Investigation of the Relationship between Eating Disorder Symptoms and Body Image in Women Attending to Gyms in Ahvaz in 2009

NILOUFAR KHAJEDDIN[1]* and PEGAH JAMALINIA[2]

[1]Department of Psychiatry, Golestan Educational Hospital,
Faculty of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
[2]School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

ABSTRACT

Eating disorder is one of the common disorders in psychiatry, caused by the nutrition behavior disorder for weight loss as a result of functional and psychological diseases as well as social damage. This disorder appears in the form of functional, emotional, cognitive, and behavioral disorders that leads to mood disorders, interpersonal relationships, internal conflict strengthening hypochondriasis in the person that is further seen in the communities paying more attention to weight loss and being thin in social and cultural terms. Given that people with eating disorders, resort to strict diets, fasting, use of laxatives and diuretics, and excessive exercise, attending to gyms makes these people accessible. Since according to the present studies eating disorders statistics of our urban society is the same as Western societies, and due to the lack of reliable statistics in this field in Ahvaz, this study aims to investigate the prevalence of eating disorders and background factors associated with it, especially the fear of body image in our culture, providing the background to prevent, screening, and therapeutic intervention in these patients. Obviously, we can achieve better results with inclusive education by impact on the knowledge and attitudes of the society in the long-term. This study is a descriptive-analytical study conducted in Ahvaz University of Medical Sciences in 2010. In this study, first a list of the women gyms has been provided, and then 20 gyms have been selected randomly. The checklists of eating attitudes test and fear of body image have been along with demographic data, and their height and weights were measured as well. Approximately 1000 persons received the questionnaires during the year, that 500 have been collected and 315 persons filled the questionnaires and their information have been usable. The data obtained from filling the questionnaires have been entered and analyzed by SPSS18. The mean score of eating attitude test in all the women have been 16.4 ± 8.4 ranging from 1 to 50. In addition, according to the results, 59 patients (18.7%), and 256 patients (81.3%) of the studied women had a positive and negative screening of eating attitudes test, respectively. Average score for fear of body image in these women has been 33 ± 9.5 ranging from 19 to 76. In addition, according to the results, 46 patients (14.6%) of the studied women had disturbed body image and 269 (85.4%) with a score of less than 42, did not have disturbed body image. Pearson correlation test conducted on the obtained data showed that there is a significant relationship between the disturbed body image and disordered eating attitudes as 0.36 (P< 0.001). Logistic regression analysis performed on data obtained from the study showed that the risk of eating disorders for women with disturbed body image is five times higher than women with no disturbed body image (OR = 5.1), and according to the mentioned test this odds ratio is quite significant (p< 0.001). In addition, the obtained confidence interval for the odds ratio has been 6.2 to 10, and because the above-mentioned range does not include the number 1, this odds ratio is significant (95%CI = 2.6 - 10). According to the results of this study, there is a relationship between disordered eating attitudes and disturbed body image, and we must promote public awareness about the effects of eating disorders complications via the media and the press to, and try to treat the eating disorders and disturbed body image in patients and people at risk through psychiatry and psychology.

Key words*: Eating disorder, Body image.

INTRODUCTION

Eating disorder is one of the common disorders in psychiatry, caused by the nutrition behavior disorder for weight loss as a result of functional and psychological diseases as well as social damage (1). Eating disorders include two major categories, one is anorexia nervosa or bulimia, and another category not having the specific and complete symptoms of these two categories (2, 3).

