah, divided into 76 kindergartens, 280 primary school, 158 intermediate schools, 118 secondary school, and 106 schools for older people.

In Al-Iskan sector, there are three governmental secondary schools with total number of 790 students distributed as follows; 3rd secondary school of Tahfeez Quran (50), 49th secondary school (502), and 54th secondary school (238).

The sample size was calculated by Raosoft website for sample size calculation. It was 164 students (based on 16% expected prevalence,[19] 5% margins of error, and 95% confidence level). The sample was increased by 10% to compensate for no response, so the final sample size was 180 students. The 49th secondary school was chosen as it included the largest number of students to fulfill the required sample size.

The sample size was distributed among the schools at three levels determined as a percentage proportionally related to the total number of the student in each level. At each level, the researcher selected two classes by simple random technique. All students in the randomly selected classes were recruited for the study till we reached the required sample size from each level.

A self-administered questionnaire was used and anthropometric measurements of weight and height for students were taken. The questionnaire included four sections; personal characteristics, the Arabic version of Eating Attitude Test—26 (EAT-26),[20,21] associated factors, and behavioral questions. It was revised and validated by two Family Medicine consultants after the pilot study.

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 were taken by a trained assistant to calculate body mass index (BMI) for each student. The same weighing machine was used for all participants.

A pilot study was conducted in one of the three schools, and the school was excluded from the study to test the questionnaire applicability and understanding before starting the actual research, and necessary modifications were made accordingly. After the pilot study, the researcher with her supervisor assistance added the important associated factors related to EDs (e.g., media, fashion, satisfaction with current weight, satisfaction with current body shape, comparison with slimmer people, and pressure from others to be slim). The researcher tested the reliability of the questionnaire by retesting 10% of participants to compare the answers. An average correlation of coefficient of 0.95 was obtained.

Written permission from Joint Program of Family and Community Medicine to start the study after the approval by the local ethics committee was obtained before conducting the study.

All collected data were verified manually and corrected when necessary; the data were then coded before their entry into a personal computer. Data entry and analysis were performed by using the Statistical Package of the Social Sciences

Table 1: Personal characteristics of secondary schoolgirls participated in the study (n = 180).

	Frequency	Percentage
Age (years)		
15	10	5.6
16	59	32.8
17	71	39.4
18	32	17.8
19	8	4.4
Mean±SD	16.83±0.94	
Nationality		
Saudi	172	95.6
Non-Saudi	8	4.4
Family size		
≤5	32	17.8
6–9	132	73.3
>9	16	8.9
Birth order		
First	41	22.8
Second–third	65	36.1
More than third	74	41.1

(SPSS) statistical program, version 20. χ^2-Test was used to test for the association between categorical variables. A p-value of <0.05 was considered to be statistically significant.

Results

The study included 180 female secondary school students. Table 1 summarizes their personal characteristics. Their age ranged between 15 and 19 years with a mean of 16.83 and standard deviation of 0.94 years. Majority of them were Saudis (95.6%). The family size of most of them (73.3%) ranged between six and nine members. First birth order was reported among 22.8% of them whereas more than third birth order was reported among 41.1% of them.

Age of menarche among almost two-thirds of the schoolgirls (65%) ranged between 12 and 13 years whereas that among 25.6% was over 13 years, and the remaining 9.4% of the students reported age of menarche of 11 years or less.

Mean EAT-26 score for the participants was16.01±8.88. More than a quarter (26.1%) of adolescent girls scored at or above the cutoff point of EAT-26 (20), indicating negative eating behavior [Figure 1].

Figure 2 presents the BMI distribution of the participants. Almost two-thirds of them (61.7%) were normal whereas 18.9% of them were underweight. Overweight and obesity were observed among 11.7% and 7.8% of them, respectively.

Table 2 shows the beliefs of schoolgirls regarding their body weight and shape

- Almost a quarter of them (23.9%) were never satisfied with their body weight whereas 23.3% and 21.1% were either always or often satisfied with body weight.

