

Gender and Disordered Eating of Adolescents in Israel

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ABSTRACT

Background: Studies from recent decades indicate that the ideal of thinness can be discerned in a growing dissatisfaction with weight and an increase of the prevalence of disordered eating at an earlier age of onset.

Objective: The purpose of this study is to evaluate the prevalence of disordered eating (above the cutoff point of 30 on the EAT-40) among a normal population of school students in Israel.

Methods: The study sample was composed of Israeli (Jewish) adolescents in grades 7 to 12 from four schools. Of 326 students approached (181 females and 142 males), 323 completed the self-report EAT-40 and a structured questionnaire that provided socio-demographic and other information.

Results: 41.5% of adolescents were not satisfied with their weight and 45.3% want to lose weight. A third of the sample engages in dieting behavior frequently; 6.1% of the adolescents have pathologic EAT-40 scores, with about three times as many girls as boys exhibiting disordered eating; 8.2% of the girls and 2.8% of the males show disordered eating ($\chi^2=0.115, p<0.05$). Among adolescents who are dissatisfied with their weight there are 7.6 times more with pathologic EAT scores than those who are satisfied with their weight ($\chi^2=0.220; p<0.01$). There are 10.8 times more pathologic EAT scores among adolescents who wish to lose weight than among those who do not wish to reduce their weight ($\chi^2=0.237; p<0.01$). No significant differences in pathologic EAT scores were found among adolescents from different ethnic backgrounds or levels of religious observance.

Conclusion: The prevalence of disordered eating among adolescents in Israel is higher than other countries in general, and among males in particular. There is a need for increased efforts to detect adolescents at risk for developing eating disorders, with the assistance of clinical tools. In addition an educational policy for disordered eating prevention should be instituted.

BACKGROUND

The past decades have witnessed the development of a cult of the body and the glorification of the ideal of thinness in modern Western society (1). Some of the side effects of this ideal can be discerned in a growing dissatisfaction with the body. A study in the U.S.A. reported that 80% of the girls stated they would like to weigh less (2). Israel, like other Western countries, is also influenced by the cult of the body. A national study reported that 60% to 80% of Israeli female adolescents are dissatisfied with their weight and body shape, although the vast majority of these youngsters are of normal or even low weight (3). In a study undertaken in 2001-2002, Israel ranked second among 33 Western countries, with 26% of Israeli girls engaged in dieting behavior (4). Previous international studies revealed an even high proportion of disturbed eating among Israeli girls, around 34.5% (3) and 28% (5). As for males, a national survey (3) revealed that 11% of the Israeli boys showed disturbed eating. This rate is higher than the rate reported in a previous study (5) of 8.9%.

The desire for thinness leads adolescents to use different behaviors to reduce weight. Some behaviors, such as controlled eating or supervised physical exercise, are considered positive or harmless methods of weight loss, while others,

such as fasting or the overuse of laxatives, are liable to have serious health consequences (6-8). This study evaluates eating attitudes and behaviors among adolescents in Israel.

However, body dissatisfaction is not only related to ideal body perception but also to being overweight (9). The desire for weight loss is more pronounced among adolescents with higher weight than among those of normal weight. Self-perception of overweight was found to be the most important factor leading to attempts to lose weight in nationally representative samples of adolescents from over 30 countries (9). Various studies have found that adolescents' satisfaction with their weight and their attitudes regarding their appearance are related to dieting behavior and other methods of weight control (10, 11). Significant differences were also found, however, in the body satisfaction of girls compared to boys (12). Whereas boys perceive the ideal body as muscular girls prefer a thinner body, and perceive the ideal feminine body as very slim (13). Even so, children and adolescents from different ethnic groups might choose a heavier and broader ideal body (14), although the findings are not systematic. A study in Israel found that Jewish college females were less satisfied with their current figures than Arab females (15).

Some studies show that gender differences in body image develop at early ages of 8-10 years old (6, 16) although some studies reported that these differences can occur even as early as age 6 (14).