Different environmental, social, psychological, and mental dynamics factors involve in the development of eating disorders. Some criteria have been considered in DSM-IV-TR (2, 3). In a study in which the prevalence of abnormal eating attitudes and their related factors had been investigated in the students, 10.5% of the students had abnormal eating attitudes. There has been a significant relationship between depression and BMI variables with abnormal eating attitudes, and the abnormal eating attitudes has been more in fat and obese people than the normal people (1). Results of a 3-year study on a population base of adolescent girls and boys, the type of diet has been the most important factor in the onset of eating disorders. One of the themes considered in the course of investigating this disorder, is abnormal eating attitudes which includes unusual attitudes and perspectives about the current and ideal weight, body image and eating behaviors, preoccupation with food contents and their metabolism in the body and using special procedures for disposal of food from the body (1, 2). Results of a study showed that people with anorexia nervosa or bulimia also highly suffer from these disorders (3).
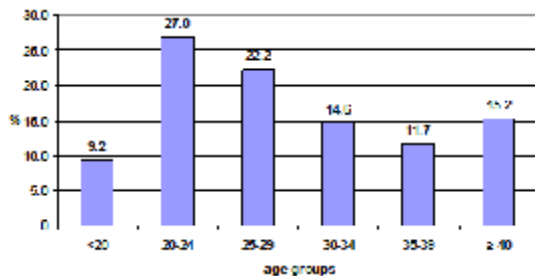
Fear of body image (BICI) means unusual views on current weight and body image, including body dysmorphic disorders and fear of body image that are classified. Patients with body dysmorphic disorder have persistent feeling bad about some aspects of their appearance or face, despite the fact that their appearance is almost or completely normal (4). Body dysmorphic disorder prevalence and fear of body image has been reported 2%, and up to 12% in the general population and psychiatric

populations, respectively. This disorder is most prevalent in ages 15 to 30 and is more common in women than men. Patients with body dysmorphic disorder, despite the fact that their appearance is almost or completely normal, have continuous feeling of being ugly in some aspects of their appearance or face (1, 2, 5, 6). Most girls and women with anorexia nervosa are from higher socio-economic class, which can be due to social pressures for weight loss in this class of society (2, 3, 7, 8). In the epidemiology study of eating disorders in Iran by Nobakht in 2001 on the girl students, the prevalence of anorexia nervosa and and syndrome relative body dissatisfaction has been evaluated 9% and 6.6%, respectively, indicating that an interest in weight loss in female students in Tehran has been prevalent and comparable to Western societies (9). Each of these disorders as a result of their characteristics, result in major complications, especially in terms of malnutrition and the threat to public health as well as mental health threat to the patients. The prevalence age of these disorders and its coincidence with social activities and the person's return highlights the importance of the issue, as it can cause depression, obsession and addiction, which ultimately undermine the social performance and the sensitivity of the relations between the members. Finally, it is seen that anorexia nervosa and bulimia nervosa have up to 18% and 3% mortality, respectively (1, 10). Biomedical theories diagnose biological factors as the cause of eating disorders. These factors can include from hormonal imbalance to serotonin malfunction in the brain. Some researchers have pointed to the possibility of genetic origin. Biomedical theorists suggest a combination of medication and psychotherapy as the treatment (11). In addition, cognitive-behavioral therapy teaches the patients to identify overeating environmental triggers, including worrying foods into their diet, but control the amount of their eating, and recognize and change their distorted cognitions about food, weight, and body (12). By cognitive behavioral therapy (CBT), there would occur great change in behaviors such as binge eating and dietary restriction, but even after the treatment, there remains concern about weight and body shape (13). Most clinicians agree that psychotherapy for eating disorders, is necessary even for people who are taking antidepressant medication (2, 14). Given that

people with eating disorders, resort to strict diets, fasting, use of laxatives and diuretics, and excessive exercise, attending to gyms makes these people easily accessible. In addition, since according to the present studies eating disorders statistics of our urban society is the same as Western societies, and due to the lack of reliable statistics in this field in Ahvaz, this study aims to investigate the prevalence of eating disorders symptoms and background factors associated with it, especially the fear of body image in our culture, providing the background to prevent, screening, and therapeutic intervention in these patients. Obviously, we can achieve better results with inclusive education by impact on the knowledge and attitudes of the society in the long-term.

MATERIALS AND METHODS

This study is a descriptive-analytical study conducted in Ahvaz University of Medical Sciences

in 2010. The study population of women attending gyms in Ahvaz in 2009. Random sampling from a list of sports centers for Ahvazi women (obtained from the Department of Physical Education) has been performed in the form of questioners (fear of body image questioner BICI) in the gyms, until 315 samples have been finally provided. Finally, the collected study data have been analyzed by statistical software SPSS18.

RESULTS

In this study, 315 women have been studied. The mean age has been 29.5 ± 8.9. In fig. 1, the frequency percentage of their age group is shown.

According to this chart, the age group 20-24 years, and 25-29 had the highest frequency.

