Disordered Eating Attitudes and its Determinants among Samples of Egyptian Adolescents from Different Governorates

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Abstract: Objective: the purpose of this study is to assess the current status of disordered eating attitudes and its related factors among Egyptian adolescence from different governorates, in order to provide a basis for health intervention. Methods: This is convenient cross-sectional study including of 852 subjects (373 male and 479 female), aged 11-18 years selected from some governmental and private schools and community recreation centers belonging to nine Egyptians governorate. The participants completed self-administered questionnaires which consist of general information and the Eating Attitudes Test-26 (EAT-26). An EAT-26 score of 20 or higher indicated that a person has disordered eating attitudes. Their anthropometric measurements were assessed after obtaining their consent Data were analyzed using the SPSS21software. Non parametric tests were used to assess positive and negative EAT respondents. Results: In this survey, the proportion of disordered eating attitudes among boys, girls, total students were 26.27%, 66.89% and 34.04%, respectively. An interesting finding was that the girls students are more likely to have disordered eating attitudes compared to boys. Our results show inverse relation between level of education of parents and disordered eating attitudes. We found that 67.9% feel that other pressure them to eat, 40% feel that food control their lives and 19.7% have impulse to vomit after meals. Brothers, sisters, trainers, TV and radio are the most factors that have impact on weight change in positive group of disordered eating. Conclusions: This study is the first to examine the prevalence of disordered eating attitudes in different Egyptian cities and governorates. Family members and sports coaches appear to play significant roles in changing adolescents norms. The Mother and father's educational status was also found to be an important factor of developing eating attitude disorders among adolescents. We hope the findings of the present study will provide base line data regarding disordered eating for other researchers.

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1. Introduction:

During adolescence period there is an intense anabolic phase; decreased intake of energy and essential nutrients, accordingly this can disrupt normal growth and development (McNaughto et at., 2008) which may lead to disordered eating behaviors. Disordered eating, while not a clinical diagnosis, involves a wide spectrum of harmful and often ineffective eating behaviors used in attempts to lose weight or achieve a lean appearance (American College of Sports Medicine, 2007). Disordered eating and eating disorders are on a continuum; mild forms of DE behaviors typically precede the full syndrome of eating disorders (Al-Kloub et al., 2019). Eating disorders (ED) are known as serious and debilitating health problems, which could lead to many medical and psychological consequences. They are clinically diagnosable disease whose treatment requires medical intervention. It involves serious disturbances in eating behaviors and cognitive distortions related to food and weight (Al-Kloub et al., 2019). In such disorders, individuals are intensively preoccupied with their weight, eating behaviors and dieting (Rajiah K et al., 2012). According to the (American Psychiatric Association,2000) three types of ED exist: anorexia nervosa (AN), bulimia nervosa (BN) and eating disorder not otherwise specified (EDNOS) to include those who failed to meet full criteria for either AN or BN.

On the other hand, disordered eating attitudes are abnormal beliefs, thoughts, feelings and behaviors regarding food and are likely precursor or indicator to the presence of eating disorders, thus considered as milder variants of eating disorders (Dos Santo Alvarenga M et al., 2010; Visser J et al. 2014).

Sufferers of eating disorders may experience higher levels of cardiovascular problems, infertility, digestive disorders, insomnia, anxiety, depression, fatigue, pain, and limitations in activities due to poor musculoskeletal health, having the highest mortality rate of any psychiatric disorder (Smink FR et al. 2012). However, studies have shown that early

detection and treatment of EDs can lead to full recovery (Becker AE et al. 2006; Fichter MM et al. 2006).

Although the precise cause of the development of eating disorders in the Middle East is not clearly known it is thought that rapid socio-economic changes in most Arab countries, particularly since the 1990s, have shifted the attitudes and behaviors of adolescents to more Western values such as thinness as an ideal body shape (Rasheed**,** 1998). Disordered eating attitudes in adolescents were reported in many Arab countries, such as Jordan (31.6), United Arab Emirates (33.5) Algeria (15.2), Palestine (31.7), Kuwait (44.7), Syria (22.9), Libya (26.7) (Musaiger et al., 2013). There is some debate, however, as to whether the tendency in the different cultures is a general one or if each culture has its own unique factors which lead to the occurrence of these disorders To the best of the authors' knowledge data on the prevalence of disorder eating attitudes and its risk factors among adolescents in Egypt are few suggesting that there be should be further studies (Musaiger et al., 2013**)**.