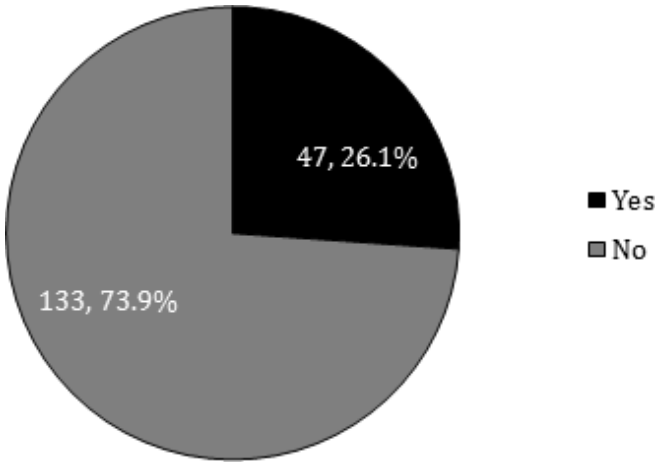

Figure 1: Prevalence of eating disorders among secondary schoolgirls, Al-Iskan sector, Makkah (n = 180).

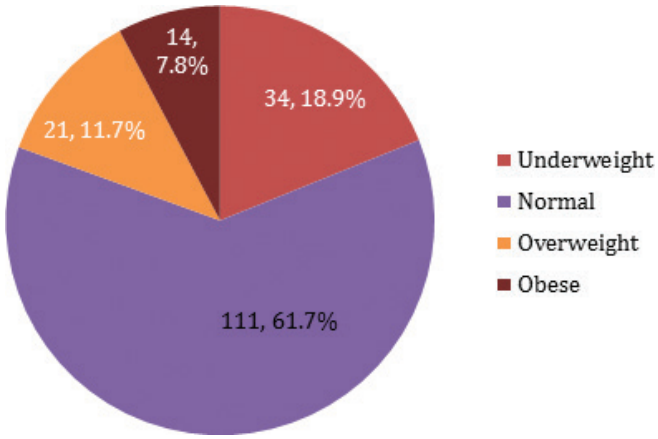

Figure 2: Distribution of secondary schoolgirls according to their body mass index.

- 30% of them were either rarely or never being satisfied with their current body shape whereas 47.8% were either always or often satisfied with it.
- More than half of them (54.4%) were always confident regarding their external appearance whereas only 2.8% were never confident with their external appearance.
- 40% of girls never believed that others were comparing them with slimmer people compared to 11.1% who always believed so.
- More than half of them (53.3%) never believed that others press on them to be slimmer compared to 19.5% who always or often believed so.
- More than a quarter of schoolgirls (26.7%) never believed that the media has an impact on their effort toward slimness. However, 18.9% always believed so.
- Slightly less than half of them (48.3) either always or often believed that the world fashion and style has a role in their

Table 2: Believes of secondary schoolgirls regarding their body weight and shape

Statements	Always, *N* (%)	Often, *N* (%)	Sometimes, *N* (%)	Rarely, *N* (%)	Never, *N* (%)
Are you satisfied with your current weight?	42 (23.3)	38 (21.1)	46 (25.6)	11 (6.1)	43 (23.9)
Are you satisfied with your current body shape?	47 (26.1)	39 (21.7)	40 (22.2)	26 (14.4)	28 (15.6)
Are you confident regarding your external appearance?	98 (54.4)	38 (21.1)	32 (17.8)	7 (3.9)	5 (2.8)
Do you believe that others comparing you with others slimmer?	20 (11.1)	28 (15.6)	26 (14.4)	34 (18.9)	72 (40.0)
Do you believe that others press on you to be slimmer?	14 (7.8)	21 (11.7)	21 (11.7)	28 (15.6)	96 (53.3)
Do you believe that the media has an impact on your effort towards slimness?	34 (18.9)	32 (17.8)	44 (24.4)	22 (12.2)	48 (26.7)
Do you believe that the world fashion and style has a role in your trial to lose weight?	51 (28.3)	36 (20.0)	36 (20.0)	23 (12.8)	34 (18.9)

Table 3: Association between female schoolgirls' characteristics and disordered eating attitudes