Fig. 1: Frequency of age groups in the study population
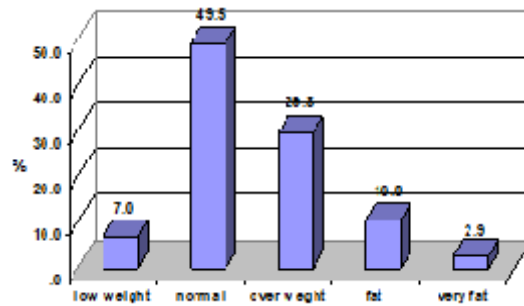
Fig. 2: Frequency of BMI in women

Table 1: Mean, standard deviation, confidence interval, minimum and maximum BMI in terms of education

Education	Number	Average BMI	Standard deviation	Confidence limits		Minimum	Maximum
				Lower limit	Upper limit		
Middle school diploma	13	30.2	2.5	28.7	31.7	25.7	33.3
Diploma	111	25.8	4.6	24.9	26.7	17.1	39.6
Associate diploma	52	24.9	4.5	23.7	26.2	17.6	34.3
BS	91	24.2	4.3	23.3	25.1	17	39.6
MA	11	24.2	1.2	23.4	25	22	25.6
PhD	5	23.3	0.5	22.7	23.9	22.5	23.5
Student	32	22.7	3.9	21.3	24.1	16.2	35.7
Total	315	25	4.5	24.5	25.5	16.2	39.6

The average weight and height for women has been 65.3 ± 12.3 kg, and 161.8 ± 6 cm, respectively. The patients' weight and height also has been 37 to 107 kg, and 180-145 cm, respectively.

Mean BMI in women has been 25 ± 4.5 with a range of 16.2-39.6. The frequency distribution of BMI is shown in fig 2

According to fig 2, 22 patients (7%) have been underweight (BMI< 18.5), 156 patients (49.5%) normal weight (18.5 <BMI< 24.99), 94 patients (29.8%) overweight (25 <BMI< 29.99), 34 patients (10.8%) overweight (30 <BMI< 34.99), and 9 patients (2.9%) have been obese (BMIe" 35).

Average BMI index has been investigated based on the education, according to which, the highest and lowest body mass index have been associated to the patients with middle school diploma (30.2 ± 2.5), and the academic students (22.7 ± 3.9). According to analysis of variance, BMI difference in terms of educational level has had a significant difference (P< 0.001) (table 1). 200 women (63.5%) and 115 women (36.5%) have

Table 2: BMI mean and standard deviation in terms of marital status

Marital status	Mean BMI	Standard deviation	P
Married	26.2	4.2	<0.001
Single	22.7	1.4	
Total	25	4.5	

Table 3: BMI mean and standard deviation in terms of the number of children

Number of children	Average BMI	Standard deviation
No children	23.3	4.1
One child	25.7	4.1
Two children	26.3	3.8
Three and more children	28.3	4.6

Table 4: BMI mean and standard deviation in terms of occupation

Occupation	Average BMI	Standard deviation
Unemployed	22.5	4.3
Housewife	26.7	4.1
Student	22.7	9/3
Self-employed	24.9	7/4
Employee	24.7	4.1

Table 5: Age mean and standard deviation based on screening results of eating attitudes test

Eating attitudes	Average age	Standard deviation
Positive	30.4	8.4
Negative	29.3	9

Table 6: BMI mean and standard deviation based on screening results of eating attitudes test

Eating attitudes	Average BMI	Standard deviation
Positive	26.4	4.7
Negative	24.6	4.4
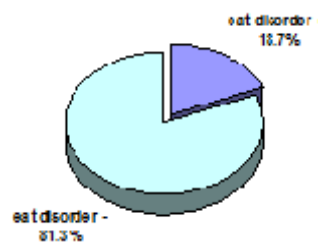
Fig. 3: The frequency of Eating Attitude Tests screening in the study population

been married and single, respectively. Average BMI index in married and single women has been 26.2 ± 4.2 and 22.7 ± 1.4, respectively. According to T-test the married women have been significantly more obese (P< 0.001) (Table 2).

According to the results, the mean BMI in women without children has been lower than the other women (23.3 ± 4.1). In addition, performing analysis of variance showed a significant difference in mean BMI in terms of the number of children (P<0.001) (Table 3).

