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Research Article

# Prevalence and Correlates of Disordered Eating Attitudes Among Jordanian Adolescents

**Tamer M. Gharaibah, Nihaya Adnan Al-sheyab, and Wa'ed Yasin Shiyab**

Faculty of Nursing, Jordan University of Science and Technology, PO Box 3030,Irbid, 22110, Jordan

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Corresponding Author:
Tamer M. Gharaibah;
email:
tgharaiybah@gmail.com

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## 1. Introduction

Disordered eating attitudes (DEA) are defined as unhealthy eating actions and habits that individuals engage in so as to maintain their body weight [1]. The prevalence of DEA has increased worldwide and has become an issue especially among adolescents [2, 3]. Adolescents engage in several types of DEA, including binging, fasting, skipping meals, or participating in excessive exercise, which may eventually lead to eating disorders such as bulimia nervosa and anorexia nervosa [4, 5].

The continuum theory of eating disorders could help in understanding and distinguishing the symptoms of DEA. Nylander [6] developed the continuum theory of eating disorders to represent different points extending on a linear continuum from normal eating behaviors, such as an individual's perceived trust of his or her own body, to the whole spectrum of eating disturbance, such as anorexia and bulimia on the opposite end of the continuum, whereas DEA, such as food preoccupation and disruptive eating patterns (binge eating, fasting, excessive exercise, self-induced vomiting), lie in the middle along the continuum [7].

The prevalence of DEA has been reported in previous studies in different parts of the world, with 7% in South Korea [8], 17% in Taiwan [2], 14% in the United States [9], and 26.4% in Turkey [10]. However, recently, the prevalence of DEA has risen in Arab countries as well. A study was recently conducted among seven Arab countries: Jordan, Kuwait, Palestine, Syria, Libya, Algeria, and the UAE [11]. The results indicated that Kuwait had the highest percentage of DEA (44.7%) in both genders followed by Jordan

and Palestine both at 32%. However, there was a difference in the rate between the genders; with Jordanian girls (42.7%) having almost double the rate of boys (20.1%).

According to Ogden (2011), two major factors, intrinsic and extrinsic, may influence eating behavior. Intrinsic factors are related to biological aspects, such as body mass index and pubertal timing [12, 13]. Obese adolescents were more likely to develop DEA than nonobese adolescents as they are more likely to suffer from low self-esteem and feelings of dissatisfaction with their appearance [14]. How pubertal development increases a tendency to develop DEA has yet to be elucidated [15].

Also, intrinsic factors may involve psychological factors, such as low self-esteem [16]. The literature [15, 17, 18] highlighted an inconsistency between self-esteem and DEA.

DEA tends to increase during adolescence as a result of psychological and biological changes [19]. The development of DEA among adolescents has a tendency to continue into adulthood [3] and is associated with functional consequences, including an increase in medical morbidity and mortality, healthcare utilization, and weight gain causing social-role adjustment problems and the development of obesity [20].

Jordan is an example of a developing country consisting of urban, rural, and Bedouin people with low economic status moving toward a Western lifestyle [11], which, in turn, could affect their culture and norms, especially those related to eating behavior due to the spread of fast food restaurants [21]. Adolescents represent the majority of the Jordanian community comprising 23% of the whole population (Department of Statistics, 2012). The main aim of the current study is to measure the prevalence of DEA among Jordanian adolescents. A secondary aim of the current study is to identify the intrinsic correlates of DEA among Jordanian adolescents.

## 2. Method

### 2.1. Design and setting

A quantitative, descriptive, cross-sectional design employing self-reported questionnaires was used in this study to achieve the study's objectives. The data were collected from public and private schools in the Irbid governorate located in northern Jordan affiliated with the Jordanian Ministry of Education. The Irbid governorate consists of eight districts (rural area). All public and private schools for boys and girls, which include grades 8 to 10, were eligible to participate in the study.

### 2.2. Participants

The target population was all Jordanian school adolescents in the northern part of Jordan. The inclusion criteria were boys and girls in grades 8 to 10 who were regularly enrolled in public and private schools in the Irbid governorate. Students who self-reported that they were on a special diet, had any disease, had a past history of eating disorders, or who self-reported that they had already taken medication were also eligible to participate in this study to provide a better insight into this group's characteristics.

