

Original Article

Eating disorders and body image concerns as influenced by family and media among university students in Sharjah, UAE

Hadia Radwan PhD, Hayder A Hasan MD, Lina Najm BSc, Sara Zaurub BSc, Faridah Jami BSc, Fahimeh Javadi BSc, Lina Adeeb Deeb BSc, Amani Iskandarani BSc

Department of Clinical Nutrition and Dietetics, College of Health Sciences/ Research Institute of Medical & Health Sciences (RIMHS), University of Sharjah, Sharjah, UAE

Background and Objectives: Eating disorders (ED) can be influenced by psychological and socio-cultural factors. The aim of this study was to explore the association between parental and media influences and body image concerns as factors in the onset of ED. **Methods and Study Design:** A cross-sectional study was conducted among 662 students (407 women and 255 men) attending one of three universities in United Arab Emirates (UAE). The study employed an online self-administered questionnaire with validated scales: Eating Attitudes Test-26 (EAT-26), Body Shape Questionnaire (BSQ), Media Influences Scale, and Family Influences Scale (FIS). **Results:** About 33% of the sample had EAT-26 scores ≥ 20 and 45% showed mild to marked concerns about their body shape. Women students were significantly more concerned about their shape, and more influenced by media than men. There were significant differences in the means of all scores, except for media influence, among the four BMI groups. The EAT-26 score showed strongest correlation with BSQ ($r=0.48$), followed by FIS, Media and BMI ($r=0.419$, $r=0.276$ and $r=0.18$ respectively). The BSQ was the best predictor of ED and was inversely associated with the EAT-26 score ($B=-1.51$, $OR=0.219$, 95% CI: 0.152-0.316, $p<0.001$). **Conclusions:** The findings of this study indicate that ED and body shape concerns are highly prevalent among the university student sample, and highlight the strong influence that both the media and families exert on the development of ED among young adults. These findings provide baseline data for future longitudinal studies to investigate factors influencing ED.

Key Words: eating disorders, mass media, parental factors, body shape, university students

INTRODUCTION

Recent studies have shown that eating disorders are becoming increasingly common in developing, non-Western countries, such as the Gulf countries of the Middle East, as well as in Western countries and constitute a serious health issue.¹⁻⁴ Smink et al reported that eating disorders have started appearing in countries experiencing cultural transition and globalization.⁵

Factors such as urbanization, economic growth and cultural changes, as well as media globalization, were found to play a major role in promoting unrealistic ideal body images.⁶ The ideally thin body image that has been widely observed in Western societies, and communicated through the mass media, is a phenomenon that has spread to non-Western countries as well.^{3,7} In countries that have adopted Westernized cultural ideas, there is an increased risk of body image concerns and ED among young people.^{8,9} Jarry and Kossert reported that individuals' acceptance of and satisfaction with their body image are key factors in determining their likelihood of developing disordered eating behaviors.¹⁰

In the United Arab Emirates (UAE), eating disorders are gaining an increasing amount of attention. The UAE is experiencing rapid economic and sociocultural change.

This has been accompanied by the influx of Western ideas which promote an ideal thin body image that has been portrayed in the mass media and influenced the self-confidence and body image of young adults in the UAE.^{11,12} Eapen et al reported that in the UAE 23.4% of female adolescents were at risk of ED.¹³ While Thomas et al reported in a study of women university students in the UAE that 74.8% of the students were dissatisfied with their current body size, and 24% of them scored above the EAT-26 (Eating Attitude Test) cut-off.¹¹ Similarly, many studies in Arab countries have reported a high prevalence of ED and body image dissatisfaction.¹⁴⁻¹⁶ The body image concerns and the risk of disordered eating was found to be twice the rate among women than in men in Jordan, Libya, Palestine and Syria.⁴ The same trend was found

Corresponding Author: Dr Hadia Radwan, Department of Clinical Nutrition and Dietetics, College of Health Sciences/ Research Institute of Medical & Health Sciences (RIMHS), University of Sharjah, Sharjah-UAE- POBOX 27272- UAE.