Unemployed women and students had lower BMI (22.5 ± 3.9 and 22.7 ± 4.3) compared to the others, while the housewives has had the highest average BMI compared with other

occupational groups (26.7 ± 4.1), and by analysis of variance, mean BMI in terms of employment has been significantly different (P <0.001) (table 5).

The mean score of eating attitudes test in all the women have been 16.4 ± 8.4 ranging from 1 to 50. In addition, according to the results, 59 patients (18.7%), and 256 patients (81.3%) of the studied women had a positive and negative screening of eating attitudes test, respectively (fig. 3).

The average age of people being positive or negative in the eating attitudes test screening has been 30.4 ± 8.4 and 29.3 ± 9 years, respectively. According to T-test there has been no significant difference between the two groups (p= 0.37) (Table 6).

Table 7: Frequency distribution of eating attitudes in terms of education

Education / Eating attitudes	Diploma and lower		Academic education		Total	
	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Positive	20	16.1	39	20.4	59	18.7
Negative	104	83.9	152	79.6	256	81.3
Total	124	100	191	100	315	100

Table 8: Frequency of eating attitudes in terms of marital status

Marital status / Eating attitudes	Married		Single		Total	
	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Positive	41	20.5	18	15.7	59	18.7
Negative	159	79.5	97	84.3	256	81.3
Total	200	100	115	100	315	100

Table 9: Frequency distribution of eating attitudes in terms of the number of children

Number of children / Eating attitudes	No children		One child		Two children		Three or more children		Total	
	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Positive	25	15.6	9	17.6	16	27.6	9	19.6	59	18.7
Negative	135	84.4	42	82.4	42	72.4	37	80.4	256	81.3
Total	160	100	51	100	58	100	46	100	315	100

Mean BMI in people being positive or negative in the eating attitudes test has been 24.6 ± 4.4 and 26.4 ± 4.7. According to the T-test, mean BMI has been significantly higher in women with eating disorders. (p= 0.006) (Table 7).

The results indicated that the prevalence of disordered eating among high school graduates and lower feedback 1/16% among those with a university education 4/20% and the chi-square test, there was no significant correlation between level of education and eating disorders (p = 0.34) (Table 8).

The prevalence of disordered eating attitudes in married and single people has been 20.5% and 15.7%, respectively. According to T-chi-square test, eating disorders had no significant difference among married and single people (p= 0.29) (Table 9).

Prevalence of the disordered eating attitudes in people without children, in patients with a child, in those with two children , and in those with three or more children has been 15.6%, 17.6%, 27.6%, 19.6%, respectively. According the Chi square test, there has been no significant

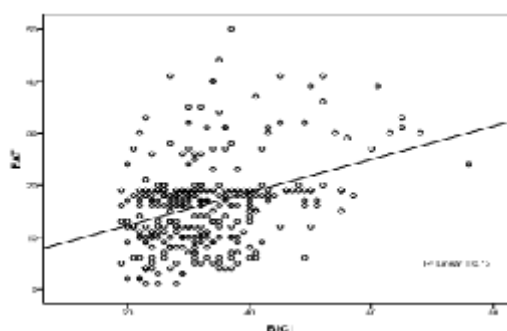**Table 10: Frequency of eating attitudes in terms of the occupation**

Occupation Eating attitudes	Unemployed		Housewife		Student		Self-employed		Employee	
	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Positive	6	10.5	30	22.6	3	9.4	4	25	16	20.8
Negative	51	89.5	103	77.4	29	90.6	12	75	61	79.2
Total	57	100	133	100	32	100	16	100	77	100

Table 11: Frequency distribution of disordered eating attitudes and fear of body image in individuals with a history of mental problems

Target population	The whole community		History of mental problems	
	Number	Percent (%)	Number	Percent (%)
Disordered eating attitudes	59	18.7	5	55
Disturbed body image	46	14.6	3	33.3
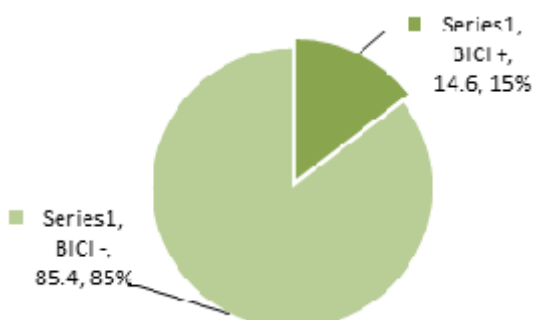
Fig. 4: Frequency of disturbed body image in the studied women