In the last century The prevalence of full and partial BN among Egyptian schoolgirls has been 1.2% and 3.4%, respectively (Shuriquie N, 1999), while recently the frequency of disordered eating attitudes (DEAs) among Ain Shams University students was 73.3% (El-Bagoury et al. 2017). Moreover, (Eladawi et at.,2018) reported that EDs were prevalent among individuals attending the weight management centers in a northern city in Egypt and were more likely reported by females (Eladawi et al. 2018).

Conduction of screening studies for disordered eating attitudes among youth is mandatory to face their alarming statistics in this population. Therefore, the objective of the current study was to investigate the prevalence and associated factors of disordered eating attitudes among samples of adolescents from different Egyptian Governorates and to investigate the associated socio demographic factors.

Aim Of Work

The aims of this study were to find out:

- The prevalence of disordered eating attitudes among adolescent males and fem different Egyptian Governorates ales.
- The associated socio-demographic factors that may be present.

2. Methods

Study design:

This was a convenient cross-sectional study during the period from first of January to the end of February 2019. Including 852 adolescent boys and girls, they were selected from some governmental and private schools and community recreation centers belonging to nine governorates including **(Cairo, Giza, Alexandria, Dakahlia, Gharbia, Beni suef, Menoufia, Qalyubia and Port Said)** with different socio -economic areas.

Inclusion criteria includes adolescent aged from 11 - 17 years, and willing to participate in the survey.

Exclusion criteria includes individuals with known history of psychiatric disorders and obvious physical deformity.

Ethical approval

The study was conducted as a graduation project of nutrition diploma awarded from NNI. Informed written consent was obtained from related authorities in each governorate and from all participants prior to their enrollment in this study.

Measures and data management

All participants in this study were subjected to pre coded interview questionnaires included 2 parts. The first part was used to identify the socio demographic characteristics and anthropometric data. Socio demographic data includes: name of the governorate, gender, age, residence, type and level of education of the student, occupation and level of education of the parents, while anthropometric data as weight in kilograms, height in centimeter and body mass index were assessed.

The second part was about evaluation of disordered eating attitudes where an Arabic version of Eating Attitude Test 26 (EAT-26) was used which has been previously validated by (Al-Adawi et al, 2002). EAT-26 is a standardized widely used measure of self-reported symptoms of eating disorders. The updated version was published in 1982 which was proved to be highly reliable and valid (Garner et al, 1982). It includes 26 items with three sub-scales which are dieting items, bulimia & food preoccupation items and oral control items. Each item has a 6-point like scale to choose from. To calculate the total score of items from 1 to 25, the scales of “always”, “usually” and “often” were given scores of 3, 2, and 1, respectively, while the other three scales (never, rarely and sometimes) were given a score of zero. Inversely, the scores of “never”, “rarely”, and “sometimes” in question 26 (Enjoy trying new rich foods) were given scores of 3, 2, and 1, respectively, and the three other scales were scored as zero. The range of the total score was 0-78. A total score of 20 or more was classified as being at risk of eating disorders; positive EAT-26 (Farahani et al, 2015).

Weight and height of participants were assessed in light clothes and without shoes using a digital scale and a portable stadiometer. Body mass index (BMI) by z-score was calculated as weight (kg)/height square (m2). The z-score is the best tool for analysis and presentation of anthropometric data because of its advantages compared to other methods of analysis according to the WHO criteria (WHO, 2004).

Statistical analysis

The completed questionnaires were reviewed and the collected data were coded, processed, and analyzed using SPSS version 21 according to (Dawson and Trapp, 2001).

Quantitative data were presented as Mean and standard deviation. Qualitative data were presented as number and percentage. t-test was used to compare quantitative data between the two groups. Chi -square test was used to compare the qualitative data between the two groups. Non parametric tests were used to assess positive and negative EAT respondents.

