

Correlation between Weight and Body Image among Secondary School Students

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Abstract

Background: A negative evaluation of the appearance of one's body is associated with weight and eating disorders which affected secondary school students psychologically and physically. **The study aimed to** investigate the correlation between weight and body image among secondary school students. **Design:** A descriptive correlational research design was adopted for this study. **Sample:** - Multistage random sample included 640 secondary school students were selected randomly. **Setting:** The study was conducted at four secondary schools in Sohag and Beni-Suef Cities. **Tools:** Three tools were used to collect data; tool (I): A student demographic data, tool (II): Anthropometric measurement tool and tool (III): A self-reported weight and body image inventory, adapted from The University of Florida Counseling Services. **Results:** Mean BMI was 25.83 ± 3.33 and overweight and obesity was found among more than one third of secondary school students, more than half of them were normal weight, and less than five percent were underweight. Relations between sex and body image attitude: More than one third of them for both sexes were at risk. There was a significant correlation between the self-reported current weight of the secondary school students and dissatisfaction about their body image among males and females ($p = 0.005$). **Conclusion:** Both genders from secondary school students responded negatively in relation to weight and body image. There was an association between body image attitudes and weight secondary school students. **Recommendations:** Establishing health educational program for secondary school students about weight control and eating habits to improve their attitudes towards their bodies.

Keywords: Attitudes, body image, secondary school students, and weight.

Introduction:

Secondary School Student means, notwithstanding any other OAR or statute, pupils attending a school offering any secondary curriculum for grades 9, 10, 11, or 12. Additionally, all students attending a school designated by the local school board through board action as a junior high school or middle school may be considered secondary students. Adolescent stage can cause important implications for psychological well-being, because this period involves many physical changes and challenges concerning the maintenance of healthy behaviors (Eisenberg et al., 2017).

They think a lot about their face and body shape. They want to maintain their body shape by different methods, which may be harmful methods to control their weight and body shape. Body image is not limited to the visual characteristics of the person, but is further concerned with health, skills, and sexuality (Luskin et al., 2011).

Weight is one of the most variables which have attracted the attention of researchers in terms of body image study. Weight measures by using a scale which is the right tool for estimation of one's weight (WHO, 2004).

Body image means how a person thinks, perceives, and feels about their body and appearance (National Eating Disorders

Collaboration, 2017). Body image is considered weight-related concerns among adolescents. It is reported that 87% among adolescents in Pulau Pinang and Kedah were concerned with their body shape and shown that more adolescent females tend to select an underweight figure as their ideal body size (**Farah et al 2011**). This distorted body-image perception is further reinforced by the use of social media.

Awareness about body image has been noticed among children and adolescents early at 8 years old that causes them think in a preference to be thinner bodies (**Damiano et al., 2015**). Body image did not reflect the observational remarks of other important people and influence their body satisfaction, self-experienced and evaluated (**Fardouly et al., 2016**).

The perception body image regarding may be has positive or negative effects among student. Studies have demonstrated that body image dissatisfaction occurring during late childhood and adolescence is associated with increased negative affect (**Ferreiro et al., 2016**). Dissatisfaction with body shape and abnormal eating attitudes and behaviors can put adolescents at risk for eating disorders such as anorexia nervosa and bulimia nervosa, which may causes many health effects (**Burnette et al., 2016**).

Johnson and Wardle (2015) stated that disturbances that occurred in the body affected body image and have a significant negative impact on physical and psychological health among adolescents. This is depend on personal factors (personality, self-esteem), interpersonal factors (family, peers and media messages), biological factors (genetic traits, increased BMI, a series of pathologies), and cultural factors (social values and norms) (**Naigaga et al., 2018**).

Body dissatisfaction, or a negative evaluation of the size, shape, or appearance of one's body, has been linked to plentiful awkward behaviors, including binge eating, self-induced purging or laxative misuse (**Roosen and Mills, 2014**). (**Zainuddin et al., (2014)** found that Malaysian Chinese males and females were more dissatisfied with their body shape.

Nurses play an important role in counseling and assisting students to control their weight and in weight management program. They educate obese students and having obesity-related health problems. They provide advice and good care for students about health and balanced diet. The nurses play a role in anticipating difficulties and they need to have skills for taking care of obese students which may cause health problems. Provide support to students to help them to maintain positive attitude towards their body image (**van et al., 2015**). There are limited studies to assess the relationship between health care providers' weight and body mass index with the attitude in Malaysia. Thus, the current study aimed to examine the correlation between weight and body image among secondary school students.