Tel: +97165057549; Fax: +9715057515

Email: hradwan@sharjah.ac.ae

Manuscript received 11 December 2016. Initial review completed 28 December 2016. Revision accepted 06 February 2017.

doi: 10.6133/apjcn.062017.10

world-wide, where women are found to be more prone to ED than men.¹⁷ Similarly, another study has reported a high prevalence of ED among adolescents, especially among girls and overweight adolescents.¹⁸

Peterson et al reported that the factors related to the development of eating disorders in adolescents include relationships with parents, susceptibility to peer pressure, and responsiveness to mass media.¹⁹ Sparhawk indicated that while the media and family were important influences in body image, peer influence was negligible. Parents are regularly the first source of socialization, influencing self-perception and mitigation of eating disturbances in their children.²⁰ Family influence refers to the perceptions or attitudes held by the family towards body image and weight.²¹ The role of parents in the development of ED extends into adolescence and early adulthood.²²

Several studies examined the relationship between media images of thinness for women and muscular shape for men, and their effect on body satisfaction, to disordered eating.^{23,24} A study conducted in Pakistan stated that media exposure has a considerable negative effect on body image dissatisfaction amongst university students.²¹

Recently, university students have been reported as being a population at risk of developing unhealthy body images and unhealthy eating behaviors.¹⁶ Therefore, college students are categorized as a population at high risk of developing unhealthy body images leading to unhealthy eating behaviour.^{16,25} Many studies have reported the high prevalence of body image dissatisfaction among university students.²⁶⁻²⁹ Musaiger et al have shown that obese women Kuwaiti university students were more likely to be influenced by mass media in dieting to lose weight and in their ideation of a perfect body shape than men.⁸

Few studies have investigated the prevalence of ED and their predictors in the UAE. Moreover, no previous study has investigated the influences of family and the media on body image and their associations with the onset of eating disorders among college students in the UAE. Consequently, the aim of this study is to identify the influence of parental factors and mass media and body image concerns on the onset of eating disorders among female and male university students.

METHODS

This cross-sectional study was conducted between January 2015 and April 2015. The targeted population was students attending one of three universities in University City, Sharjah, United Arab Emirates. A total of 662 students (407 women and 255 men), aged between 18-25 years, participated in the study.

The study was approved by the Institutional Review Board of the Ethic -Research Ethics Committee- at the University of Sharjah (Reference No.: Pending006/S).

Data was collected anonymously from a web-based survey on a secure server at <https://www.quicksurveys.com>. The link <https://www.quicksurveys.com/s/Hr9m3SB> was sent to the students through their university e-mail accounts, and their response to the e-mail was considered as consent to their participation. As well as a demographic questionnaire, the following self-report measures were administered.

Data collection tools

After consenting to the survey, the participants completed the questionnaire regarding sociodemographic factors, including age, sex, ethnicity, and marital status. Body mass index (BMI) was calculated based on self-reported weight and height. The BMI was stratified into underweight, normal weight, overweight and obese groups using the cutoff points established by the World Health Organization.³⁰

Questionnaires included the following validated scales:

- Eating Attitudes Test (EAT-26)©: used to identify those at risk for disordered eating attitudes.³¹ The EAT-26 test has been validated and widely used in several countries and among various age groups. It is a self-reported measure and the scores are ranked on a 6-point Likert scale. The participant was considered at risk for disordered eating attitudes and behaviors, and further evaluation by a mental health professional was deemed, when the total score was 20 points or above. Media Influence Scale: consists of 10 items to measure the participants' levels of interest in magazines, television shows, and other mass media that promote a thin body ideal.^{23,32}
- Family Influence Scale (FIS): is a 12-item measure designed to assess family attitudes toward appearance or family focus on appearance and attractiveness (e.g. "I have noticed a strong message from my family to have a thin body", "in my family, people make favorable comments about the slender figures of other women"). The FIS is constructed along a 5-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). Reverse scoring was used for the present study so that higher scores represent more problematic family attitudes.²³
- Body Shape Questionnaire (BSQ): This inventory was adapted from Cooper et al. (1986). The BSQ is a self-applied questionnaire with 8 items assessing the level of preoccupation with weight and body shape over the past four weeks. Items were ranked using a 6-point Likert scale ('never', 'rarely', 'sometimes', 'often', 'very often,' and 'always'). Higher BSQ scores were expected from participants who were more concerned about their weight and shape.³³

Data analysis

Data were coded and analyzed using Statistical Package for the Social Sciences (SPSS) program version 21.0. Means and standard deviations were calculated for age, BMI, EAT-26 Score, BSQ score, media and FIS. To compare the means of these variables in the men and women groups, the independent t-test was used; to compare the means of the same variables among different BMI groups, the one-way ANOVA test was applied. Frequencies and percentages were calculated for other variables. Correlation coefficient (r) and binary logistic regression were performed to test the relationships among variables. The level of significance was set at $p < 0.05$.