3. Results:

Figure 1: illustrates the percentage distribution of EAT-26 scores of all the study participants. As can be seen 34.04 % of the participants were EAT-26 positive; while the remaining (65.96%) were EAT-26 negative.

As demonstrated in table 1, there was no statistically significant difference between the mean age in both groups (EAT-26 negative and positive). Similarly, no statistically significant difference was detected between the mean weight in both groups. On the other hand, y significant statistical difference in the mean height in both groups was detected with a p value of 0.013. The mean height of the EAT-26 positive group was less than that of the EAT-26 negative group.

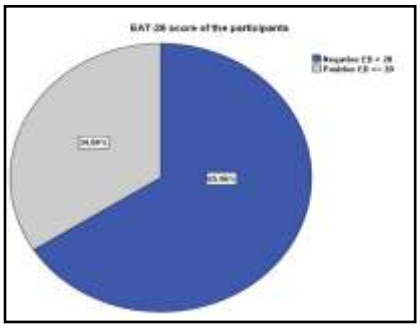


Figure 1. EAT-26 score of the participants

Table 1. Distribution of age and anthropometric data as a function of eating disorder score.

	EAT-26 Negative (n = 562) No (%)		EAT-26 Positive (n = 290) No (%)		T test	P
	Mean (SD)	Median (range)	Mean (SD)	Median (range)		
Age	14.1(2.1)	14.0(10.0-18.0)	14.3(2.0)	14.0(10.0-18.0)	-1.012	0.312
Weight	55.2(13.0)	55.0 (26-110)	55.1(14.2)	54.0 (25-110)	0.142	0.887
Height	158.2(11.2)	159 (115-195)	155.9(14.6)	158.0 (95-195)	2.503	**0.013**

Table 2 demonstrates the distribution of demographic data as a function of eating disorder score. As shown, the gender distribution difference between both groups was statistically significant with a p value of 0.00. While in EAT-26 negative group male and female percentages were +/- equal; the female prevailed in the EAT-26 positive group. On the other hand, neither the participant's location (urban vs rural) nor the education level (primary, preparatory, secondary or university levels) showed statistical significance when both groups were compared. As for the difference in school type between the 2 groups, data in figure 2 and table 2 demonstrate that although the school type distribution pattern was similar in both groups, there was a difference in the distribution percentages, and this difference was statistically significant, with p value 0.001.

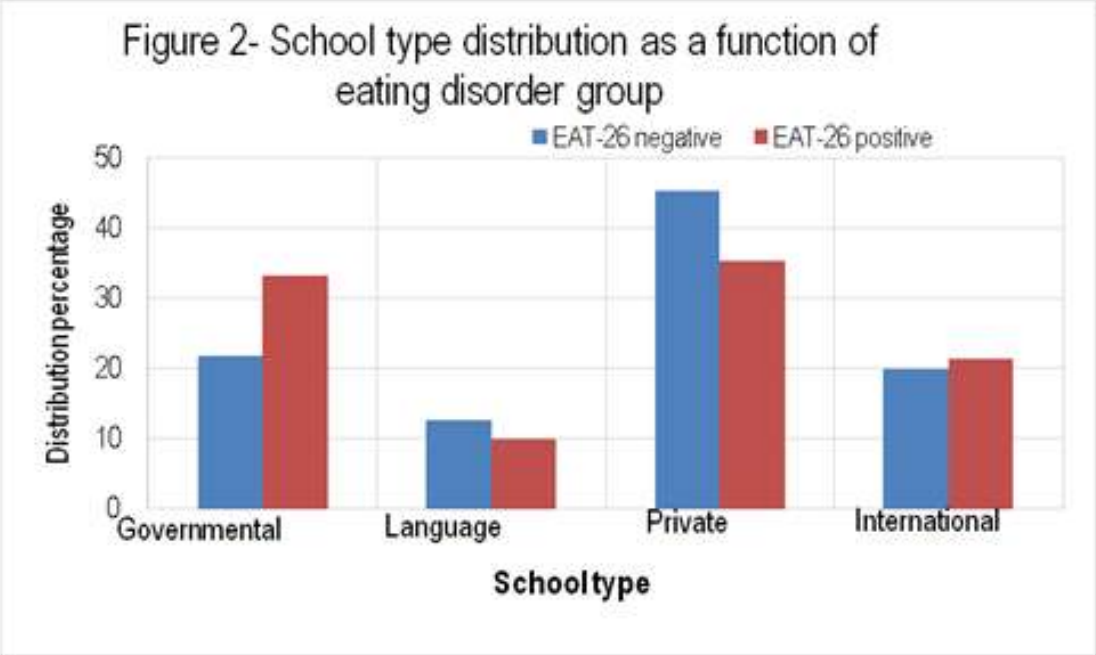
Similarly, a statistically significant difference in the study branch (Scientific vs. literary) was observed between both groups as shown in table 2, where more percentage of secondary school students enrolled in literary branch were in EAT-26 positive relative to EAT-26 negative group (with p value of 0.002). Figure 3 and table 2 demonstrate the distribution of parent education level in both groups of EAT-26 scores. As can be seen, similar overall distribution pattern was observed in both groups for both mothers' and fathers' education levels. However statistical significant differences were detected when comparing mother education level as well as father education level in both groups (p = 0.00 and p = 0.002 respectively).