### 2.3. Sampling technique

A multistage random sampling technique was used to recruit participants for this study. At the first stage, a sample of four districts was selected from a list of all eight districts in northern Jordan using a simple random sampling technique through Randomizer software (Urbaniak & Plous, 2008). Once selected, each district was contacted for a list of public and private schools.

In total, 123 secondary schools were identified. Schools from this group were stratified by gender (52 female schools and 56 male schools) and the type of school (16 private and 107 public). From the total 107 public schools, 8 schools were randomly selected (4 male schools and 4 female schools) using a stratified sampling technique. On the other hand, a total of three private schools were selected using a convenience sampling technique.

From each of the selected schools ($n$ = 11 schools), a sample of three classes (8th, 9th, and 10th grades) was selected using a simple random sampling method. All students in the randomly selected class were asked to participate in the study.

## 3. Measurements

### 3.1. Demographic data

Participants were asked to indicate their age, date of birth, and if they had any disease.

### 3.2. Disordered eating attitude (DEA)

The eating attitude tests questionnaire (EAT-26) was used to measure students' eating attitude and their symptoms of disordered eating [22]. The EAT-26 has been reproduced with permission.

The EAT-26 scale assesses a broad range of DEA, such as dieting behaviors to achieve thinness, bulimia, binge eating, self-induced vomiting, oral control eating, and excessive exercise [21].

EAT-26 contains 26 items referring to various DEA. Each item uses a 6-point Likert-type scale with possible answers ranging from; 'always' to 'never'. A score of 3 points is given for 'always', 2 points for 'usually', and 1 point for 'often'. Answers of 'sometimes', 'rarely', and 'never' are scored at 0 points. This is the scoring method for items 1–25 items, while scoring of item 26 is vice versa: a score of 3 points is given for 'often', two points for 'usually', and 1 point for 'always'. The possible range of scores is 0–78 points. A participant who scores 20 points or more is considered at high risk of DEA and should be seen by a mental health professional.

### 3.3. Body esteem

The adolescents' perceptions of satisfaction and dissatisfaction about their appearance and body weight were measured using the revised body esteem scale (RBES) [23]. The RBES scale consists of 23 items on a Likert-type scale, which measures multidimensional body esteem constructs of three subscales, which includes feelings about appearance, weight satisfaction, and attribution to others about one's body and appearance. The REBES Arabic version was used with permission.

Adolescent participants were asked to rate how often they agree with each item on a five-point Likert scale, with answers ranging from 'always' to 'never'. A score of 4 points was given for 'always', 3 points for 'often', 2 points for 'sometimes', 1 point for 'seldom', and 0 for 'never'. The possible range of scores is 0–92 points.

### 3.4. Perception of body image

Perception of body image was measured using the Stunkard figure scale (SFS) [24]. The SFS contains nine figures extending from very thin to extreme obesity. The participants were asked two questions: (1) Which figure represents your body image? and (2) If you want to change your body image, which figure would you select?

## 3.5. Anthropometric measurements

Body mass index percentile (BMIP) was taken by using a metric version of software on a body mass index percentile calculator for children and teens. According to Kuczmarski et al. [25], the cut point percentages that are less than 5% are considered underweight, 5% to 85% is considered a healthy weight, 85% to less than 95% is considered overweight, and equal to or greater than the 95th percentile. BMIP is a suitable measurement to show how the adolescent's weight compares to that of other adolescents of the same age and sex.

Height was measured using the same meter stick for all students, and the readings were recorded to the nearest 0.1 centimeters. Weight was measured with a digital scale, and the readings were recorded to the nearest decimeter fraction.

## 3.6. Social class

Social class was measured using a social wealth index that contains seven items on a self-questionnaire. Each item was answered with a yes or a no.

## 3.7. Data collection

The purpose of the study and the instruments that were to be used were explained to all participants, and their parents were asked to fill out a consent form. On the following day, consent forms were collected.