RESULTS

The general characteristics of the participants are shown in Table 1. A total of 662 [407 (61.5%) women and 255

Table 1. General characteristics of the participants (n=662)

Data	N	%
Gender		
Women	407	61.5
Men	255	38.5
Ethnicity		
Arabs	579	87.5
Non-Arabs	83	12.5
Educational level		
First year	168	25.4
Second year	171	25.8
Third year	136	20.5
Fourth year	187	28.2
BMI		
Underweight	49	7.4
Normal	395	59.7
Overweight	132	19.9
Obese	86	13
EAT-26 Score		
<20	442	66.8
≥20	220	33.2
BSQ		
No concerns	365	55.1
Mild concerns	148	22.4
Moderate concerns	113	17.1
Marked concerns	36	5.4

BMI: body mass index; EAT-26: Eating Attitude Test-26; BSQ: Body Shape Questionnaire.

(38.5%) men] participated in this study. The mean age of the participants was 20.4±1.85 years with no significant difference between men and women. About 60% of the participants had normal BMI with a mean of 24.1±5.6 kg/m² and men had significantly higher BMI than women. The majority of the participants were Arabs (87.5%), and were, to some extent, fairly evenly distributed from the first to the fourth years of university. About 33% had EAT-26 score ≥20 and approximately 45% showed mild to marked concerns about their body shape. The mean EAT-26 score was 16.8±12.5 with no significant difference between men and women, while the mean BSQ score was 16.3±9.8, with women (17.0±10) having a sig-

nificantly higher score compared to men (15.2±9.6). The mean media score was 29.6±9.3, with highly significant difference between men and women (26.6±9.5 vs 31.09±8.7, $p<0.001$). The mean FIS was 32.5±9.9 with no significant difference between men and women (Table 2).

Results in Table 3 and Figure 1 demonstrate the comparisons of the means of the EAT-26 score, BSQ, media, and FIS among underweight, normal, overweight and obese participants. There were significant differences in the means of all scores, except for the media, among the four BMI groups with a common trend of an increasing score with the increase in BMI.

The correlations of the BMI, BSQ, media, and FIS with the EAT-26 score are presented in Table 4. The EAT-26 score showed highly significant positive correlations with the BMI, BSQ, media, and FIS. The strongest was with the BSQ ($r=0.48$), followed by FIS, Media and BMI ($r=0.42$, $r=0.272$ and $r=0.18$ respectively). The BMI showed highly significant positive correlations only with the BSQ ($r=0.37$) and FIS ($r=0.37$) but not with the media, which demonstrated highly significant positive correlation with the FIS ($r=0.34$).

Table 5 depicts the risk prediction for eating disorders and shows that both BMI and BSQ scores were associated with EAT-26 score. BMI was positively associated with the EAT-26 score ($B=0.039$, $OR=1.04$, 95% CI: 1.007-1.074, $p=0.017$), while the BSQ was the best predictor and was inversely associated with the EAT-26 score ($B=-1.51$, $OR=0.219$, 95% CI: 0.152-0.316, $p<0.001$).

DISCUSSION

This study showed that about one-third of the participants were at risk of developing ED and 45% had concerns about their body shape.

The prevalence of disordered eating was found to be higher than that previously reported among university students,^{11,12} as well as among adolescents in the UAE and other Arab countries.¹³⁻¹⁵ In fact, results indicate an even higher incidence of eating disorders than has been reported in Western countries.³⁴⁻³⁷

Table 2. Comparisons of EAT-26 score and BSQ score between men and women

	All	Men (N=255)	Women (N=255)	<i>p</i> value
Age (years)	20.3±1.8	20.4±1.8	20.3±1.8	0.88
BMI (kg/m ²)	24.1±5.6	25.8±6.2	23.0±4.9	<0.001
EAT-26	16.8±12.5	16.8±13.0	16.8±12.3	0.99
BSQ	16.3±9.8	15.2±9.6	17.0±10.0	0.021
Media score	29.4±9.3	26.6±9.5	31.1±8.7	<0.001
FIS	32.5±9.9	32.4±10.5	32.5±9.6	0.89

BMI: body mass index; EAT-26: Eating Attitude Test-26; BSQ: Body Shape Questionnaire; FIS: Family Influences.