	Eating disorders		*p*-Value
	No, *N* = 133	Yes, *N* = 47	
Nationality			
Saudi (*n* = 172)	127 (73.8)	45 (26.2)	
Non-Saudi (*n* = 8)	6 (75.0)	2 (25.0)	0.652
Age (years) (mean±SD)	16.9±1	16.7±0.8	0.153
Family size			
≤5 (*n* = 32)	26 (81.2)	6 (18.8)	
6–9 (*n* = 132)	97 (73.5)	35 (26.5)	
>9 (*n* = 16)	10 (62.5)	6 (37.5)	0.371
Birth order			
First (*n* = 41)	31 (75.6)	10 (24.4)	
2–3 (*n* = 65)	46 (70.8)	19 (29.2)	
>3 (*n* = 74)	56 (75.7)	18 (24.3)	0.774
Age at menarche (years)			
≤11 (*n* = 17)	13 (76.5)	4 (23.5)	
12–13 (*n* = 117)	85 (72.6)	32 (27.4)	
>13 (*n* = 46)	35 (76.1)	11 (23.9)	0.875
Body mass index			
Underweight (*n* = 34)	24 (70.6)	10 (29.4)	
Normal (*n* = 111)	81 (73.0)	30 (27.0)	
Overweight (*n* = 21)	15 (71.4)	6 (28.6)	
Obese (*n* = 14)	13 (92.9)	1 (7.1)	0.405

trial to lose weight whereas 31.7% either rarely or never believed so.

As shown in Table 3, there was no significant association between any of studied students' baseline characteristics (age, nationality, family size, birth order, age of menarche, and BMI) and disordered eating attitudes.

As shown in Table 4, the rate of ED was significantly higher among students who believed that others were always comparing them with slimmer people (45%) than those who believed that others never compared them with slimmer people (20.8%). This difference was statistically significant (p = 0.035). Also, the rate of ED was significantly higher among students who always believed that media has an impact on their effort toward slimness (44.1%) than those who not always believed that media has an impact on their effort toward slimness. This difference was statistically significant (p = 0.027). Finally, the rate of ED was significantly higher among students who always believed that the world fashion and style has a role in their effort to lose weight (39.2%) than those who not always believed that. This difference was statistically significant (p = 0.023).

Regarding students' behaviors, history of continuous eating with inability to stop during the past 6 months was reported by 20.6% of the participants; however, history of inducing vomiting to control body weight and shape during the past 6 months was reported by only 2.2% of them. History of using laxatives, anti-appetizers, or diuretics to control body weight and shape during the past 6 months was mentioned by 3.3% of schoolgirls whereas history of previous treatment for disordered eating attitudes during the past 6 months was reported by 6.7% of participants.

Discussion

Over the past decade, evidences from American Psychiatric Association[22] and World health Organization[23] have accumulated, indicating that the prevalence of ED among adolescent and young females has increased dramatically in the world.

Our finding of 26.1% girls scoring high on EAT is similar to those observed from other Gulf countries with rates ranging from 29.4% for Omani teenage girls[13] and 23.4% for the UAE adolescent girls.[16] However, a rate of 15.9% for secondary schoolgirls has been reported in another Saudi study.[19] In Jordan, 40.5% of a population sample of adolescent girls (10–16 years) has experienced negative eating behavior.[14]

Results of this study concluded that ED occurrence in the present population sample (26.1%) using EAT-26 diagnostic criteria is higher than that observed in some other populations. The estimates of ED in adolescent girls were 7.4% in Singapore[24] and 24.2% in Iran.[25] However, it was lower