Data collection consisted of direct measurement and an online survey. Weight and height were first measured by a trained research nurse assistant. Participants were asked to remove their shoes and any hair ornaments that could interfere with the measurement. Then, the student was told to stand with feet flat, together, against the wall. After that, the student was asked to look straight in a line of sight parallel to the floor. The reading was taken by a trained research nurse assistant while the student stood with head and heel touching the flat surface of the wall. After that, participants were asked to remove heavy clothes and shoes and told to stand with both feet in the center of the scale. Students who completed the measurement process were then invited to complete an online survey in the computer lab at the same school. The students were informed that everyone had to answer a questionnaire without any explanation for any item. After that, all participants were thanked for their participation in the study.

## 3.8. Pilot study

A pilot sample of 84 students (42 boys and 42 girls) was used to measure the internal consistency and reliability of the instruments and to test the feasibility of the data collection procedure and the time required to fill out an online survey. The pilot study was also used to identify any practical limitations of the instruments and to assess the participants' understanding of the items on the questionnaire.

The pilot study was carried using a convenience sample of 84 students selected based on the aforementioned inclusion criteria for the study. In each school, 13 computers were used to collect data. The minimum time required to fill out all items was 11 minutes. Whereas, the maximum time required was 21 minutes. Most of the students completed the questionnaire within 14 minutes.

Almost all participants in the pilot study reported that the items were clear and understandable. They also reported that answering items using an online survey helped them to answer the questions honestly.

One barrier that was discovered while conducting the pilot study was the weak internet access in the schools, which made preparation of the online survey more time-consuming; however, to overcome this barrier, the online survey was prepared while the measurements of height and weight were being taken. In general, using the online survey in the pilot study proved an effective method of data collection.

## 3.9. Validity and reliability of instruments

The EAT-26 scale has been widely used as an instrument with acceptable reliability and validity in nonclinical samples of boys and girls. The EAT-26 was also validated in Arabic (Cronbach's alpha value of 0.80) by Mousa et al. [21] and used among Jordanian girls aged between 10 and 16 years. Internal consistency and reliability of the translated EAT-26 in the current study was 0.74.

The RBES Arabic version was validated [26] (Cronbach's alpha values fell between 0.70 and 0.90. In the current study, internal consistency and reliability for the RBES was 0.90.

Finally, the internal consistency and reliability for SFS in the current study was 0.74.

### 3.10. Sample size

A minimum of 490 subjects are required to detect a difference in DEA with a power of 80% and an alpha level of 5%. The sample size was inflated to 800 to account for the missing data, loss to follow-up, and response rate.

### 3.11. Data analysis

Data were cleaned and checked in the database and then analyzed by using IBM, SPSS statistics version 21. The number and percentage were presented along with the mean (standard deviation) as appropriate. Disordered eating attitude were distributed by all independent variables (BMIP, body esteem, and demographic data). A chi-square test was used to test the association between outcomes variables and independent variables.

A *t*-test was used to compare the mean for appropriate variables by DEA. An alpha level of 0.05 was used to determine statistical significance. Multilogistic regression analysis was used to measure the adjusted effect of independent variables on outcome variables, using an adjusted odds ratio and a 95% confidence interval with an alpha level of 0.05.

## 4. Results

To investigate DEA among adolescents, 800 eligible adolescents were invited to participate in the study, of which 738 participants (92.3%) completed the online survey. The sample included 330 boys (44.7%) and 408 girls (55.3%), with an age range from 14 to 16 years (mean age (SD) = 15.06 (0.8) years). A total of 218 participants were 14 years old (29.5%), 363 were 15 years old (35.6), and 257 were 16 years old (34.8%) (Table 1).

Regarding social class, the majority of our sample were in the middle social class. One hundred thirty-seven participants were from private schools (18.4%) and 601 of the participants were from public schools (81.6%).