Disordered eating is a broad construct that includes subclinical eating disorders not otherwise specified (EDNOS) as well as aberrant preoccupations, attitudes and behaviors related to shape, weight, body image and food, that do not reach the levels of EDNOS (4, 16).

Studies of the prevalence of disordered eating attitudes and behavior based on the Eating Attitudes Test (above the cutoff point of 30 on the EAT-40) show that disordered eating ranges from 5% to 22% (2, 17-19) and one study of males (20) found high scores of EAT-26 in 6% of high school boys. There are a few studies regarding disordered eating in Israel. Most of these studies focus on girls in various settings. Two studies of 12-18-year-old Jewish girls in Israel in several educational settings such as urban-secular, kibbutz and boarding schools reported that around 20% of the students of the secular boarding school had the most pathological EAT-26 (21) and EDI-2 (22) scores. The researchers suggest that eating-related pathology may increase when there are adverse conditions for growing up. One earlier study (23) reported higher rates of pathologic EAT-26 scores among girls from kibbutzim compared to girls in five urban high schools; 27% of the girls from kib-

butzim had pathologic EAT-26 scores compared to 16.2% of the urban high school girls (23). Another study of native Israeli and Russian immigrant females (24) reported that 19.6% of the native Israeli females had pathological levels of disturbed eating attitudes and behaviors as assessed with the EAT-26. A similar rate (18.8%) was found among the Russian female immigrants living in Israel for a longer period of time. On the other hand, only 7.9% of the Russian female immigrants living in Israel for three years or less had pathological levels as assessed with the EAT-26. The researchers (24) attribute these findings to the inclination among veteran immigrants to adopt Western cultural norms in order to bring them closer to native Israelis.

Recently a national study of 2,978 Israeli Jewish and Arab schoolgirls from grades 7 through 12 (25) found that 30% of these girls can be defined as having disordered eating behavior according to the 4-points adapted SCOFF questionnaire. The study also found that being underweight reduces the probability of disordered eating, but that dieting, early onset of menarche, being overweight or obese and suffering from constipation increases the risk. Arab girls were more likely to have disordered eating than Jewish girls.

Interestingly, a previous study of Arab girls from different ethnic backgrounds reported that the highest EAT-26 scores (>20) were found among Bedouin (19.4%) and Muslim (18.6%) adolescents (23). The drive to diet or involve themselves in disordered eating is related mainly to media influence, particularly television. In the Western world, the television and media convey the message that "thin is beautiful/intelligent" and have permeated the entire social fabric so that teenage girls are equally influenced to diet irrespective of their SES background. Specifically for Arab girls it is suggested that the degree of exposure to the Western body ideal and to the presence of a conflict between what is the supposedly modern and the traditional feminine role is also considered to affect the high rate of eating disorder among those girls (23).

A few studies in Israel addressed disordered eating among males. A study of 360 students in northern Israel (26) found that 5% of the boys (and 20.8% of girls) had pathological EAT-26 scores. Another study (27) reported that 6.8% of boys (and 20% of the girls) had pathologic EAT-26 scores.

The current study seeks to provide an additional look at the prevalence of disordered eating among adolescence in Israel. The objectives of this study are to evaluate the prevalence of disordered eating attitudes and behaviors by an Eating Attitudes Test (EAT-40) above the cutoff

point of 30 (28, 29) in a random sample of 323 students of four large school base populations in Israel.

METHOD

PARTICIPANTS

The study was conducted in four schools in the northern and central regions of Israel. Each school has approximately 500 students. The four schools therefore comprise a total of 2,000 Jewish pupils. In each school we sampled randomly three classes. In each class about 25-30 students answered the questionnaires. The final sample included 323 students. The sample consists of 56% (n=181) females and 44% (n=142) males. The mean age was 14.4 (SD =1.25, n=322). 60.3% (n=195) were born to Israeli fathers, 28.1% were born to fathers of different countries, 10.5% (n=34) had fathers who came from Russia and 0.9% (n=3) fathers who came from Ethiopia.