Table 3. Comparisons of EAT-26 score and BSQ score among different BMI groups using ANOVA test

	Underweight (N=49)	Normal Weight (N=395)	Overweight (N=132)	Obese (N=82)	<i>p</i> value
EAT-26	14.5±9.8	15.8±12.2	18.2±12.8	20.7±14.1	0.003
BSQ	9.7±8.5	14.9±9.5	19.3±9.2	21.5±9.2	<0.001
Media score	28.3±9.0	29.9±9.1	28.7±9.6	28.3±9.6	0.256
FIS ⁴	24.9±7.1	31.2±9.4	34.9±10.0	39.2±8.9	<0.001

BMI: body mass index; EAT-26: Eating Attitude Test-26; BSQ: Body Shape Questionnaire; FIS: Family Influences.

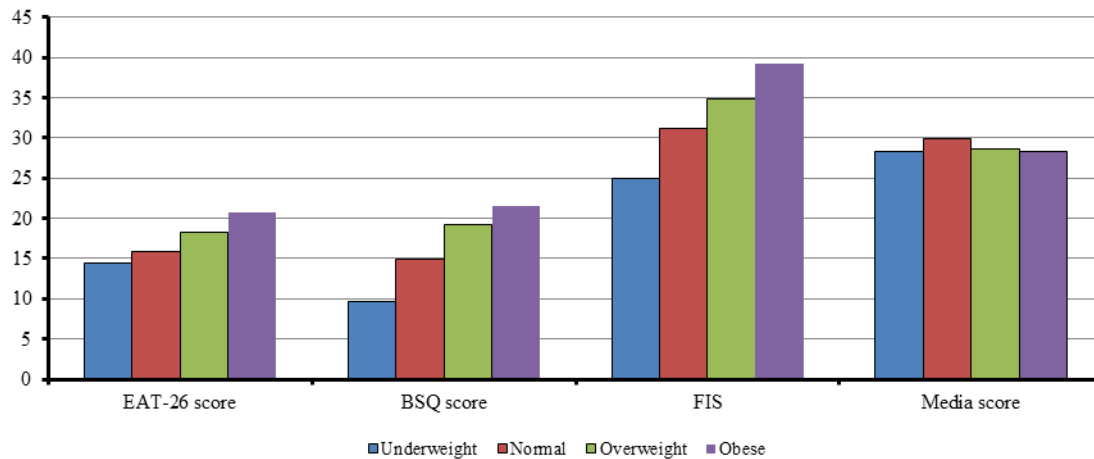


Figure 1. Comparisons of EAT-26 (Eating Attitude Test-26) score, BSQ (Body Shape Questionnaire) score, media score and FIS (Family influences Scale) among different BMI (Body Mass index) groups.

The transition from adolescence to adulthood reflects the vulnerability of this population group, during the life stage when new individual and social skills are being acquired, and when social and environmental pressures may predispose this population to the development of body image dissatisfaction and disorder.²⁸ Nevertheless, previous studies have indicated that university students may have a higher proportion of unhealthy eating behaviours and attitudes, and may be considered a high-risk group.^{2,35}

Additionally, this study also highlighted that, in its population sample, body image concerns, and family and media influences were significantly related to increased risk of developing an ED. Similar results were reported by previous studies that linked parental influence and mass media with body image concerns, which were associated with increased incidence of disordered eating.^{23,38,39} Exposure to media images of thin celebrities and models on television and magazines can increase body dissatisfaction which, in turn, increases the risk of developing ED among young adults.²³ Studies revealed that messages

featuring thin body images play a role in the development of body shape concerns and dissatisfaction among adolescents and young adults in the Arab countries.^{8,13} Moreover, authors have reported that a family culture focusing on appearance and shape has a direct effect on the development of body image distortion.¹⁸ Parents' comments and criticisms relating to body size have been linked to body image concerns and disordered eating.^{38,40,41} Over time, parental commentary about their children's weight and body shape plays an important role in their developing ED.^{38,42}