The results showed that 103 participants (14.0%) were overweight, 63 participants (8.5%) were obese, and 539 participants (73.0%) had normal weight based on body mass index percentile. Within gender, about 7.6% of boys and 2% of girls were categorized as underweight, 70% of boys and 75% of girls were categorized as normal

Table 1: Sociodemographic characteristics of the sample ($N$ = 738).

| Variables | Total n (%) | Boys n (%) 330 (44.7) | Girls n (%) 408 (55.3) |
|---|---|---|---|
| **Age in year (mean (SD) = 15.06 (0.8))** | | | |
| 14 | 218 (29.5) | 76 (23.0) | 142 (34.8) |
| 15 | 263 (35.6) | 138 (41.8) | 125 (30.6) |
| 16 | 257 (34.8) | 116 (35.2) | 141 (34.6) |
| **School** | | | |
| Public | 601 (81.4) | 270 (81.8) | 331 (81.1) |
| Private | 137 (18.6) | 60 (18.2) | 77 (18.9) |
| **Social class** | | | |
| Low | 266 (36) | 112 (33.9) | 154 (37.7) |
| Middle | 322 (43.6) | 146 (44.2) | 176 (43.1) |
| High | 150 (20.3) | 72 (21.8) | 78 (19.1) |

weight, 12.7% of boys and 15% of girls were categorized as overweight, and 9.1% of boys and 8.1% of girls were categorized as obese (Table 2).

When participants were asked to choose the figure representing their current perceived body image shape, most of them chose a normal body shape (60.4%), and 34.7% of the participants thought that they had a thin body shape. Only 4.5% of the participants saw themselves as obese. On the other hand, most of girls desired a thin body image (60%), whereas the majority of boys desired a normal body image (71.5%).

## 4.1. Disordered Eating Attitude (DEA)

Among all participants, the prevalence of DEA was 23.6% (Table 3). The percentage of DAE among girls (29.4%) was statistically higher than that among boys (16.4%) ($p < 0.001$). DEA was not statistically significant among this age group ($p = 0.318$). Also, there was no significant relationship between social class and DEA ($p = 0.261$). There was a significant relationship between the type of school and DEA ($p < 0.001$); prevalence of DEA was higher among private schools (33.6%) than public schools (21.3%).

BMIP was significantly associated with DEA ($p < 0.001$); there was a higher prevalence of DEA in obese and overweight adolescents, 49.2% and 30.8%, respectively, in

Table 2: Distribution of BMIP, perception of body image, and desired body image.

| Variables | Total n (%) | Boys n (%) 330 (44.7) | Girls n (%) 408 (55.3) |
|---|---|---|---|
| **BMI percentile** | | | |
| Under weight (less than 5th) | 33 (4.5) | 25 (7.6) | 8 (2.0) |
| Normal weight (5th to less than 85th) | 539 (73.0) | 233 (70.6) | 306 (75.0) |
| Over weight (85th to less than 95th) | 103 (14.0) | 42 (12.7) | 61 (15.0) |
| Obese (over 95th) | 63 (8.5) | 30 (9.1) | 33 (8.1) |
| **Perception of body image** | | | |
| Thin | 256 (34.7) | 98 (29.7) | 158 (38.7) |
| Normal | 446 (60.4) | 202 (61.2) | 244 (59.8) |
| Overweight | 36 (4.9) | 30 (9.1) | 6 (1.5)' |
| **Desired body image** | | | |
| Thin | 329 (44.6) | 84 (25.5) | 245 (60.0) |
| Normal | 398 (53.9) | 236 (71.5) | 162 (39.7) |
| Overweight | 11 (1.5) | 10 (3.0) | 1 (0.2) |

comparison to normal weight and underweight adolescents, 20% and 12.1%, respectively. Participants' perception of own body image was significantly associated with DEA ($p < 0.001$); 44.4% of adolescents who perceived their body image as obese or overweight developed DEA. Of the adolescents who desired a thin body image, 33.4% developed DEA ($p < 0.001$).

The difference in the mean of body esteem scores between adolescents with DAE and normal eating behaviors was found to be statistically significant; $t$ (736) = 5.20 ($p < 0.001$) (Table 4). Adolescents with normal eating behaviors had a mean body esteem score (M = 2.6, SD = 0.7) significantly higher than adolescents with DEA (M = 2.42, SD = 0.8). Within body esteem subscales, all subscales—appearance, weight, and attribution—were significantly associated with DEA.

## 4.2. Predictors of DEA

To examine the factors predicting DEA, a binary logistic regression analysis was run on the total sample ($n$ = 738) (Table 5).