Fig. 5: Relationship between the eating attitudes score and disturbed body image

Table 12: Frequency distribution of body image in terms of eating attitudes

| Eating attitudes | Positive | | Negative | | Total | |
Body image	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Positive	21	35.6	25	9.8	46	14.6
Negative	38	64.4	231	90.2	269	85.4
Total	59	100	256	100	315	100

Table 13: Odds ratio of the disturbed body image for women with disordered eating attitudes

Odds ratio	Confidence interval	P
5.1	2.6 – 10	<0.001

relationship between the number of children and the eating disorder symptoms (p= 0.26) (table 10).

According to the results, there has been no significant relationship between disrupted eating attitudes and employment status of women based on Fisher's exact test (p= 0.16) (Table 11).

The results indicated that the prevalence of disordered eating attitudes as well as the prevalence of fear among people with mental health problems has had a significant difference compared to the general population (P = 0.025) (Table 12).

Average score for fear of body image in these women has been 33 ± 9/5 ranging from 19 to 76. In addition, according to the results, 46 patients (14.6%) of the studied women had disturbed body image and 269 (85.4%) with a score of less than 42, did not have disturbed body image (fig. 4).

Pearson correlation test conducted on the obtained data showed that there has been a significant relationship between the disturbed body image and disordered eating attitudes as 0.36 (P<0.001) (fig. 5).

The results obtained by Chi-square test on the mentioned data showed that there has been quite a significant relationship between disturbed body image and eating disorders symptoms (P< 0.001) (Table 13).

Logistic regression analysis performed on data obtained from the study showed that the risk of eating disorders for women with disturbed body image is five times higher than women with no disturbed body image. (OR= 5.1), and according to the mentioned test this odds ratio is quite significant (p< 0.001). In addition, the obtained confidence interval for the odds ratio has been 6.2 to 10, and this odds ratio is significant (95%CI = 2.6 - 10).

DISCUSSION AND CONCLUSION

The overall objective of this study has been to determine the relationship between eating disorders symptoms and body image in women attending gyms in Ahvaz. The average age of people being positive or negative in the eating attitudes test screening has been 30.4 ± 8.4 and 29.3 ± 9 years. The common age for this disorder is among 15 to 35 years old in the reference books that is consistent with our results (2, 3).

Mean BMI in women has been 25 ± 4.5. BMI among people being positive in eating attitudes test screening has been significantly higher that is consistent with previous studies in this area (1, 15).

Nine participants in our study had a history of mental illnesses, that more than half of them were positive in the eating attitude test screening and 30% of them had abnormal body image that was significantly different compared with other people that were consistent with the results of other studies in this field (1, 10, 14, 16).

According to the results of this study, 18.7% of participants in the eating attitudes test screening have been positive, and 14.6% of the

people with disturbed body image, that the eating disorders prevalence in our study has been higher than the other similar studies (4, 15, 17). One of the main reasons is related to the study population. In other words, women have been studied in our study who participated in sports activities, and exercise is one of the selective compensatory treatment in patients with unusual attitudes to eating and disturbed body image, and the selected sample is not the representative of the whole population, and if a sample has been taken from the total women population, probably the prevalence of eating disorders would be less.

About 30% of the people in our study with disordered eating attitudes, had disturbed body image as well, and about half of people with impaired body image have been positive in the eating attitudes test screening. This statistics show that there has been a significant relationship between eating disorders symptoms and fear of body image in our study sample that is similar to the results of other similar studies (16, 18, 15).

As stated previously and approved in multiple studies, the prevalence of fear of body image and eating disorders in Iranian society is high and similar to western societies. In addition, it has been observed that this phenomenon has been influenced by culture and its prevalence in rising in our society. In multiple studies, significant consequences have been reported as a result of

eating disorders that can be dangerous. According to the young population of Iran, these dangers and their harmful effects in society is more relevant.