MEASURES

The Eating Attitude Test questionnaire (EAT-40) (28) was used to evaluate disordered eating. The EAT-40 consists of 40 items that relate to different dimensions of eating behavior, such as dieting, bulimia, a desire to be thin, excessive preoccupation with food and social pressures to eat (29). For example, the behavioral dimension of dieting is represented by statements such as: "Avoid eating when I am hungry," "Engage in dieting behavior" and "Like my stomach to be empty." The dimension of bulimia is represented by statements such as: "Have gone on eating binges where I feel I may not be able to stop" and "Vomit after I have eaten." The aspiration for thinness is represented by statements such as: "Am terrified about being overweight" and "Am preoccupied with a desire to be thinner." Food preoccupation is represented by statements such as: "Eat the same foods day after day" and "Feel that food controls my life." Finally, the dimension of social pressure to gain weight is represented by statements such as: "Feel that others would prefer if I ate more" and "Feel that others pressure me to eat." The respondents' answers for each item in the questionnaire are on a Likert scale from 1 to 5 (1=always, 2=often, 3=sometimes, 4=rarely, 5=never). Each respondent's final score is based on the total number of points accumulated from the answers to the questionnaire. The original questionnaire was translated into Hebrew for the purposes of this study. A test of the Hebrew-language questionnaire's internal consistency showed it to have a high level of reliability ($\alpha=0.85$), close to that of the original questionnaire ($\alpha=0.87$).

The respondent's score on the EAT-40 is calculated by the 40 items in this questionnaire. The eat cutoff point is 30. A final score above the cutoff point (>30) indicates disordered eating (17, 28, 30).

A structured questionnaire was administered to obtain information about each participant regarding the followings: gender (male or female), age (in years), weight (kg) and height (cm) as reported by each respondent and the father's country of birth.

Religiosity was measured by the question: "How do you define yourself in terms of religion?" with possible answers: religious, traditional and secular, which are considered as levels of religious observance. Desired weight loss was measured in kilograms, with possible answers: 0.5kg, 1kg, 2kg, 3kg, 4kg, 5kg, more than 5kg. Weight perception was measured by the statement: "I define myself as" (a) very thin (b) thin (c) full-figured (d) fat (e) very fat. Weight satisfaction was measured by the statement: "I am satisfied with my body," with the possible answers: "Yes" or "No." Desire to lose weight was measured by the statement: "I desire to lose weight," with the possible answers: "Yes" or "No." Those questions are not part of the EAT-40. Thus the answers to them do not affect the EAT-40.

PROCEDURE

Each questionnaire contains the EAT-40 in part A and a structured questionnaire which obtains socio demographic and other information about each participant in part B. The questionnaires were approved by the Ministry of Education and the school principals. The questionnaires were delivered and distributed by two research assistants who explained to the students how to fill out the questionnaires, and who emphasized that the questionnaire is anonymous and that the students' names do not appear on it and asked them to answer honestly. Of 326 students approached, 323 completed the questionnaire and three students refused to participate.

STATISTICAL AND DATA ANALYSIS

Four statistical measurements were used (31): Spearman's rho (signified by r_s) for testing for correlations between ordinal variables. The Spearman test is a version of Cramer's correlation. The Phi measurement (signified by the letter Φ) for testing associations between variables, one or two of which are nominal; for the comparison of continuous variables, student's t-test was used. The values were presented as the mean plus the standard deviation (SD) and as percentages.

For proportion comparison between the groups, the chi-square test was used. Differences are considered statistically

significant at a P value of <.01 or <.05. Data were calculated with the use of the Statistical Package for Social Sciences software (SPSS v. 15.0; SPSS Inc., Chicago, IL, USA).

RESULTS

The respondents' average weight was 53kg (SD=11.8; n=256), and their average height was 1.64m (SD=0.87; n=256); 60.2% had Israeli-born fathers, while the fathers of 39.8% had been born outside Israel. About a half of the students were secular, about 40% were traditional, and only 10% were religious. Other characteristics are presented in Table 1

Among adolescents who wish to reduce weight (n=148), we found a positive correlation ($r_s=.348$) between the number of kg each wished to lose and weight satisfaction, as presented in Table 2.