In this study, BMI had a significant positive association with body image concerns. It was revealed that as BMI increases, the BSQ also increases, which subsequently raises the risk of developing ED. These findings are consistent with previous research which found that higher BMI predicted greater body dissatisfaction and preoccupation with weight and shape.^{43,44} Previously, it was reported that high BMI is a risk factor for body image dissatisfaction.⁴⁵ A recent study demonstrated that the risk of disordered eating attitudes among obese university students was twice that found among their non-obese counterparts.⁴⁶ Young adults with aberrant weight may focus on their body image and shape and this may increase their concerns.⁴⁷ In this direction, results indicated that BMI and BSQ were the most significant predictors of risk of developing ED among the university students in this study. Students with higher BMI had higher BSQ scores and ultimately, higher EAT-26 scores. Similarly, other researchers have reported that BMI was positively correlated with EAT-26.¹²

Although women students were more concerned about their body shape compared to men students, sex was not a significant predictor of the risk of developing an eating disorder among the college students in our study. Similar findings of college women exhibiting greater body dissatisfaction than their male counterparts have been reported by others.^{27,48} It would seem that sociocultural pressures to attain a thin and fit body shape have a greater effect on young women than men, and such pressures were found to be the primary factors in the development of EDs among young women in college.^{16,49} The findings of this study concur with those conducted in Western societies,

Table 4. Correlations of the BMI, BSQ, media, and FIS with the EAT-26 score. (n=662)

	EAT-26 score	BMI	Media
BMI	0.18**	-	-
BSQ	0.48**	0.37**	-
Media	0.27**	-0.03	-
FIS	0.42**	0.37**	0.34**

BMI: body mass index; EAT-26: Eating Attitude Test-26; BSQ: Body Shape Questionnaire; FIS: Family Influences.

** $p < 0.001$

Table 5. Risk prediction for eating disorders among university students. (n=662)

Variables	EAT-26			
	B	OR*	95% CI	p value
Sex	0.049	1.05	0.724-1.524	0.79
BMI	0.039	1.04	1.007-1.074	0.017
BSQ	-1.51	0.219	0.152-0.316	<0.001

BMI: body mass index; EAT-26: Eating Attitude Test-26; BSQ: Body Shape Questionnaire; OR: Odd ratio; CI: Confidence interval.

many of which reported similar rates of disordered eating among men and women.^{12,50,51}

This study demonstrated that the relationship between the influence of family and of media may be mediated by body image concerns which were distorted by the media and influenced parents' comments and attitudes.³⁸ It has been found that a concern with body image can eventually lead to improper weight control practices among university students, with the consequent development of disordered eating habits.^{2,26,52}

Conclusion and recommendations

This study has important implications for treating and preventing EDs among university students in the UAE. Results reported here indicate the prevalence of body shape dissatisfaction among the university student population, and that the consequent risk of developing an eating disorder provides grounds for concern. Results indicate that media images and judgmental families are significant influences in young adults' eating habits becoming disordered. Therefore, this study suggests the importance of investigating family histories in the treatment of young people at risk to reveal the influence of familial perceptions and attitudes about weight and appearance. Given the prevalence of EDs and body shape concerns among men and women university students, the need for early prevention and treatment plans to be developed is warranted. Furthermore, interventional nutrition education programs, as well as counseling, should be targeted to this group to provide knowledge about healthy ways of controlling weight and countering negative body image perceptions.

Limitations

The main limitation of this study is that BMI calculations were based on self-reported measures of weight and height, which may have caused inaccuracy owing to response bias. A second limitation was the cross-sectional design which showed the associations between risk factors, but not the causation, and thus, results cannot be generalized. It is recommended that future research includes face to face interviews to avoid the possibility of false positives.

AUTHOR DISCLOSURES

The authors declare no conflict of interest.