Regarding the dieting subscale score of the participants, table 3 clearly demonstrates statistical significant differences between both EAT-26 negative and positive groups in analyzing the adolescents' response to question/statement 1-12. Higher percentage of the adolescents in the EAT-26 positive group answered strongly positive for questions 1-12 than their counterparts in the EAT-26 negative group.

In contrast, the difference in the adolescents' response to the last statement in the "Dieting subscale score" of "Enjoy trying new rich foods" was not different in both groups of EAT-26 score.

Table 2. Distribution of demographic data according to eating disorder score.

	EAT-26 Negative (562), No (%)	EAT-26 Positive (290), No (%)	χ^2	P value
Sex Male Female	275z (48.8) 287(51.3)	98(33.6) 192(66.4)	17.879	**0.000**
Location Urban Rural **Squatter areas**	36(6.5) 520(92.4) 6(1.1)	30(10.4) 255(87.9) 5(1.7)	4.659	0.097
Education Primary Preparatory Secondary University	94(16.9) 229(40.1) 235(42.3) 4(0.7)	36(12.5) 124(42.9) 128(43.9) 2(0.7)	2.937	0.401
School type Governmental Language Private International	123(21.8) 74(12.8) 251(45.4) 113(20.0)	96(33.3) 29(9.9) 103(35.4) 62(21.4)	15.636	**0.001**
Study branch Scientific Literary	153(80.1) 38(19.9)	56(62.9) 33(37.1)	9.471	**0.002**
Mother education Illiterate Read and write Primary Preparatory Secondary University Post graduate	4(0.7) 8(1.4) 4(0.7) 3(0.5) 54(9.7) 391(69.9) 98(17.0)	7(2.5) 13(4.6) 6(2.1) 8(2.8) 27(9.5) 189(65.6) 40(13.0)	24.831	**0.000**
Father education Illiterate Read and write Primary Preparatory Secondary University Post graduate	0(0.0) 12(2.1) 3(0.5) 4(0.7) 45(8.1) 365(65.3) 133(23.3)	1(0.4) 16(5.3) 7(2.1) 9(2.8) 27(9.1) 177(61.8) 54(18.6)	20.372	**0.002**