Table 4: Association between students' believes and disordered eating attitudes

	Eating disorders		χ^2	*p*-Value
	No, *N* = 133, *N* (%)	Yes, *N* = 47, *N* (%)		
Satisfaction with current weight				
Always (*n* = 42)	31 (73.8)	11 (26.2)		
Often (*n* = 38)	28 (73.7)	10 (26.3)		
Sometimes (*n* = 46)	33 (71.7)	13 (28.3)		
Rarely (*n* = 11)	11 (100)	0 (0.0)		
Never (*n* = 43)	30 (69.8)	13 (30.2)	0.004	0.951
Satisfaction with current body shape				
Always (*n* = 47)	38 (80.9)	9 (19.1)		
Often (*n* = 39)	29 (74.4)	10 (25.6)		
Sometimes (*n* = 40)	31 (77.5)	9 (22.5)		
Rarely (*n* = 26)	18 (69.2)	8 (30.8)		
Never (*n* = 28)	17 (60.7)	11 (39.3)	3.45	0.063
Confidence regarding external appearance				
Always (*n* = 98)	74 (75.5)	24 (24.5)		
Often (*n* = 38)	29 (76.3)	9 (23.7)		
Sometimes (*n* = 32)	21 (65.6)	11 (34.4)		
Rarely (*n* = 7)	4 (57.1)	3 (42.9)		
Never (*n* = 5)	5 (100)	0 (0.0)	0.187	0.666
Believing that others comparing you with slimmer people				
Always (*n* = 20)	11 (55.0)	9 (45.0)		
Often (*n* = 28)	19 (67.9)	9 (32.1)		
Sometimes (*n* = 26)	20 (76.9)	6 (23.1)		
Rarely (*n* = 34)	26 (76.5)	8 (23.5)		
Never (*n* = 72)	57 (79.2)	15 (20.8)	4.46	0.035
Believing that others press on you to be slimmer				
Always (*n* = 14)	8 (57.1)	6 (42.9)		
Often (*n* = 21)	15 (71.4)	6 (28.6)		
Sometimes (*n* = 21)	16 (76.2)	5 (23.8)		
Rarely (*n* = 28)	22 (78.6)	6 (21.4)		
Never (*n* = 96)	72 (75.0)	24 (25.0)	1.18	0.277
Believing that the media has an impact on your effort towards slimness				
Always (*n* = 34)	19 (55.9)	15 (44.1)		
Often (*n* = 42)	28 (87.5)	4 (12.5)		
Sometimes (*n* = 44)	30 (68.2)	14 (31.8)		
Rarely (*n* = 22)	18 (81.8)	4 (18.2)		
Never (*n* = 48)	38 (79.2)	10 (20.8)	10.94	0.027
Believing that the world fashion and style has a role in your trial to lose weight				
Always (*n* = 51)	31 (60.8)	20 (39.2)		
Often (*n* = 36)	26 (72.2)	10 (27.8)		
Sometimes (*n* = 36)	31 (86.1)	5 (13.9)		
Rarely (*n* = 23)	17 (73.9)	6 (26.1)		
Never (*n* = 34)	28 (82.4)	6 (17.6)	5.19	0.023

than those reported in Israel (30%).[26] Several epidemiological studies also signified that ED occurrence in Western and developed countries such as Norway was 8.7%,[27] 12% in the USA,[28] and 27% in Canada.[29] This difference with study results could be attributed partially to the difference in tool used in this study and that used in most of other studies.

Generally, Saudis are exposed to sudden changes in lifestyle patterns due to the sociodevelopmental changes that are characterized by shifting toward an urban life. These changes would cause adolescent girls to adopt some negative attitudes to go along with the modernization process of this period such as engaging in aberrant eating attitudes and behaviors to control body weight.

In addition, differences in the occurrence of ED in Western and non-Western populations might be explained by the fact that these studies were conducted in various communities, which reflects different cultures, ethnicities and socioeconomic status, as well as discrepancy in design and methodology

used by the researchers, mainly sampling procedure and population sample characteristics.

Contrary to others,[14,29] findings of this study showed that age and BMI were not significant predictors of negative eating attitudes. However, these findings are consistent with the finding reported previously in Saudi Arabia.[20] This is not supported by a study conducted in the UAE, which showed that heavier adolescent girls have exhibited significant ED.[30]

In a study conducted in Jordon,[14] EDs were more pronounced among the age categories of 12.1–14 years and 14.1–16 years, that is, among participants who were older than 12 years, which is close to the mean menarcheal age. The current data document that ED was not significantly associated with age of menarche although the highest rate was observed in the 12–13 years age group.

In this study, the age of student girls ranged between 15 and 19 years with a mean of 16.83±0.94 years. Earlier review on pubertal changes and ED argued that physical changes associated with puberty have predisposed bodies of post-pubertal girls to deviate from the pre-pubertal thin body considered ideal.[31,32] The discrepancy between actual and ultra-slender ideal weight has a psychological impact on adolescent girls characterized by an exaggerated concern about weight,[33] initiating ED development.[34]

In this study, comparing girls with slimmer people has significantly increased the probability of developing ED. Nevertheless, numerous studies have indicated that perceived pressure to be thin and the importance of thinness to peers are not associated with weight concerns.[35,36] On the contrary, subsequent surveys are in accordance with the current findings verifying that negative comments from others regarding physical appearance have negatively influenced eating attitudes and behaviors of adolescent girls.[14,37,38]