Table 3 presents the frequency of selected eating attitudes and behaviors among the sample.

Our findings show that 6.1% of the sample scored above the EAT-40 cutoff (>30). There is a correlation between

gender and pathologic EAT-40 scores, with 8.2% of the females scoring above the EAT-40 cutoff (>30), compared to 2.8% of the males ($\phi=0.115$, $p<0.05$). Another finding relates to the age of those with disordered eating. A t-test of the differences between age groups revealed significant differences between the age of those above the EAT-40 cutoff and below it ($t=2.586$, $df=320$, $p<0.01$). Those above the EAT-40 cutoff were relatively older than the rest, with an average age of 15.1 years (SD=1.2), compared to the average age of those below the eat cutoff (14.4 years; SD=1.2).

We also found little association between weight satisfaction among the sample and pathologic EAT-40 scores ($\phi=0.220$). In addition, we discovered little association between the subjects' desire to lose weight and pathologic EAT-40 scores ($\phi=0.237$), as presented in Table 4.

However, no significant differences were found between those who wish to lose several or only a few kg with regards to their representation in the group with pathologic EAT-40 scores, as shown in Table 5.

DISCUSSION

The present study provides some interesting findings regarding the eating behavior and attitudes of adolescents in Israel and explores some important characteristics of Israeli students, especially toward body dissatisfaction, body perception and desire to reduce weight. An important asset of the study is that it provides information from a normal population of Israeli adolescents. Relatively few studies have been done in this population group.

This study reveals that the ideal of thinness is very prominent among these teenagers, as evinced by 41.5% of them who admitted that they were not satisfied with

Table 1. Weight satisfaction, weight perception and desire to reduce weight in the study sample of Israeli (Jewish) adolescents aged 12-18

Variable	Total	percentages
Weight perception	310	100.0
Very thin	13	4.2
Thin	151	48.7
Full-figured	123	39.7
Fat	17	5.5
Very fat	6	1.9
Weight satisfaction	313	100.0
Satisfied	183	58.5
Not satisfied	130	41.5
Desire to reduce weight	322	100.0
Yes	146	45.3
No	176	54.7
Number of kg would like to lose*	148	100.0
0.5 kg	6	4.1
1 kg	4	2.7
2 kg	12	8.1
3 kg	15	10.1
4 kg	15	10.1
5 kg	37	25.0
More than 5 kg	59	39.9

*Relevant only to those who wish to lose weight

Table 2. Israeli (Jewish) adolescents aged 12-18 who wish to lose weight, by the number of kg they wish to reduce and by their weight satisfaction (n=148)

Number of kg wish to lose	Total	Weight satisfaction	
		Satisfied	Not satisfied
Total	148 (100.0)	19.6	80.4
0.5 kg	6 (100.0)	50.0	50.0
1 kg	5 (100.0)	60.0	40.0
2 kg	11 (100.0)	27.3	72.7
3 kg	15 (100.0)	40.0	60.0
4 kg	16 (100.0)	18.7	81.3
5 kg	36 (100.0)	16.7	83.3
More than 5 kg	59 (100.0)	8.5	91.5

($p<0.05$)

Table 3. Selected eating attitudes and behaviors in the study sample of Israeli (Jewish) adolescents aged 12-18 (n=323)