REFERENCES

- Cash TF, Deagle EA. The nature and extent of body-image disturbances in anorexia nervosa and bulimia nervosa: a meta-analysis. *Int J Eat Disord.* 1997;22:107-25. doi: 10.1002/(SICI)1098-108X(199709)22:2<107::AID-EAT1>3.0.CO;2
- El Ansari W, Clausen S. V., Mabhala A, Stock C. How do I look? Body image perceptions among university students from England and Denmark. *Int J Environ Res Public Health.* 2010;7:583. doi: 10.3390/ijerph7020583.
- As-Sa'edi E, Sheerah S, Al-Ayoubi R, Al-Jehani A, Tajaddin W, Habeeb H. Body image dissatisfaction: prevalence and relation to body mass index among female medical students in Taibah University, 2011. *J Taibah Univ Med Sci.* 2013;8:126-33.
- Musaiger AO, Al-Mannai M, Tayyem R, Al-Lalla O, Ali EYA, Kalam F et al. Risk of disordered eating attitudes among adolescents in seven Arab countries by gender and obesity: a cross-cultural study. *Appetite.* 2013;60:162-7. doi: 10.1016/j.appet.2012.10.012
- Smink FR, van Hoeken D, Hoek HW. Epidemiology of eating disorders: incidence, prevalence and mortality rates. *Curr Psychiatry Rep.* 2012;14:406-14. doi: 10.1007/s11920-012-0282-y.
- Lorenzen LA, Grieve FG, Thomas A. Brief report: exposure to muscular male models decreases men's body satisfaction. *Sex Roles.* 2004;51:743-8. doi: 10.1007/s11199-004-0723-0.
- Warren CS, Gleaves DH, Cepeda-Benito A, Fernandez Mdel C, Rodriguez-Ruiz S. Ethnicity as a protective factor against internalization of a thin ideal and body dissatisfaction. *Int J Eat Disord.* 2005;37:241-9. doi: 10.1002/eat.20102.
- Musaiger AO, Al-Mannai M. Role of obesity and media in body weight concern among female university students in Kuwait. *Eat Behav.* 2013;14:229-32. doi: 10.1016/j.eatbeh.2012.12.004.
- Ford KA, Dolan BM, Evans C. Cultural factors in the eating disorders: a study of body shape preferences of Arab students. *J Psychosom Res.* 1990;34:501-7. doi: 10.1016/0022-3999(90)90024-X.
- Jarry JL, Kossert AL. Self-esteem threat combined with exposure to thin media images leads to body image compensatory self-enhancement. *Body Image.* 2007;4:39-50. doi: 10.1016/j.bodyim.2006.12.003
- Thomas J, Khan S, Abdulrahman AA. Eating attitudes and body image concerns among female university students in the United Arab Emirates. *Appetite.* 2010;54:595-8. doi: 10.1016/j.appet.2010.02.008.
- Schulte SJ, Thomas J. Relationship between eating pathology, body dissatisfaction and depressive symptoms among male and female adolescents in the United Arab Emirates. *Eat Behav.* 2013;14:157-60. doi: 10.1016/j.eatbeh.2013.01.015.
- Eapen V, Mabrouk AA, Bin-Othman S. Disordered eating attitudes and symptomatology among adolescent girls in the United Arab Emirates. *Eat Behav.* 2006;7:53-60. doi: 10.1016/j.eatbeh.2005.07.001.
- Al-Adawi S, Dorvlo ASS, Burke DT, Al-Bahlani S, Martin RG, Al-Ismaily S. Presence and severity of anorexia and bulimia among male and female Omani and non-Omani adolescents. *J Am Acad Child Adolesc Psychiatry.* 2002;41:1124-1130. doi: 10.1097/00004583-200209000-00013.
- Al-Subaie AS. Some correlates of dieting behavior in Saudi schoolgirls. *Int J Eat Disord.* 2000;28:242-6. doi: 10.1002/1098-108X(200009)28:2<242::AID-EAT16>3.0.CO;2-Z.
- El Ansari W, Dibba E, Labeeb S, Stock C. Body image concern and its correlates among male and female undergraduate students at Assuit University in Egypt. *Glob J Health Sci.* 2014;6:105-17. doi: 10.5539/gjhs.v6n5p105.
- Striegel-Moore RH, Bulik CM. Risk factors for eating disorders. *Am Psychol.* 2007;62:181-98.
- Abraczinskas M, Fisak B, Barnes RD. The relation between parental influence, body image, and eating behaviors in a nonclinical female sample. *Body Image.* 2012;9:93-100. doi: 10.1016/j.bodyim.2011.10.005.
- Peterson CB, Crosby RD, Wonderlich SA, Joiner T, Crow SJ, Mitchell JE, Bardone-Cone AM, Klein M, le Grange D. Psychometric properties of the eating disorder examination-questionnaire: factor structure and internal consistency. *Int J Eat Disord.* 2007;40:386-9. doi: 10.1002/eat.20373.
- Sparhawk JM. Body image and the media: the media's influence on body image. 2003. [cited 2016/04]; Available