Significance of the study:

Concerning National Eating Disorders Collaboration report, it was estimated that 15% of adolescent females and 3% of males experiencing an eating disorder (**National Eating Disorders Collaboration, 2016**).

Adolescents have a great interest with their body and physical appearance which increasing concern about their body can affect their attitude toward their body. Body image shapes the individual's thoughts, emotions and behaviors and also affects both mental and psychological well-being. Our society today adolescents prefer a very twisted image of beauty for men and women of all ages. The effects of weight on body image reflect on their attitude and can be especially powerful during the teenage years. Student's negative attitudes towards their body image can lead to educational decline, loneliness, avoidance, self-destructive behavior. Therefore the main focus of this study centered on examining the relation between weight and body image among secondary school students (**Wilhelm, 2016**)

Aim of the study

The study aimed to investigate the correlation between weight and body image among secondary school students through:

1. Assessing secondary school students' body mass index.
2. Assessing secondary school students' body image.

3. Assessing the correlation between weight and body image among secondary school students.

Research questions:

- 1- What is the secondary school students' body mass index?
- 2- What is secondary school students' body image?
- 3- Is there a correlation between weight and body image among secondary school students?

Subjects and Methods:**Research design:**

A descriptive correlational research design was adopted for this study; it is used to a statistical measure of a relationship between two or more variables, gives an indication of how one variable may predict another. The descriptive techniques based on observation, in the form of correlations, about that relationship. However, correlation does not imply causation; that is, simply because two events are in some way correlated (related) does not mean that one necessarily causes the other (Walker, 2005).

Setting:

The study was conducted at four secondary schools in Sohag and Beni-Suef Cities. The selected schools in Sohag and Beni-Suef Cities included Sohag El-Thanwia, Asmaa Bent Abo Baker, El-Thanwia El-Gadeda Banat, and El-Nile secondary schools. Sohag and Beni-Suef Cities contains 20 secondary schools. The researchers selected 20% of the total number of schools by stratified random sample which was about four secondary schools.

Subjects

Multistage sample were utilized in this study, 640 secondary schools students who selected randomly were included in this study from four different secondary schools at Sohag and Beni-Suef Cities. The researchers took 10% of students from the four schools. The total number of secondary school students in all secondary schools was about 36000 students; the researchers took taken 10% of students

from the four secondary schools. The secondary school students were from grade one, two and three.

Inclusion criteria included:

- (1) Secondary school students aged from 15-18 years.
- (2) From both sexes.
- (3) Agree to participate in the study.

Exclusion criteria included:

- (1) Secondary school students with physical health problems.
- (2) Secondary school students with mental problems.

Tools of data collection:

Three tools were used to collect the data of the study as the following:

Tool (I): A students' demographic data sheet: it was utilized to collect data pertinent to this study designed by the researchers based on reviewing the relevant literature. It included four questions related to the demographic characteristics of the students as follows: students' age, gender, residence, educational level.

Tool (II): Anthropometric measurement tool: This tool included the anthropometric measurement of the child which is used to record weight, height, and Body mass index (BMI) which was calculated by dividing weight (kilograms) with height in meters squared (kg/m^2). Evaluation of growth status (underweight, normal, overweight, and obesity) using BMI was based on the score of centile is performed according to Egyptian centiles as the following: (1) a student with BMI below 5th centile is considered underweight. (2) A student with BMI from above or equal to 5th centile to below 85th centile is considered normal. (3) A student with a BMI equal to or above 85th centile but less than 95th centile is considered overweight. (4) A student with a BMI equal to or above 95th centile is considered obese.

Tool (III): A self-reported weight and body image inventory (Estes and Kohnke, 2012) adapted from The University of Florida Counseling Services. This inventory was comprised of 10 true/false statements addressing

attitudes related to weight and body image. The responses were analyzed; with five or more negative responses representing is considered a higher degree of risk. The weight and body image attitudes inventory consisted of statements about the level of comfort participants feel surrounding their weight. This inventory also had statements related to how they feel regarding their body shape and size. Participants were categorized as either presenting normal or at-risk attitudes based on their negative responses to these statements.