No. 1 ^a	Selected statements	Frequency (%)			Average Score (Eat-40) mean	s.d.
		Always, often and sometimes	Rarely	Never		
1	Like eating with other people	86.8	10.2	3.1	2.49	1.023
4	Am terrified about being overweight	46.4	17.9	35.7	3.40	1.530
5	Avoid eating when I am hungry	19.9	21.5	58.5	4.29	1.013
6	Find myself preoccupied with food	43.4	26.9	29.7	3.63	1.208
7	Have gone on eating binges where I feel that I may not be able to stop	16.0	21.3	62.7	4.38	0.968
9	Aware of the calorie content of foods that I eat	49.4	19.1	31.6	3.40	1.413
10	Particularly avoid foods with a high carbohydrate content	16.4	21.4	62.2	4.39	0.931
12	Feel that others would prefer if I ate more	41.9	19.6	38.5	3.63	1.389
13	Vomit after I have eaten	4.6	9.0	86.4	4.77	0.692
14	Feel extremely guilty after eating	15.9	15.0	69.2	4.45	0.977
15	Am preoccupied with a desire to be thinner	38.7	19.5	41.8	3.67	1.433
21	Eat the same foods day after day	43.1	35.0	21.9	3.65	1.000
22	Think about burning up calories when I exercise.	49.5	17.5	32.9	3.41	1.438
24	Am preoccupied with the thought of having fat on my body	35.3	22.3	42.4	3.77	1.360
25	Take longer than others to eat my meals	48.0	31.2	20.9	3.42	1.207
29	Eat diet foods	35.2	24.3	40.5	3.85	1.191
30	Feel that food controls my life	24.3	20.2	55.5	4.13	1.198
31	Display self-control around food	69.6	9.9	20.4	2.82	1.443
33	Give too much time and thought to food	16.8	25.2	58.1	4.33	0.963
34	Suffer from constipation	6.2	18.8	75.0	4.65	0.738
36	Engage in dieting behavior	32.3	17.9	49.8	4.00	1.200
37	Like my stomach to be empty	25.8	20.2	54.0	4.13	1.162
38	Enjoy trying new rich foods	68.1	17.3	14.7	2.80	1.370
39	Have the impulse to vomit after meals	6.9	10.7	82.4	4.70	0.775

^athe statement number as it appears in the EAT-40 questionnaire.

Table 4. The study sample of Israeli (Jewish) adolescents aged 12-18, by their desire to lose weight and by EAT-40 cutoff (n=313)

Desire to lose weight	EAT-40 cutoff	
	Pathologic [cutoff score > 30]	Not Pathologic [cutoff score < 30]
No	0.0	100.0
Yes	10.8	89.2

(p<0.01)

their weight and 45.3% who declared that they want to reduce weight. Body dissatisfaction is particularly prevalent among 81% to 91% of the adolescents who want to reduce more than 4 kg of their body weight. Those findings are compatible with the findings of a national study in Israel (3), which reported that 60% to 80% of Israeli youth are dissatisfied with their weight. Interestingly, although such a high percentage of the

Table 5. Israeli (Jewish) adolescents aged 12-18 who wish to reduce weight, by the number of kg they wish to lose and by EAT-40 cutoff (n=129)

Number of kg wish to lose	Total	EAT-40 cutoff	
		Pathologic [EAT score > 30]	Pathologic [EAT score < 30]
Total	147(100.0)	12.8	87.2
0.5kg	6(100.0)	16.7	83.3
1kg	4(100.0)	0	100.0
2kg	12(100.0)	8.3	91.7
3kg	14(100.0)	6.7	93.3
4kg	15(100.0)	13.3	86.7
5kg	37(100.0)	16.2	83.8
More than 5kg	59(100.0)	13.6	86.4

youths are not satisfied with their weight, just 5.5% of the subjects defined themselves as fat and 1.9% as very fat.

However it should be noted that those rates are low compared to the findings of a national health and nutrition survey among 7th-12th grade Jewish students which reported that 10.3% are overweight (BMI 88% to 97%) and 1.9% obese (BMI 98% and above) (32). The gap between those findings could be due to the fact that the adolescents' weights in our study are based on the subjects' self-reporting and not on their BMI. So this finding indicates that about 3%-5% of the adolescents who are overweight or obese do not define themselves in those terms and have a distorted weight image.