In the logistic model, DEA served as the dependent variables. The independent variables that were entered into the model as potential predictors were body esteem

Table 3: Distribution of study participants by eating attitude status and independent variables (*N* = 738).

| | Eating Behaviors Status | | Total | P-value |
|---|---|---|---|---|
| | EAT-26 < 20 **n** (%) | EAT-26 ≥ 20 *n* (%) | | |
| **Total** | **564 (76.4)** | **174 (23.6)** | – | – |
| **Gender** | | | | |
| Boys | 276 (83.6) | 54 (16.4) | 330 | 0 |
| Girls | 288 (70.6) | 120 (29.4) | 408 | |
| **Age (years)** | | | | |
| 14 | 158 (72.5) | 60 (27.5) | 218 | 0.318 |
| 15 | 201 (76.4) | 62 (23.6) | 263 | |
| 16 | 200 (79.7) | 51 (20.3) | 251 | |
| **Social class** | | | | |
| Low | 212 (79.7) | 54 (20.3) | 266 | 0.261 |
| Middle | 242 (75.2) | 80 (24.8) | 322 | |
| High | 110 (73.3) | 40 ( 26.7) | 150 | |
| **School** | | | | |
| Public | 473 (78.7) | 128 (21.3) | 601 | 0 |
| Private | 91 (66.4) | 46 (33.6) | 137 | |
| **BMI Percentile** | | | | |
| Under weight | 29 (87.9) | 4 (12.1) | 33 | 0 |
| Normal weight | 432 (80.0) | 108 (20) | 540 | |
| Over weight | 72 (69.2) | 32 (30.8) | 104 | |
| Obese | 31 (50.8) | 30 (49.2) | 61 | |
| **Perception Body Image** | | | | |
| Thin | 204 (79.7) | 52 (20.3) | 256 | 0 |
| Normal | 340 (76.2) | 106 (23.8) | 446 | |
| Overweight | 20 (55.6) | 16 (44.4) | 36 | |
| **Desired body image** | | | | |
| Thin | 229 (69.6) | 100 (30.4) | 329 | 0 |
| Normal | 325 (81.7) | 73 (18.3) | 398 | |
| Overweight | 10 (90.9) | 1 (9.1) | 11 | |

Table 4: Association of eating attitude with body esteem (*N* = 738).

| | Eating Attitude | | t-value | p-value |
|---|---|---|---|---|
| | Normal Mean (SD) | Disordered Mean (SD) | | |
| Body Esteem | 2.6 (0.7) | 2.4 (0.8) | 0.86 | 0 |
| Appearance | 2.9 (0.7) | 2.5 (0.9) | 6.67 | 0 |
| Weight | 2.9 (0.9) | 2.2 (1.2) | 8.39 | 0 |
| Attribution | 2.4 (0.8) | 2.6 (0.8) | −3.02 | 0.003 |

(body weight, body attribution, and body appearance), BMIP, perception of body image, change body weight, and gender.

The adjusted effect of gender on DEA was not statistically significant (OR = 1. 54 for girls, 95% CI = 0.94–2.52).

The adjusted effect of body appearance esteem was not statistically significant (OR = 0. 83, 95% CI = 0.58–1.20). Whereas the body weight and attribution satisfaction significantly predicted DEA. For the body weight esteem, for each one-unit increase in body weight satisfaction scale, the risk for developing DEA decreased by 0.50 (95% CI = 0.41–0.62). For attribution esteem, for each one-unit increase in attribution esteem, DEA increased by 1.82 (95% CI = 1.40–2.36). The adjusted effect of BMIP and self-perception of body image on DEA was not statistically significant.

# 5. Discussion

## 5.1. Disordered eating attitude (DEA)

The mean score of the EAT-26 obtained by this study was lower than the research in a previous Jordanian study of adolescent females [21]. This difference can be attributed to differences in school settings, which was the capital city in the previous study [21]. Actually, Amman, the capital city, is the most urbanized city in Jordan (Alwan & Kharabsheh, 2006) compared to our setting, which is much more rural area. This is supported by Van son's (2006) findings, which showed that adolescents in urban areas were more likely to develop DEA than those in rural areas. In urban areas, there tends to be increasing numbers of fast food restaurants and grocery stores to accommodate larger quantities of people compared to those in rural areas. So, larger amounts of food can be obtained inconspicuously (Alfano, Hodges, & Saxon, 2009).