It is comprised of 10 true/false statements as follow:

1. I rarely talk negatively about my body.
2. I do not weigh myself more than once a week.
3. If appearance didn't matter in our society, I would still exercise the same amount that I do now.
4. I rarely compare my looks or body to others.
5. I rarely feel guilty / anxious after eating a high fat / high calorie food.
6. I can accept a compliment about my appearance.
7. If I had to do things that were unhealthy (fasting, laxatives, throwing up, excess exercise) in order to change (or maintain my weight), I would choose not to do them.
8. I feel happy or content, for the most part, with my life at this time.
9. I wouldn't panic if I gained (or lost) a few kilos.
10. For the most part, I am satisfied with my body shape and size.

Validity and reliability of the tools:

The content validity of the tools tested for clarity, comprehensiveness, appropriateness, and relevance and reviewed by five experts in pediatric nursing field to test the content validity before using it in the study. Modifications were done according to the panel judgment to ensure clarity of sentences and appropriateness of the content. The Cronbach's α test was used to assess the reliability of the tools was assessed through Cronbach's alpha test $\alpha = 0.90$ in the first tool, the second tool α were 0.86, and the third tool was 0.87.

Administrative Approval

Before starting this study, Permission was obtained from ministry of education in Sohag

and Beni-Suef Cities; official permission was obtained through an issued letter from the Dean of Faculty of Nursing, Sohag and Beni-Suef Universities to the managers of the selected secondary schools affiliated to Sohag and Beni-Suef Cities, Egypt. The aim of the study was explained and the expected outcomes from the implementation of the study were included in this letter to obtain permission to collect the research data.

A pilot study

A pilot study was conducted on 10% of the sample (64) secondary school students. The clarity and testing of the feasibility of the research process needed for modifications were done to develop the final form of the tools. Secondary school students involved in the pilot study were excluded from the study.

Fieldwork:

Data was collected in November 2020. Data collection was collected by the researchers during the school day according to every school policy. The work started by meeting the school managers in the morning or evening school day, the researchers firstly were introduced themselves to school managers and gave them a complete explanation about the study and the tools used which translated by the researchers in the Arabic language to collect the required data. Then the researchers went to the students' classes and introduce themselves to students, and explain the aim for their visits and the research aims, and invited them to participate in the study by filling out the tools of data collection. Then the tools used were distributed to 640 students and was collected on the same day.

Methods for data collection: -

- After obtaining the written permission from the schools, a written consent was obtained from the students to participate in the study.
- The students were interviewed face to face by the researchers, and a total of 640 questionnaires including the three used tools were distributed.
- The participants were asked to read each question carefully and to answer the questions honestly.

- The researchers were available for more clarification whenever needed. Once the participants completed the questionnaires, the researchers collected them from the participants by themselves in every visit.
- The researchers visited each school twice every week to collect data. It was done during the routine work of the school. -The participants took about 25-35 minutes to fulfill the questionnaires.
- Student's weights were measured using an electronic weighing scale, and the scale records weights in kilograms.
- Student's heights were measured using plastic measuring tape in centimeters, and the scale records heights in centimeters.
- Body mass index (BMI) which was calculated by dividing weight (kilograms) with height in meters squared (kg/m²).
- The evaluation was done through the A self-reported weight and body image inventory, adapted from The University of Florida Counseling Services. This inventory was to assess attitudes related to weight and body image.

Ethical considerations:

Written informed consent was obtained from the secondary school students after the objective of the study was explained to them. The researcher informed the participants that, the study was voluntary, they were allowed them to not participate and they had the right to withdraw from the study at any time, without giving any reason. Moreover, they were assured that their information would be confidential.

Statistical analysis:

Data entry and statistical analysis were performed using SPSS for Windows, version 20. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and mean and SDs for quantitative variables. Differences between the two means tests (t-test) were used. Chi-square (x²) test of significance was used to compare proportions between qualitative parameters. Pearson's correlation coefficient (r) test was used to assess the degree of

association between two sets of variables. Statistical significance was considered at P-value <0.05.

Results:

In the present study, table (1): illustrated that the mean age of secondary school students was 15.25 ± 1.43 , the age group from 15 - ≤ 16 years was the most prevalent (56 %); it is noticed from the same table that (75%) of the secondary school students were male, whereas 25% of them were female, and 44% of children was in the first-grade primary education.