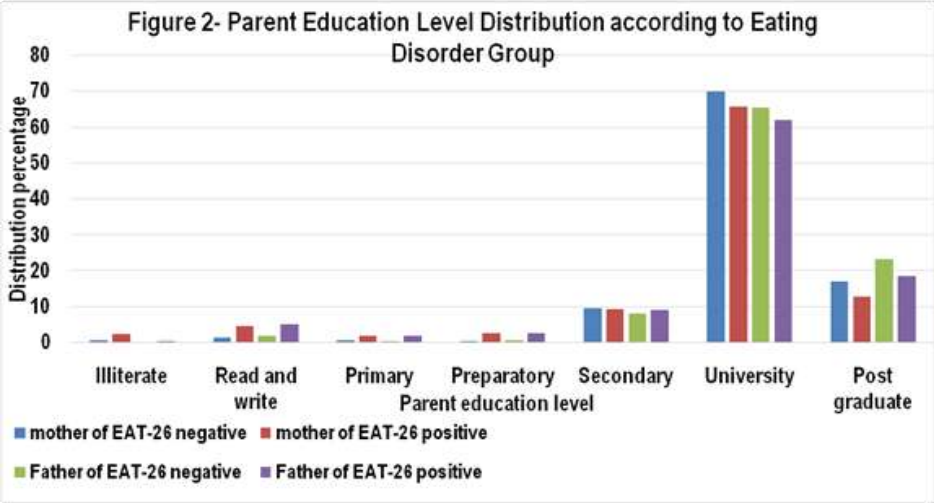


Table3. Dieting subscale score of the participants.

Dieting Attitudes	EAT-26 Negative (n = 562) No (%)	EAT-26 Positive (n = 290) No (%)	χ^2	P value
1- Terrified about being overweight	192(34.2)	224(77.2)	142.069	**0.000**
2- Aware of calorie content of food I eat	43(7.7)	82(28.3)	64.998	**0.000**
3- Avoid food with high carbohydrate content	58(10.3)	122(42.1)	115.713	**0.000**
4- Feel guilty after eating	65(11.6)	137(47.2)	134.602	**0.000**
5- Am preoccupied with desire to be thinner	145(25.8)	219(75.5)	193.221	**0.000**
6- Think about burning up calories when exercising	160(28.5)	221(76.2)	176.336	**0.000**
7- Am preoccupied with the thought of having fat on my body	93(16.5)	166(57.2)	149.715	**0.000**
8- Avoid foods with sugars in them	70(12.5)	128(44.1)	107.638	**0.000**
9- Eat diet food	106(18.9)	164(56.6)	125.531	**0.000**
10- Feel uncomfortable after eating sweets	93(16.5)	153(52.8)	122.134	**0.000**
11- Engage in dieting behavior	144(25.6)	205(70.7)	160.655	**0.000**
12- Like my stomach to be empty	88(15.7)	150(51.7)	123.600	**0.000**
13- Enjoy trying new rich foods	289(51.4)	147(50.7)	0.041	0.839

Regarding Attitude of Bulimia and Food Preoccupation Subscale Score demonstrated in table 4, it is clear that higher percentages of participants in the EAT-26 positive score group responded positively to all six questions than participants in the EAT-26 negative group. The differences between responses to all questions/statements were statistically significant.

Table 5 demonstrates the data for the attitudes of oral control subscale. Again, it is clear that higher percentages of participants in the EAT-26 positive score group responded positively to six out of the seven questions/statements, as compared to participants in the EAT-26 negative group, and the difference was statistical significant. The difference in the participants' response to the statement "Cut my food into small pieces" showed a trend –that did not reach significance level- of higher positive response in the EAT-26 positive than in the EAT-26 negative groups.

Table 4. Attitude of Bulimia and Food Preoccupation Subscale Score.

Dieting Attitudes	EAT-26 Negative (n = 562) No (%)	EAT-26 Positive (n = 290) No (%)	χ^2	P value
1- Find myself preoccupied with food	165(29.4)	143(49.3)	32.988	**0.000**
2- Have gone on eating binges	140(24.9)	110(37.9)	15.641	**0.000**
3- Vomit after eating	10(1.8)	23(7.9)	19.443	**0.000**
4- Feel that food controls my life	82(14.6)	117(40.3)	70.876	**0.000**
5- Feel that others pressure me to eat	231(41.1)	197(67.9)	55.073	**0.000**
6- Have the impulse to vomit after meals	20(3.6)	57(19.7)	60.290	**0.000**

Table 5. Attitudes of Oral Control Subscale of the Participants.