- from: <http://www2.uwstout.edu/content/lib/thesis/2003/2003sparhawkj.pdf>.
21. Khan AN, Khalid S, Khan HI, Jabeen M. Impact of today's media on university student's body image in Pakistan: a conservative, developing country's perspective. *BMC Public Health*. 2011;11:379. doi: 10.1186/1471-2458-11-379.
 22. Aquilino WS, Supple AJ. Long-term effects of parenting practices during adolescence on well-being outcomes in young adulthood. *J Fam Issues*. 2001;22:289-308.
 23. Young EA, McFatter R, Clopton JR. Family functioning, peer influence, and media influence as predictors of bulimic behavior. *Eat Behav*. 2001;2:323-37. doi: 10.1016/S1471-0153(01)00038-1.
 24. Hogan MJ, Strasburger VC. Body image, eating disorders, and the media. *Adolesc Med State Art Rev*. 2008;19:521-46, x-xi.
 25. Hudson JI, Hiripi E, Pope HG, Kessler RC. The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biol Psychiatry*. 2007;61:348-58. doi: 10.1016/j.biopsych.2006.03.040.
 26. Taylor CB, Bryson S, Luce KH, Cuning D, Doyle AC, Abascal LB, Rockwell R, Dev P, Winzelberg AJ, Wilfley DE. Prevention of eating disorders in at-risk college-age women. *Arch Gen Psychiatry*. 2006;63:881-8. doi: 10.1001/archpsyc.63.8.881.
 27. Kuan PX, Ho HL, Shuhaili MS, Siti AA, Gudum HR. Gender differences in body mass index, body weight perception and weight loss strategies among undergraduates in Universiti Malaysia Sarawak. *Malays J Nutr*. 2011;17:67-75.
 28. Ferrari EP, Petroski EL, Silva DAS. Prevalence of body image dissatisfaction and associated factors among physical education students. *Trends Psychiatry Psychother*. 2013;35:119-27. doi: 10.1590/S2237-60892013000200005.
 29. Sepulveda AR, Carrobbles JA, Gandarillas AM. Gender, school and academic year differences among Spanish university students at high-risk for developing an eating disorder: an epidemiologic study. *BMC Public Health*. 2008;8:102. doi: 10.1186/1471-2458-8-102.
 30. WHO. Obesity and overweight. factsheets. [cited 2015/03/25]; Available from: <http://www.who.int/>.
 31. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The eating attitudes test: psychometric features and clinical correlates. *Psychol Med*. 1982;12:871-8.
 32. Stice E, Schupak-Neuberg E, Shaw HE, Stein RI. Relation of media exposure to eating disorder symptomatology: an examination of mediating mechanisms. *J Abnorm Psychol*. 1994;103:836-40. doi: 10.1037/0021-843X.103.4.836.
 33. Cooper PJ, Taylor MJ, Cooper Z, Fairburn CG. The development and validation of the Body Shape Questionnaire. *Int J Eat Disord*. 1986;6:485-94. doi: 10.1002/1098-108X(198707)6:4<485::AID-EAT2260060405>3.0.CO;2-O.
 34. Graber JA, Tyrka AR, Brooks-Gunn J. How similar are correlates of different subclinical eating problems and bulimia nervosa? *J Child Psychol Psychiatry*. 2003;44:262-73. doi: 10.1111/1469-7610.00119.
 35. Sepulveda AR, Todd G, Whitaker W, Grover M, Stahl D, Treasure J. Expressed emotion in relatives of patients with eating disorders following skills training program. *Int J Eat Disord*. 2010;43:603-10. doi: 10.1002/eat.20749.
 36. Calado M, Lameiras M, Sepulveda AR, Rodriguez Y, Carrera M V. The association between exposure to mass media and body dissatisfaction among Spanish adolescents. *Womens Health Issues*. 2011;21:390-9. doi: 10.1016/j.whi.2011.02.013.