Figure (1): Demonstrated that (63%) of secondary school students living in rural areas and 37% of them were from urban areas.

Table (2): Showed that the average weight and height among secondary school students were 71.45 ± 15.14 kg and 168.8 ± 11.31 cm, respectively. Mean BMI was 25.82 ± 3.36 .

Table (3): Illustrated that 41% of students was found to be overweight and obesity, 56% of them were normal weight, and 4 % were underweight.

Table (4): illustrated that, from the total secondary school students, one third (34 %) of them were having negative attitude. While (66%) of the students were normal. At risk students (More than 5 false answers) were 34 % of male students, 48 % of female students, with a total of 43% for both sexes (p=0.001)

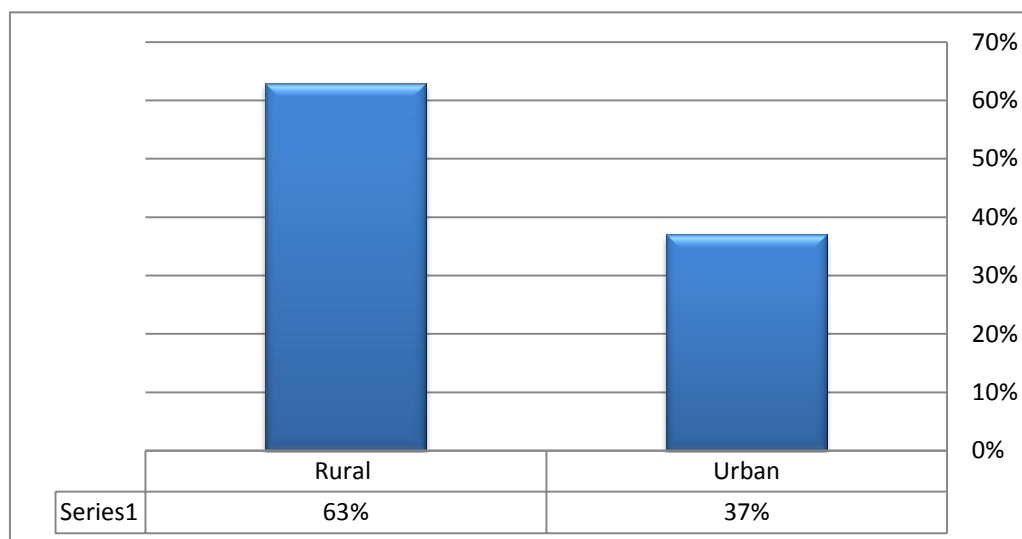
In Table 5; it's observed that a correlation between the students' self-reported current weight and their attitudes about weight and body image. Also, showed a statistically significant positive correlation present among females, $r = 0.134$, $n=258$, $p=0.036$.

Regarding body image attitude and BMI **Table 6** revealed that; (66%) of students had normal attitude, while 34 % were having negative attitude.

Table (7): illustrated correlations between self-reported weight and attitude about body image in males and females; it observed that female students revealed a significant correlation between their self-reported current weight and negative attitude about their body image in relation to males ($p = 0.005$).

Table (1): Frequency distribution of the secondary school students according to their demographic characteristics (n=640)

Personal characteristics	No	%
Age (Yrs.)		
• 15 - ≤16	346	54.0
• 16- ≤17	230	36.0
• 17- ≥18	64	10.0
Mean± SD 15.25±1.43		
Gender		
• Male	480	75.0
• Female	160	25.0
Educational level		
• First grade	282	44.0
• Second grade	230	36.0
• Third grade	128	20.0

**Figure (1):** Percentage distribution of the secondary school students according to their residence (n=640)**Table (2):** Mean standard deviation (SD) measurements among secondary school students according to their weight, height, and body mass index (n=640)

Item	No
• Weight	71.45 ± 15.14
• Height	168.8 ± 11.31
• Mean Body mass index	25.82 ± 3.36

Table (3): Frequency distribution of body mass index among secondary school students (n=640)

Item	No	%
• Overweight and obesity	256	40%
• Normal weight	358	56%
• Underweight	26	4%

Table (4): Differences in body image among secondary school students (n=640)