ED in the present study was found to be significantly influenced by the role of media on girls' efforts toward slimness as well as world fashion. Several studies are consistent with the current relationship between mass media and ED occurrence.[14,30,36] The present data are comparable to a report that documented that adolescent girls aged 9–14 years who made efforts to look like females in media have been 1.9- and 1.6-folds more likely to have weight concerns and to become constant dieters, respectively.[36] In Saudi Arabia, females have internalized Western body ideals because of the accessibility to assimilate Western values through mass media. In particular, the changes in female beauty standards and body shape have been imported from the Western society through television programs, magazines, and the Internet. In addition, media messages promise to transform the body shape of females into a more desirable one and to lose weight easily in a short period of time by using non-nutritious diet products. These messages from media have caused Saudi females, especially adolescent girls who seek media for information, to be dissatisfied with their body image and to engage in negative eating attitudes.

This study has few limitations: it was not possible to undertake a clinical diagnosis by a psychiatrist, given the limited resources; therefore, we could not know the number of participants who might have mental illnesses. The study was conducted in one sector in Makkah Al-Mukarramah, one gender, and limited age, therefore, we could not generalize the results on Makkah Al-Mukarramah.

Conclusion

The high prevalence of disordered eating attitudes among schoolgirls in Al-Iskan sector in Makkah Al-Mukarramah is of great concern. It indicated that adolescent girls in this study had experienced weight and shape concerns similar to those in Western populations.

References

1. Klein DA, Walsh BT. Eating disorders: clinical features and pathophysiology. Physiol Behav 2004;81(2):359–74.
2. Chamay-Weber C, Narring F, Michaud PA. Partial eating disorders among adolescents: a review. J Adolesc Health 2005;37(5):417–27.
3. Golden NH. Eating disorders in adolescence and their sequelae. Best Pract Res Clin Obstet Gynaecol 2003;17(1):57–73.
4. Garrusi B, Baneshi MR. Eating disorders and their associated risk factors among Iranian population—a community based study. Global J Health Sci 2013;5(1):193–202.
5. Hoek HW, van Hoeken D. Review of the prevalence and incidence of eating disorders. Int J Eat Disord 2003;34(4):383–96.
6. Chan CK, Glynn Owens R. Perfectionism and eating disorder symptomatology in Chinese immigrants: mediating and moderating effects of ethnic identity and acculturation. Psychol Health 2006;21(1):49–63.
7. Chen H, Jackson T. Prevalence and sociodemographic correlates of eating disorder endorsements among adolescents and young adults from China. Eur Eat Disord Rev 2008;16(5):375–85.
8. Mellor D, McCabe M, Ricciardelli L, Yeow J, Daliza N, Hapidzal NF. Sociocultural influences on body dissatisfaction and body change behaviors among Malaysian adolescents. Body Image 2009;6(2):121–8.
9. Nishizawa Y, Kida K, Nishizawa K, Hashiba S, Saito K, Mita R. Perception of self-physique and eating behavior of high school students in Japan. Psychiatry Clin Neurosci 2003;57(2):189–96.
10. Jackson T, Chen H. Sociocultural predictors of physical appearance concerns among adolescent girls and young women from China. Sex Roles 2008;58(5–6):402–11.
11. Lee S, Lee AM. Disordered eating in three communities of China: a comparative study of female high school students in Hong Kong, Shenzhen, and rural Hunan. Int J Eat Disord 2000;27(3):317–27.
12. Thomas J, Khan S, Abdulrahman AA. Eating attitudes and body image concerns among female university students in the United Arab Emirates. Appetite 2010;54(3):595–8.
13. Al-Adawi S, Dorvlo AS, Burke DT, Moosa S, Al-Bahlani S. A survey of anorexia nervosa using the Arabic version of the