 37. Martins C, Carraça E, Teixeira P, Silva, A, Petroski E. Prevalence of body shape concerns and associated factors among Brazilian early adolescents. *Hum Mov*. 2014;15:12-20.
 38. Kluck AS. Family influence on disordered eating: the role of body image dissatisfaction. *Body Image*. 2010;7:8-14.
 39. Martínez-González MA, Gual P, Lahortiga F, Alonso Y, de Irala-Estévez J, Cervera S. Parental factors, mass media influences, and the onset of eating disorders in a prospective population-based cohort. *Pediatrics*. 2003;111:315-20. doi: 10.2478/humo-2013-0047.
 40. Keel PK, Heatherton TF, Hamden JL, Hornig CD. Mothers, fathers, and daughters: dieting and disordered eating. *Eat Disord*. 1997;5:216-28.
 41. Baker CW, Whisman MA, Brownell KD. Studying intergenerational transmission of eating attitudes and behaviors: methodological and conceptual questions. *Health Psychol*. 2000;19:376-81. doi: 10.1037/0278-6133.19.4.376.
 42. Vincent MA, McCabe MP, Vincent M, McCabe M. Gender differences among adolescents in family, and peer influences on body dissatisfaction, weight loss, and binge eating behaviors. *J Youth Adolesc*. 2000;29:205-21.
 43. Calzo JP, Sonnevile KR, Haines J, Blood EA, Field AE, Austin SB. The development of associations among body mass index, body dissatisfaction, and weight and shape concern in adolescent boys and girls. *J Adolesc Health*. 2012;51:517-23. doi: 10.1016/j.jadohealth.2012.02.021.
 44. Santana ML, Silva Rde C, Assis AM, Raich RM, Machado ME, de J Pinto E, de Moraes LT, Ribeiro Júnior Hda C. Factors associated with body image dissatisfaction among adolescents in public schools students in Salvador, Brazil. *NutrHosp*. 2013;28:747-55. doi: 10.3305/nh.2013.28.3.6281.
 45. van den Berg P, Paxton SJ, Keery H, Wall M, Guo J, Neumark-Sztainer D. Body dissatisfaction and body comparison with media images in men and women. *Body Image*. 2007;4:257-68. doi: 10.1016/j.bodyim.2007.04.003.
 46. MUSAIGER AO, Al-Kandari FI, Al-Mannai M, Al-Faraj AM, Bouriki FA, Shehab FS et al. Disordered eating attitudes among university students in Kuwait: the role of gender and obesity. *Int J Prev Med*. 2016;7:67. doi: 10.4103/2008-7802.180413.
 47. Ahern AL, Bennett KM, Kelly M, Hetherington MM. A qualitative exploration of young women's attitudes towards the thin ideal. *J Health Psychol*. 2011;16:70-9. doi: 10.1177/1359105310367690.
 48. Blow J, Cooper T V. Predictors of body dissatisfaction in a Hispanic college student sample. *Eat Behav*. 2014;15:1-4. doi: 10.1016/j.eatbeh.2013.10.010.
 49. Feingold A, Mazzella R, Feingold A, Mazzella R. Gender differences in body image are increasing. *Psychol Sci*. 1998;9:190-5.
 50. Blashill AJ. Gender roles, eating pathology, and body dissatisfaction in men: a meta-analysis. *Body Image*. 2011;8:1-11. doi: 10.1016/j.bodyim.2010.09.002.
 51. Chin YS, Taib MNM, Shariff ZM, Khor GL. Development of multi-dimensional body image scale for Malaysian female adolescents. *Nutr Res Pract*. 2008;2:85-92. doi: 10.4162/nrp.2008.2.2.85.
 52. Stice E, Shaw HE. Role of body dissatisfaction in the onset and maintenance of eating pathology: a synthesis of research findings. *J Psychosom Res*. 2002;53:985-99. doi: 10.4162/nrp.2008.2.2.85.