Concerning the eating behavior and attitudes of the sample, our study reveals that a third of the adolescents frequently engage in dieting behavior (32.3%; Table 3, item 36). These findings are compatible with the study of Harel et al. (3), which reported that 34.5% of Israeli girls engaged in dieting behavior. We also found that 13.6% admitted that they vomit after meals (Table 1, item 13). This finding is compatible with the study of Kaluski et al. (25), which found that 14% of the schoolgirls reports ever having made themselves vomit when they had a feeling of fullness. We also discovered that almost half of the sample admitted that food controls their life (44.5%; Table 1, item 30). This finding is compatible with Kaluski et al. (25), who found that 45% of the girls reported sometimes worrying that they will lose control over the quantity of food they eat.

Our main finding indicates that 6.1% of the Israeli Jewish adolescent boys and girls have disordered eating. This conclusion can be generalized, as it is based on a sample drawn from a large population base from four schools in various parts of Israel and consists of normal adolescent boys and girls. The eating attitudes and behaviors questionnaire (EAT-40) (28-30) that we used as the research tool is appropriate for measuring disordered eating (above the cutoff point of 30 on the EAT-40), as it was designed as a psychometric tool for the initial diagnosis of symptoms of eating disorders and for acquiring a profile of the psychological, attitudinal and behavioral traits of those observed with EDs. The EAT-40 has been used in many studies as a scale for evaluating a wide range of behaviors and attitudes generally observed in EDs (17). We used this version of the EAT-40, even though there is also a shorter version that consists of 26 items (EAT-26) (33). Both versions have been used in research in different studies (4, 16-21, 23, 24, 26, 32) and as screening instruments to measure symptoms and characteristics of EDs.

Compared to some studies, which reported 5.5% (17) or 4% (32) pathologic EAT-40 scores among boys and girls, the rate of adolescents with disordered eating in Israel found in

this study (6.1%) is slightly higher. However, it should be noted that other studies in Israel also reported higher rates of pathologic EAT scores among their subjects, compared to other countries, although those studies used the shorter version of the EAT questionnaire (EAT-26) (21-24).

Regarding the age of adolescents with disordered eating, our findings indicate greater prevalence among adolescents with an average age of 15. This finding joins other studies that reported eating disorders to be more common at age 14 and over (35-36) and is compatible with the findings of Gur et al. (27) in Israel, who found that 16-year-old girls had higher rates of pathological EAT-26 scores than younger girls. No significant differences were found in this study between the adolescents with pathologic EAT-40 scores and the rest of the sample with respect to their ethnicity; whether first- or second-generation Israelis; or in relation to their levels of religious observance. However, it should be noted that the four schools sampled in this study were secular schools. Thus the religious students who attend them may be atypical of the more conservative religious population who attends religious schools. Other studies in Israel (4) have also found no correlation between immigrant status or religiosity and anorexia among Jewish youth. The current study gives special consideration to the issue of disordered eating among male teenagers. This group has rarely been studied in studies in Israel and abroad. Our study found disordered eating among 2.8% of boys. This rate is quite high, compared to the study of Abbate-Daga et al. (17) in Italy (0.4%). In Israel Maor et al. (26) found that 5% of the males (and 20% of the females) had pathologic EAT-26 scores, and Gur et al. (27) reported that 6.8% of boys (and 20% of the girls) had pathologic EAT-26 scores. The ratio of females to males in these studies is 4 to 1 (20% of the females vs. 5% males) in Maor et al. (26) and 2.9 to 1 in Gur et al. (27) (20% of the females vs. 6.8% males). These ratios are compatible to our study, which found that girls are nearly three times as likely to have disordered eating (8.2% vs. 2.8%) than boys.

Another conspicuous finding of the present study is that 8.2% of the girls show disordered eating. This rate is slightly higher than reported by Abbata-Daga et al. (17) in Italy (7.4%) or other countries (2, 37). Other studies in Israel that used the shorter version of the EAT questionnaire (EAT-26) also revealed a higher incidence of females (around 20%) with pathological EAT-26 scores (cutoff score > 20) compared to other countries (4, 21-24).