Table 5: Logistic Regression Analysis of factors associated with disturbed eating attitudes and independent variables ($n$ = 738).

| Independent Variable | Odds Ratio | 95% C.I. | p-value |
|---|---|---|---|
| **Gender** | | | |
| Boys | ref | | |
| Girls | 1.54 | 0.94–2.52 | 0.08 |
| **Body esteem** | | | |
| Body weight satisfied | 0.5 | 0.41–0.62 | 0 |
| Body attribution satisfied | 1.82 | 1.40–2.36 | 0 |
| Body appearance satisfied | 0.83 | 0.58–1.20 | 0.337 |
| **BMI percentile** | | | |
| Underweight | ref | | |
| Normal weight | 1.62 | 0.50–5.25 | 0.423 |
| Over weight | 1.58 | 0.44–5.66 | 0.487 |
| Obese | 2.54 | 0.64–9.96 | 0.19 |
| **Perception body image** | | | |
| Thin | ref | | |
| Normal | 1.2 | 0.75–1.92 | 0.438 |
| Overweight | 1.46 | 0.51–4.17 | 0.472 |
| **Desired body weight** | | | |
| Thin | ref | | |
| Normal | 0.56 | 0.38–0.82 | 0.002 |
| Overweight | 0.26 | 0.03–2.18 | 0.173 |

In this study, about a quarter of the adolescents reported DEA (Measured by EAT-26). This finding is lower than that in a previous Jordanian study that showed that about a third of Jordanian adolescents had DEA [11, 21], twice as high as that found in American [9], Turkish [27], and Korean studies [8], but very close to those reported in Greece [28].

Among the girls in our study, the prevalence of DEA was similar to what was reported in the UAE [29]. Furthermore, our finding for adolescent girls to develop DAE was twice as high as that found among the southeastern Asian countries of Taiwan [2], South Korea [8], and Japan [30]. When compared to Western countries, our findings were

higher than those reported in the USA [9] and Canada [31] and also higher than in Turkey [27], but the results were very close to the results reported in Greece [28].

On the other hand, the boys in our study were more susceptible to developing DEA than those reported in the USA [9], Korea [8], Greece [28], and Turkey [27]. This difference could be attributed to a lack of relevant health education and promotion programs in Jordanian schools. Also, adolescents either at home or in school receive little attention in Jordan, and there are very few programs that target adolescents' overall health and lifestyle behaviors. This, in turn, could increase the tendency to develop unhealthy behaviors. Furthermore, little research has been conducted on the eating attitude among adolescents in Arab countries compared to those in Western or Asian countries.

In the Middle East, girls seem to report higher percentages of DEA when compared to boys. In this study, the prevalence of DEA was much higher in girls compared to boys, and this is consistent with Musaiger et al. [11], who also reported statistically significant results in 6 of 7 Arab countries.

One possible explanation for the development of DEA among girls are changes in body appearance (increased adiposity) and physical changes (breast development), which may have an effect on the internalization of the thin ideal as a standard of beauty and, in turn, girls struggle to maintain this ideality of beauty [32]. On the other hand, changes in body appearance (growing body and facial hair) and physical changes (V-body shape) among boys present the desired body image for them, thereby reducing their vulnerability to DEA [32].

According to the literature, age appears to be an important risk factor for DEA [15]. However, our findings did not show a significant difference in the different age groups; although adolescents aged 14 years had a higher prevalence of DEA, this finding is consistent with Fan et al.'s [33] finding, which found no statistically significant difference with age, and inconsistent with Eapen et al.'s [29] study, which found significant differences in age groups among girls in the UAE. This may be due to the delay in puberty development in Jordan [34] as compared to that in the UAE, which has a hot climate that could accelerate the onset of puberty (Zaal, Brebner, Musaiger, & D'Souza, 2011).