According to results obtained in this study, the prevalence of eating disorders in women referring to gyms in Ahvaz has been 18.7%, and prevalence of fear of body image in them is 14.6%, that is more compared to the general population of Iran. This result confirms our hypothesis that people with eating disorders resort to physical exercises. In addition, it has been observed in this study that people with eating disorders symptoms have been five times more likely to suffer from fear of body image, indicating a close relationship between eating disorders and body image, and their relationship of the two with physical exercises is confirmed due to their high prevalence in our population compared to other societies. In this study, mean BMI has been also higher in these patients in addition to disturbed body image. In addition, the risk of psychological disorders is also higher, that the two can be considered as the effects of eating disorders in our society. In this study, there has been no significant relationship between the level of education, occupation, and marital status, indicating that eating disorders, independent of the socio-cultural issues, includes all stratums of the society. The information obtained in this study may provide hope to fight this phenomenon and its complications by preventative strategies and interventions.

REFERENCES

1.   Zarghami M., Chimeh N.; Investigating the Prevalence of eating abnormal attitudes and related factors in high school students in Sari in the academic year 2002-2003; Scientific Research Journal of Mazandaran University of Medical Sciences; Summer 2003.

2.   Kaplan H.I, Sadock B,j; synopsis of psychiatry : 19th ed; Baltimore: Williams & wilkins; 2007 739-751, 643-661

3.   sadock B.j, sadock V.A: comprehensive text book of psychiatry: $\neq$[th] ed Bahimone: Williams & wilkins; 2009

4.   littelton , H.L. , Axsom , D. & pury , C.L.C (2003); Developmen Body image concern

inventory ; *Behavior Research and therapy* **43** (2005); 224-240

5.   Aghakhani N., Feizi A., Shams Sh.; Investigation of body image and self-esteem in high school students in Urmia 2002-2003; Urmia Medical Journal; Winter 2006; 254-259.

6.   Omidvar N. & *et al* ; Body Image And Its Association With Body Mass Index And Eating Attitudes In Young Adolescent In Tehran ; Journal of the faculty of medicine ,winter; **26**(4), 257-264 (2003)

7.   David L. Rosenhan, Martin Seligman; Psychopathology, translation by Yahya

Seyyed Mohammadi, Tehran, Arasbaran, 2000, First edition, **2**, p. 402.

8. Peterson, V.M.; Body image and dieting behaviors: A study of athletes and non-athletes 2003; Research services locked bog 4115.

9. Nobakht M., Dezkam M.; An Epidemiological Study Of Eating Disorder In Iran ; *international journal of eating disorder;* **28**(3):265-271 (2000)

10. Troisi A. & *et al* ; Body Dissatisfaction in Women With Eating Disorders : Relationship to Early Separation Anexity and Insecure Attachment ; *psychosomatic Medicine;* **68**:449_453 (2006).

11. James N. Butcher *et al.*; Psychopathology, translation by Yahya Seyyed Mohammadi, Tehran, Arasbaran, 2009, First edition, **2**: p. 95.

12. Kalat, James; Psychophysiology, translation Yahya Seyyed Mohammadi, Tehran, Ravan, first edition, p. 125 (2007).

13. Prochaska, James, Norcross, and John, theories of psychotherapy, translation by Yahya Seyyed Mohammadi, Tehran, Roshd, first edition, p. 434 (2002).

14. Yamamoto C. & *et al* ; The Usefulness of Body Image Tests in the Prevention of Eating Disorders ; Kobe Univercity Graduate of Medicine, Japan; 240-256   periodicals,Inc (2006)

15. Striegel_Moore R.H. & *et al* ; Change in Weight and Body Image Over Time in Women With Eating Disorders; 2004 by Wiley;54-67

16. josep toro & *et al*; Eating disorders and body image in Spanish and mexican female adolescents; *social psychiatry and psychiatric epidemioloy;* **41**:556-565 (2006)

17. Patton G.C. & *et al*; Onset Of Adolescent Eating : Population Based Cohort Stady Over 3 Years ;*BMJ* **318**- 20 Marche 1999

18. Ruffolo, j.s. & *et al*, ; comorbidity of Body Dismorphic Disorder and Eating Disorder: severity of psychopathology and Body Image Disturbance; *international journal of eating Disorder;* **39**:1-11-19 (2006)