Our findings which show that disordered eating is approximately three times more frequent in girls than boys is a surprisingly low ratio, given that the literature generally

claims that around 85% of eating disorder patients are women. However, a common feature of those teenagers with disordered eating is that they are 7.6 more likely to be dissatisfied with their weight than other teens.

A possible explanation for these findings – as other researchers in Israel also noted (23-25) – is that adolescents in Israel are affected by the Western modern culture which glorifies the ideal of thinness (1). These models are often conjoined with different personality traits which are presented by the media, including television and film actors, celebrities mentioned in the press, magazines, and the Internet. For example fatness is represented as symbolizing negative features, such as lack of control, laziness and addiction to various pleasures and cravings; feminine thinness is presented with attractiveness, autonomy, ambitiousness and control. Studies show (38) that identification with these models has an impact in shaping the adolescents' self-image, when they compare themselves to them.

PRACTICAL IMPLICATIONS

There is a need for increased efforts to detect adolescents at risk for developing eating disorders. The detection of at-risk adolescents should be conducted with the assistance of clinical tools, taking into account more variables like BMI. Future studies should also refer to the participants' body mass index. To date this variable has been little investigated in relation to disordered eating and body satisfaction.

Considering that the current results indicate 41.5% of adolescents were not satisfied with their body weight, the design of a policy for prevention of disordered eating among youth is essential, since body dissatisfaction is considered one of the risk factors for disordered eating and might also increase the risk of psychological disturbances (6, 12).

Since adolescents spend much of their day in school it can be a suitable framework for the implementation of primary prevention programs, aimed to promote healthy eating habits and satisfaction with the body image. A school food policy based on the availability of food items, school food rules, nutrition education program has a positive impact on adolescents' food habits (39). In Israel there is a program that focuses on nutrition education, personal hygiene and development among children. This is operated in cooperation with the Ministry of Health and Ministry of Education through professional staff that received training in nutrition (<http://www.tafuralay.co.il>). However new and modern tools for adolescents' health promotion should rely on the assumption that they need a food culture based on foods to eat, rather than foods to avoid, and an understanding of suitable weight-control measures (40). The adolescents' age in

these programs should be addressed, since younger students were found to be more ignorant of these issues compared to older adolescents (41). Professional staff from different disciplines (42) should also be included in the program.

A model of a comprehensive school-based program suggested that these programs should relate to a variety of factors, such as cognitive, behavioral, social, and cultural. The model proposes to combine knowledge about nutrition along with developing critical thinking about social messages glorifying unrealistic body shapes and decreasing the body dissatisfaction of adolescents (43). Improvement of the body image can be done using a combination of exercises and informal messages that encourage acceptance of different body shapes, and learning methods that encourage healthy relationships, critical thinking, social skills and empowerment (2, 43) through group work, play, drama, etc. (44). A new interactive approach recommends focusing on the concept of self-esteem and positive aspects of the self, the adolescents' expectations and feelings and social pressures held against them (2, 45). In addition, it is recommended increasing the adolescents' understanding regarding the influence of cultural factors on the body image and encouraging them to use critical thinking regarding social norms that glorify unrealistic body shapes (43).

LIMITATIONS OF THE STUDY

The EAT- 40 is used in general as the first part of a two-part diagnostic screen (45, 46) and the present study addresses this initial stage. Future studies should use a sequential procedure in which those identified with disordered eating (in the first stage) will be diagnosed in the second stage via clinical interviews.

An important study limitation lies in the fact that the weight of the subjects was not tested, so it was not possible to calculate their body mass index, and its relation to disordered eating and body satisfaction. Since this study is based on adolescents' self-reported eating behaviors, there is a possibility that some subjects were not interested in providing true answers, especially if the respondents practice some kind of disordered eating. However, since the questionnaires were anonymous there is reason to believe that the participants answered openly and truthfully. Nevertheless, future research in large and representative samples of Israeli boys and girls can strengthen the conclusions of this study.

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