EAT-26 and "gold standard" interviews among Omani adolescents. Eat Weight Disord 2002;7(4):304–11.
14. Mousa TY, Al-Domi HA, Mashal RH, Jibril MA. Eating disturbances among adolescent schoolgirls in Jordan. Appetite 2010;54(1):196–201.
15. Ricciardelli LA, McCabe MP. A biopsychosocial model of disordered eating and the pursuit of muscularity in adolescent boys. Psychol Bull 2004;130(2):179–205.
16. Kluck AS. Family influence on disordered eating: the role of body image dissatisfaction. Body Image 2010;7(1):8–14.
17. Yates A, Edman J, Aruguete M. Ethnic differences in BMI and body/self-dissatisfaction among Whites, Asian subgroups, Pacific Islanders, and African-Americans. J Adolesc Health 2004;34(4):300–7.
18. Holy Makkah Municipality website. *Makkah Statistics*, available at: http://www.holymakkah.gov.sa/Makka/Statistics.aspx (last accessed on October 3, 2014).
19. Al-Subaie AS. Some correlates of dieting behavior in Saudi schoolgirls. Int J Eat Disord 2000;28(2):242–6.
20. Al-Subaie A, al-Shammari S, Bamgboye E, al-Sabhan K, al-Shehri S, Bannah AR. Validity of the Arabic version of the Eating Attitude Test. Int J Eat Disord 1996;20(3):321–4.
21. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The eating attitudes test: psychometric features and clinical correlates. Psychol Med 1982;12(4):871–8.
22. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Revised*. Washington, DC: American Psychiatric Association, 2000.
23. World Health Organization. *Nutrition in Adolescence*: *Issues and Challenges for the Health Sector: Issues in Adolescent Health and Development*. Geneva: World Health Organization, 2005.
24. Ho TF, Tai BC, Lee EL, Cheng S, Liow PH. Prevalence and profile of females at risk of eating disorders in Singapore. Singapore Med J 2006;47:499–503.
25. Nobakht M, Dezhkam M. An epidemiological study of eating disorders in Iran. Int J Eat Disord 2000;28,265–71.
26. Kaluski DN, Natamba BK, Goldsmith R, Shimony T, Berry EM. Determinants of disordered eating behaviors among Israeli adolescent girls. Eat Disord 2008;16(2):146–59.
27. Götestam K, Agras W. General population-based epidemiological study of eating disorders in Norway. Int J Eat Disord 1995;18:119–26.
28. Williams RL, Schaefer CA, Shisslak CM, Gronwaldt VH, Comerci GD. Eating attitudes and behaviors in adolescent women: discrimination of normals, dieters, and suspected bulimics using the eating attitude test and eating disorder inventory. Int J Eat Disord 1986;5:879–94.
29. Jones JM, Bennett S, Olmsted MP, Lawson ML, Rodin G. Disordered eating attitudes and behaviors in teenaged girls: a school-based study. Can Med Assoc J 2001;165:547–52.
30. Eapen V, Mabrouk AA, Bin-Othman S. Disordered eating attitudes and symptomatology among adolescent girls in the United Arab Emirates. Eat Behav 2006;7(1):53–60.
31. Abraham S, O'Dea J. Body mass index, menarche, and perception of dieting among peripubertal adolescent females. Int J Eat Disord 2001;29:23–8.
32. Sweeting H, West P. Gender differences in weight related concerns in early to late adolescence. J Epidemiol Community Health 2002;56:700–1.
33. Moses N, Banilivy M-M, Lifshitz F. Fear of obesity among adolescent girls. Pediatrics 1989;83:393–8.
34. Gowers S, Shore A. Development of weight and shape concerns in the aetiology of eating disorders. Br J Psychiatry 2001;179:236–42.
35. Button E, Loan P, Davies J, Sonuga-Barke E. Self-esteem, eating problems, and psychological well-being in a cohort of schoolgirls aged 15–16: a questionnaire and interview study. Int J Eat Disord 1997;21:39–47.
36. Field A, Camargo C, Taylor B, Berkey C, Roberts S, Colditz G. Peer, parent, and media influences on the development of weight concerns and frequent dieting among preadolescent and adolescent girls and boys. Pediatrics 2001;107:54–60.
37. Archibald A, Graber J, Brooks-Gunn J. Associations among parent–adolescent relationships, pubertal growth, dieting, and body image in young adolescent girls: a short-term longitudinal study. J Res Adolesc 1999;9:395–415.
38. Gowers S, Shore A. Development of weight and shape concerns in the aetiology of eating disorders. Br J Psychiatry 2001;179:236–42.

How to cite this article: Allihaibi MM. Disordered eating attitudes among secondary schoolgirls in Al-Iskan sector, Makkah Al-Mukarramah, Saudi Arabia. Int J Med Sci Public Health 2015;4:939-945

Source of Support: Nil, **Conflict of Interest:** None declared.