An interesting finding is that social class was not associated with DEA, which is in line with Mousa et al. [21] and Eapen et al.'s [29] findings. Some studies, however, are inconsistent with our results [33]. Globalization and negative mass media pressure may eliminate the pressure of social class, such as increasing satellite TV channels among people irrespective of their economic status [29].

In the present study, BMIP was significantly associated with DEA, suggesting that overweight and obese adolescents are more likely to exhibit DEA. This finding is consistent with previous studies in Jordan and other Arab countries [11, 21], Turkey [35], Taiwan [33], Korea [8], and Canada [31]. This is alarming and has also been emphasized in a recent Jordanian study in which the prevalence of overweight adolescents was high compared to that of neighboring countries [36]. A potential explanation for that is the issue of weight-related teasing (WRT). Most of the previous studies suggest that obese and overweight adolescents are teased significantly more than nonobese adolescents [37].

Although overweight and obese adolescents in our sample were more likely to develop DEA, BMIP was not a significant predictor of DEA. This finding was inconsistent with previous reports (Yang, Su-Jin, Mousa, Tamara Yousef), which found that BMIP was a predictor of DEA among girls [8, 21].

It is interesting to note that our findings suggested that DEA was higher in private schools than in public schools and also that adolescents in private schools were more obese and overweight than those in public schools. This may be the effect of the amenities provided by private schools, such as transportation and the availability of junk food and soft drinks in their canteen. Also, students in private schools usually have high economic status, allowing them to consume more junk food. Hence, these factors could play a role in the increasing obesity rates in private schools, which could thus increase body dissatisfaction and DEA could develop as a result. In fact, this is supported by our findings, in which adolescents in private schools were more obese and overweight than those in public schools.

Most boys in this study perceived their body image as a normal body image, and most of them desired a normal body image. On the other hand, the findings of the current study showed that most girls perceived their body image as a normal body image, but most of them desired a thin body image. This is consistent with previous studies [2, 8, 38]. Desiring thin body image could be a result of the influence of Western culture that links beauty to thinness [21, 39]. Another possible explanation for that is the Westernization influence of media, modeling, and exposure to TV and fashion programs that may contribute to a preoccupation with thinness and body image dissatisfaction [39, 40]. In fact, this is an important issue that should be taken into consideration by parents and school health nurses, especially after the spread of Turkish drama and the feasibility and availability of mass media for everyone in the last few years.

Traditional Arab culture and norms dictate a plump body size for girls [39] because a plump body is linked to beauty, sociability, romance, and sexual attraction [11]. The incongruence between Arab traditions and norms and Western culture regarding the perfect body image puts pressure on girls to achieve high body esteem, a general feeling about body appearance and weight satisfaction and evaluation attributed to others about one's body weight and appearance, thereby girls develop body dissatisfaction and DEA risk increases as a result [39].

### 5.2. Strengths and limitations

The strengths of this study include the random selection and the large sample, which made the sample more representative. The diversity of age and the inclusion of both boys and girls make this study different from previous studies that focused on girls and a limited age group.

Limitations of this study include the self-reporting bias. Another limitation is the large number of the questionnaire's items. The researcher tried to overcome this issue by creating the online survey, which might be more interesting as compared to a paper survey.

## 6. Conclusion

With a high prevalence of DEA in Jordan, findings also suggest a further primary prevention program, such as an educational intervention program about the signs and symptoms of unhealthy eating behaviors, healthy eating behaviors, body image concerns, and body esteem evaluation, should be instituted.

Findings of the current study highlight the high prevalence of overweight and obese adolescents. It's important to note that high BMIP is associated with perceived peer pressure and DEA. So, an intervention program, such as dieting or exercise programs, should be offered to those students who have a high BMIP. In addition, these adolescents should be taught the importance of body esteem and the consequences of body dissatisfaction.

### 6.1. Ethical Clearance

The research was approved by the Institutional Review Board (IRB) at Jordan University of Science and Technology for review and approval.

All students who were recruited in the study had been asked voluntarily to sign child informed assent as well as a parental informed consent after explaining the purpose, potential risk, and procedure. They were also informed that they have the right to refuse answering any questions and could withdraw from the study at any time without any penalties. Confidentiality and anonymity were carefully protected and ensured during all stages of the study.

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