Body image attitude	Male (n=211)		Female (n=429)		X ²	P
	No	%	No	%		
Normal (less than 5 false answer)		66		52	18.27*	<0.001*
At risk (More than 5 false answer)	72	34	206	48		

Statistically significant at $p \leq 0.05$

Table (5): Correlation between self-reported current weight among secondary school students and weight and body image

Item	Male (n=211)		Female (n=429)		Total (n=640)	
	R	P	R	p	R	P
Students' weight in kg	0.024	0.890	0.134*	0.036*	0.058	0.258

Statistically significant at $p \leq 0.05$

Table (6): Relation between BMI and body image among secondary school students (n=640)

Body image attitude	Underweight (n = 14) N (%)	Normal weight (n = 222) N (%)	Over - weight (n = 115) N (%)	Obese (n = 47) N (%)	Total (n= 398) N (%)	X ²	P
Normal (false <5)	(65)	61	63	67	66	1.011	0.799
At risk (false ≥ 5)	35	39	37	33	34		

Table (7): Correlation between weight and Body image attitude among secondary school students (n=640)

Body image attitude	Male	Female	t	P
Positive	76.60 \pm 18.35	66.57 \pm 12.17	0.227	(0.720)
Negative	73.90 \pm 16.47	71.23 \pm 19.92	2.885*	(0.005*)

Statistically significant at $p \leq 0.05$

Discussion:

Changing in body size may lead to disturbances in weight and body image attitudes. Hence, the study aimed to examine the relation between weight and body image attitudes among secondary school students

The results of the current study indicated that more than one third of students were found to be overweight and obesity. These results are supported by the study conducted by **Salama**

and **Genena (2014)** in Alexandria who studied weight and body image attitudes: correlation and gender differences and found the same results. This is may be the leading cause of negative attitude among students

The results of present study revealed that with a total of nearly to half of secondary school students for both sexes were having negative attitude. This is related to their dissatisfaction about their body

The results of the current study indicated that correlations were found between self-reported weight and attitude about body image in males and females and a significant correlation between their self-reported current weight and attitude about their body image in relation to males ($p = 0.005$). These results are supported by the study conducted by **Azmira et al., (2018)**, and found negative attitude about body image is correlated with BMI among primary-school students. This result is in the same line with **Pratika et al. (2019)** who conducted a study about "The Relative Associations of Body Image Dissatisfaction among Psychiatric Out-Patients in Singapore" and found positive and significant relation between dissatisfaction and females, risk for obesity, depression, and eating disorders among females than males. Similarly, **Silva et al. (2011)** who reported in their study about factors associated with body image in physical education students that female was more likely to be associated with dissatisfaction due to weight increasing. From the researchers point of view that females are worried about their body and dissatisfied with their body image more than males because of social pressure for a slim body.

In a study conducted by **Bahreynian et al. (2019)** about association of perceived weight status versus body mass index on adherence to weight-modifying plan among Iranian children and adolescents and observed that primary-school students aged 11-12 years old had negative attitude about their body image and their weight. On the other hand, **Costa et al. (2019)** who studied association between body image dissatisfaction and obesity among schoolchildren aged 7–10 years showed that more than 80% of South Asian children aged 5-7 years old were not satisfied with their body image.

Pallan et al. (2011) who studied body image, body dissatisfaction and weight status in south Asian children and found that found a significant positive correlation between BMI and body image dissatisfaction for adolescents has been demonstrated multiple times, including among overweight and obese children as young as 5-7 years old.

These results were in accordance with the results conducted by **AL-Otaibi et al. (2015)** about body shape dissatisfaction, weight status and physical activity among a sample of university students in Saudi Arabia and they found that body shape dissatisfaction and inactive lifestyle were prevalent among females than males and age, weight, BMI and marital status were predictors of body shape dissatisfaction.

Conclusions:

Depending upon the results of the current study and the study questions it was concluded that overweight and obesity was found among more than one third of secondary school students, more than half of them were normal weight, and less than five percent were underweight. Both genders from secondary school students responded negatively in relation to weight and body image. There was correlation between body image and weight secondary school students.

Recommendations:

From the previous findings the following recommendations are suggested:

- Establishing health educational program for secondary school students about weight control and eating habits to improve their attitudes towards their bodies.
- Providing secondary school students with health promotion program regarding the concepts of the healthy body image to raise and improve their awareness.

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