Attitudes of Oral Control		EAT-26 Negative (n = 562) No (%)	EAT-26 Positive (n = 290) No (%)	χ^2	P value
1.	**Avoid eating when hungry**	52(9.3)	109(37.6)	100.201	**0.000**
2.	**Cut my food into small pieces**	138(24.6)	169(58.3)	94.370	0.057
3.	**Feel others prefer if I eat more**	21 (37.7)	148(51.0)	13.893	**0.000**
4.	**Other people think I am too thin**	203(36.1)	151(52.1)	20.033	**0.000**
5.	**Take longer than others to eat my meal**	178(31.7)	154(53.1)	36.941	**0.000**
6.	**Display self-control around food**	255(45.4)	198(68.3)	40.296	**0.000**
7.	**Feel that others pressure me to eat**	231(41.1)	197(67.9)	55.073	**0.000**

Table 6 demonstrates the analysis for the factors that might have impact on weight change in both groups of eating disorder score. It is clear from the table that higher percentages of participants in the EAT-26 positive group responded positively as compared to their counterparts in the EAT-26 negative group as regards the impact of the following socio-demographic data on their weight change: brothers and sisters, trainers, TV and radio, family interest about eating attitudes, and their body weight. The differences in both groups for these factors were significant. Other factors that were also investigated as potential factors with impact on weight changes, however the results were statistically insignificant.

Table 7 shows the distribution of anthropometry z-score (standard deviation score) in both groups of eating disorder score. The z-score is the best tool for analysis and presentation of anthropometric data because of its advantages compared to other methods of analysis. Being a linear score, this makes results comparable across ages groups, and indicators. It is also sex-independent, thus permitting the evaluation of children growth status. Height for age, and BMI have been analyzed using the z-score classification system. Data analysis reveals a statistical significant difference in the distribution of height for age in both groups of EAT-26 score. Percentages of adolescents fitting in the category of stunted for age, or tall for age were higher in EAT-26 positive than in EAT-26.

Analyzing the BMI z-score data in table 7 reveals statistically insignificant differences between both groups. Higher percentages of participants fitting in the underweight and in the overweight classes were detected in the EAT-26 positive as compared to the EAT-26 negative group. On the other hand, the percentages of participants fitting in the normal BMI or the obese classes were higher in the EAT-26 negative as compared to the EAT-26 positive group.

Table 6. Distribution of factors which have main impact on weight change according to eating disorder score.

	EAT-26 Negative (n = 562) No (%)	EAT-26 Positive (n = 290) No (%)	χ^2	P value
Parents Yes No	187(33.3) 375(66.7)	111(38.3) 179(61.7)	2.104	0.147
Friends Yes No	112(19.9) 450(80.1)	67(23.1) 223(76.9)	1.162	0.281
Brothers and Sisters Yes No	28(5.0) 534(95.0)	25(8.6) 265(91.4)	4.341	**0.037**
Family Yes No	44(7.8) 518(92.2)	31(10.7) 259(89.3)	1.950	0.163
Teachers Yes No	8(1.4) 554(98.6)	6(2.1) 284(97.9)	0.493	0.483
Trainer Yes No	34(6.0) 528(94.0)	34(11.7) 256(88.3)	8.386	**0.004**
Newspaper Yes	7(1.2) 555(98.8)	4(1.4) 286(98.6)	0.027	0.870

	EAT-26 Negative (n = 562) No (%)	EAT-26 Positive (n = 290) No (%)	χ^2	P value
No				
T.V and Radio Yes No	12(2.1) 550(97.9)	15(5.2) 275(94.8)	5.750	**0.016**
Magazine Yes No	6(1.1) 556(98.9)	4(1.4) 286(98.6)	0.160	0.689
Social media Yes No	34(6.0) 528(94.0)	21(7.2) 269(92.8)	0.450	0.502
Personal desire Yes No	180(32.0) 382(68.0)	76(26.2) 214(73.8)	3.084	0.079
Others Yes No	13(2.3) 549(97.7)	5(1.7) 285(98.3)	0.321	0.571
Family interesting Yes No	243(43.5) 316(56.5)	159(55.6) 127(44.4)	11.150	**0.001**
Weight effect Yes No	148(26.4) 412(73.6)	103(36.7) 178(63.3)	9.345	**0.002**

Table 7. Distribution of anthropometry z score regarding to eating disorder score.

	EAT-26 Negative (n = 562) No (%)	EAT-26 Positive (n = 290) No (%)	χ^2	P value
Height per age z-score Stunted Normal Tall	25(4.5) 510(90.9) 26(4.6)	27(9.3) 246(85.1) 16(5.5)	8.476	**0.014**
BMI z-score Wasted Normal Overweight Obese	5(0.9) 341(60.8) 143(25.5) 72(12.8)	5(1.7) 161(55.7) 93(32.2) 30(10.4)	6.004	0.111

4. Discussion

Most studies in the Arab world have focused on disordered eating (DE) attitudes in adolescent girls. This trend is found worldwide, because females are more prone to eating disorders than males (Hsu, 2002). We hypothesized that, owing to rapid socio-cultural changes in Arab countries, the prevalence of disordered eating attitudes among adolescents is relatively high among both males and females. **Therefore, the aim of this study** was to assess (1) the prevalence of disordered eating attitudes among Egyptian adolescent males and females, and (2) the potential associated socio-demographic factors.

To test our hypothesis and to fulfill our aim, 852 adolescent boys and girls aged (11 to 18) years old were selected from nine governorates including (Cairo, Giza, Alexandria, Dakahlia, Gharbia, Benisuef, Menoufia, Qalyubia and Port said) with different socio -economic status.

Screening for eating disorders is based on the assumption that early identification of an eating disorder can lead to earlier treatment, thereby reducing serious physical and psychological complications or even death (Farahani et al, 2015).

In the present study, we find a high prevalence of disordered eating attitudes (34.04%) in the studied sample which is in concordance with the results from studies in Taif (Taha et at.,2018), Bangladesh (Pengpid et at.,2015) and Oman (Al-Adawi et at.,2002) (35.4%,37.6%, and 36.4% respectively). The prevalence in the current study is also more or less similar to that reported by another study in Saudi Arabia, (Farahani et at., 2015), where 32.9% of female students scored above the cut off level of 20 using the same tool of measurement. Varying percentages of

eating disorders among university students have been reported all over the world; a Brazilian study (Pengpid et at., 2011) reported a prevalence of about 22.4%, and 23.4% in an Emirati study (Eapen et at.,2006).

In the present work, results regarding the demographic data confirms that the disordered eating attitudes were more prevalent in girls as compared to boys, with highly significant difference between boys and girls. This was close to that reported by (Musaiger et al.,2013) and (Mousa et al.,2010). With regard to boys, interestingly, the current finding's prevalence was nearly twice that reported in (Musaiger et al., 2013). This indicates that disordered eating attitudes are a problem of considerable concern among adolescents of both genders in Arab countries and thus warrant further reinvestigations.

As regard to weight our results showed no significant difference between negative and positive groups for disordered eating attitude**.** This result is agreement with (El-Bagoury et al., 2017), where there was no association between disturbed eating attitudes among university students and their weight. **In contrast to the height** which shows significant statistical difference in the mean height in both groups was detected with a p value of 0.013. The mean height of the EAT-26 positive group was less than that of the EAT-26 negative group.

Regarding BMI z-scor, it was insignificant differences between both groups. This is not in concordance with the results of a study of female students in An-Najah National University, (Saleh et at.,2018) that showed significant and positive correlation between BMI and EAT-26 (p 0.011), suggestive of higher risk of ED among females with higher BMI values. Also (Rouzitalab et al.,2015) mentioned that some anthropometric indices such as BMI and central obesity indices were related to the increase in disordered eating attitude.

As regard school type and level of education of parents, our results show inverse relation between level of education and disordered eating attitudes, the higher the level of education the less disordered eating attitudes, the difference between negative and positive groups is highly significant (p 0.001) for school type, (p0.000) for mother education and (p 0.002) for father education. This result was similar with the study finding in Malaysia |(Rajiah et at.,2012), which revealed that the students with disordered eating attitudes were less likely to have parents with higher education. This might be due to the fact that those from educated family will have right information about the consequences of eating disorders and immune from developing favorable attitude towards eating attitude disorders. However, this finding is not consistent with a study done in China (Yu et at,2015) were adolescents with educated parents showed disordered eating attitude Those from well doing families have high chance of developing obesity which further contributed to the development of disordered attitude towards diet in adolescents (Yirga et al, 2016).

Regarding the dieting subscale score of the participants: When we compare our findings of EAT-26 results with recent study which was carried out in one of the nearby arab country we found that, students suffer from food obsession and addiction where they are unable to control their eating urges. Those results are nearly the same results of (Taha et al, 2018) performed this test on female student of Taif University, Saudi Arabia.

Regarding Attitude of Bulimia and Food Preoccupation Subscale Score, our results show that more than 67.9 % feel that others pressure me to eat, 40% feel that food controls their lives and 19.7 % have impulse to vomit after meals. This in contrast to (Taha et al., 2018) whose results show that about 65% of the positive EAT students felt that food controls their life. Only 39% of positive EAT students avoided eating when hungry. Moreover, nearly 39% of positive EAT respondents reported eating binges where they feel that they may not be able to stop. Differences between the studies may be the results of cultural differences in the studied population.

Regarding oral control subscale, the highest oral control items in the positive EAT students were in "Display self-control around food" (68.93 %) and "Feel that others pressure me to Eat" (67.95 %). The latter is much higher than findings of (Taha et al., 2018) who reported a percentage of 54.4 in Taif. The lowest item was "Avoid eating when hungry" at 37.6% among positive EAT-26 with similar findings of (Taha et al,2018), reporting a percentage of 39.4 in Taif.

The response of participants in both groups of EAT-26 groups to the statements of "feel others prefer if I eat more" and "Feel that others pressure me to eat", demonstrate an interesting finding. Even in the EAT-26 negative group a substantial percentage of adolescents responded positively to both statements (37.7 % and 41.1 %; respectively). This may indicate the strength of cultural factors, where Egyptian parents tend to exert pressure on their children to eat. This finding deserves further analysis and should be a target for awareness programs directed to the parents as will be mentioned later in the recommendation section.

As regard of factors which have main impact in weight change regarding eating disorder score, A significant relationship was found between family stress to lose weight and EAT-26 positive scores. We found that 55.6 % of participants, felt a family interest for weight change. Similar to the findings of (Saleh et al., 2018) of 50% in Saudi Arabia. Socio-cultural

factors have also been shown to be among the most influential risk factors for DE during adolescence. Messages from family members (parents, sisters, and brothers) regarding body weight set the characteristics of a negatively perceived body image (Al-Kloub et al, 2019). In a case-control study, (Swarr and Richards,1996) found that girls with eating disorders felt more criticized, less accepted and less close to their parents than did the control group. Since the effect of parents and peers on eating attitudes in Egypt has not been investigated, however, it is difficult to anchor our findings and further studies in this area are needed. Another finding of ours was that36.7 % of adolescents felt pressured to change their weight, and 11.7 % name their trainer or coach as the cause.

Interesting results that require further studies to investigate them were reported in the current work. For instance, the differential effects of friends vs. siblings (brothers and sisters) even in the same EAT-26 score group. It was noted that even within the EAT-26 negative group, ~ 20% of participants responded positively for the impact of friends on their weight changes, as compared to only 5% who responded positively for the impact of their siblings. A similar pattern was observed in the EAT-26 positive group.

Other intriguing results include the unexpected low impact of social media as perceived by the adolescents included in the current work (only 6 % of the EAT-26 negative and 7.2 % of those in the EAT-26 positive groups). This result was unexpected taking into consideration the vast influence of social media on children and adolescents in our modern societies. Socio-demographic-focused future studies are recommended to investigate these findings more closely.

Conclusion

To the best of the authors knowledge, this study is the first to examine the prevalence of disturbed eating attitudes in different Egyptian cities and governorates. It suggests that adolescents are susceptible to eating disorders. Our findings propose this may be associated with various individual, psychological, and socio-cultural variables. Socio-cultural variables particularly pressure from family members and sports coaches appear to play significant roles in changing adolescents' norms. The Mother and father's educational status was also found to be an important factor of developing eating attitude disorders among adolescents.

We hope the findings of the present study will provide base line data regarding disordered eating for other researchers to identify and target these adolescents for intervention. Further research is needed to develop intervention programs to control eating disorders among Egyptian adolescents. Establishment of early screening and timely treatment of adolescents with disordered eating attitude is highly recommended.

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