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## EFFECT OF EDUCATIONAL PROGRAM FOR OVERWEIGHT AND OBESE PRIMARY SCHOOL CHILDREN REGARDING THEIR LIFESTYLE, BODY IMAGE AND SELF-ESTEEM

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### ABSTRACT

**Background:** Overweight and obesity are considered the most severe nutritional health problems which affect children worldwide and are consistently associated with body image dissatisfaction. **Aim:** This study aimed to evaluate the effect of educational programs for overweight and Obese Primary School Children regarding their lifestyle, Body Image and Self-esteem. **Subjects and method: Design:** A Quasi-experimental design was utilized in the current study. **Subjects:** The study has been carried out on 300 overweight and obese primary school children in grades five and six **Setting:** Sohag City. **Tools:** four tools were used to collect data; the first was a child's demographic data sheet, the second structured questionnaire of physical activity, dietary behaviors and anthropometric measurement, the third Body Image Questionnaire, and the fourth was self-esteem. **Results:** More than half of primary school children were found to be obese, demonstrates statistically significant between body image self-esteem and BMI (overweight/obese) ( $P < 0.001$ ,  $P < 0.005$ ), respectively, among the studied sample before and after applying for the educational program. **Conclusion:** The study concluded that after implementing a well-designed applied intervention program for overweight and obese children, improved their lifestyle (nutrition and physical activity), reflecting on their lifestyle practices leading to improved BMI. This improvement was retained throughout the six-month follow-up with better body image & self-esteem. **Recommendation:** Implementing the program on a broader scale to confirm its merits & further improvement.

**Keywords:** Body Image, Educational Program, Lifestyle, Overweight and Obese Primary School Children, Self-Esteem.

## INTRODUCTION

School-age is the active phase of childhood growth, representing the dynamic physical and mental development period. Overweight and obesity are considered the most severe nutritional and health problems that affect children worldwide because they are important risk factors for hypertension, cardiovascular disease, and insulin resistance in adolescence and childhood (Kelishadi, Mirmoghtadaee, Najafi, & Keikha 2015;, 2020). In addition overweight can increase the risk of morbidity and mortality in adulthood (Berkowitz, 2010). Low self-esteem and depression are the most common mental problem examined with obesity. (Luppino et al. 2010). So identifying changeable risk factors for low self-esteem in children is vital in developing interventions to stop the state of low self-esteem. It is a priority to prevent obesity and improve self-esteem during this phase of life (Kelishadi & Azizi-Soleiman, 2014). Body image refers to how the adolescent believed about his body and showed their physical appearance (Vilhjalmsson, Kristjansdottir, & Ward,2012). Individual beliefs and attitudes influence a person's body image. An individual's image of his body changes according to their lifestyle. ( Duncan, Woodfield, O'Neill, & Al-Nakeeb, 2009). It is reported that the body's dissatisfaction with the body image results from the effect of obesity on the individual psychologically and socially.(Crow , Eisenberg, Story, & Neumark-Sztainer 2006). Eating disorders such as anorexia nervosa disorder and bulimia nervosa disorder are closely linked to obesity, body displeasing, and social diseases such as isolation and suicide.)(Mohammed, 2017).

Moreover, it is necessary to pay attention to the mental and behavioral health of children who have weight problems to overcome body image culture in society. Children who fear gaining weight may have more severe behaviors that lead to binge eating, known as mood disorder and binge eating. That is why it is necessary to exercise health-promoting sports and eat the right healthy food in the correct quantity while avoiding sweets (Ikuomola 2018; Lifshitz, 2008).

Statistics of the National Health and Nutrition Center of America reported that around 13% of children between 6–12 years are overweight, and this is due to bad lifestyle habits. It is said that being overweight during adulthood is associated with being overweight during childhood. Also, Physical activity and dietary habits are formed during the first years of life. Certain risk factors such as high blood pressure, excess LDL-

cholesterol, triglycerides, and metabolic syndrome may be closely related to increased BMI (Anand et al., 2015).

Egyptian Growth Charts (2002) define body mass index (BMI) as a person's weight in kilograms divided by the square of height in metres. This method is easy to be implemented and cheap and finds an unhealthy BMI. The body mass index by age and sex is determined in children and adolescents. The problem of weight, whether excess fat in large quantities or underweight, is related to health problems for children. The following table represents weight status categories for BMI for age and corresponding percentage, based on expert committee recommendations (Barlow & Expert Committee 2007).

<b>Category of weight</b>	<b>Range Percentile</b>
<b>Underweight</b>	<b>&lt; 5<sup>th</sup> percentile</b>
<b>Healthy Weight</b>	<b>from 5<sup>th</sup> to &lt; 85<sup>th</sup> percentile</b>
<b>Overweight</b>	<b>from 85<sup>th</sup> to &lt; 95<sup>th</sup> percentile</b>
<b>Obesity</b>	<b>≥ the 95<sup>th</sup> percentile</b>

According to the Centers for Disease Control and Prevention CDC 2008, growth charts are determined by the percentage of weight and height and their relationship to age and sex through the following websites [www.infanchart.com/child/](http://www.infanchart.com/child/), and [http://dempuegypt.blogspot.com/2008/11/egyptian-for Egyptian growth chart](http://dempuegypt.blogspot.com/2008/11/egyptian-for-Egyptian-growth-chart).

### **Significance of the study:**

Although obesity prevalence has significantly increased among Egyptian school children in the last decade, obesity is still prevalent among children in primary school in Egypt. This may be due to several factors, such as lack of daily activity and nutritional knowledge. The obesity prevalence among children aged six months was 9.8%, and 12 years was 1.8% (Hamed, Hassan, Younis, & Kamal 2019; Poh et al., 2013). In Egypt, the obesity prevalence among boys and girls were (15.1% and 11%), respectively (Lobstein, 2019). This study was applied to primary school children because they are more receptive to acquiring information and can keep them long throughout their lives. Also, the incidence of obesity must be examined to aid obese children in improving lifestyle, body

image, self-esteem, and reducing weight. Primary school children's negative attitudes towards their body image can lead to educational decline, loneliness, avoidance, self-destructive behavior. Therefore, the present study aimed to evaluate the effect of the educational program on changing body image among overweight and obese primary school children.

## **AIM OF THE STUDY**

the present study aims to evaluate the effect of the educational program on body image and self-esteem among overweight / obese primary school children.

### **Objective:**

The program's general goal was to improve overweight and obese children's lifestyle, body image and self-esteem.

### **Research question**

Is there a relationship between lifestyle, and overweight and obese children's body image and self-esteem?

### **Hypotheses**

implementing a well-designed applied intervention program for overweight and obese children , will improve their lifestyle leading to improve BMI with better body image & self-esteem

## **SUBJECTS AND METHOD**

### **Design:**

A quasi-experimental research design was utilized in the current study, with one group pre/post-test being used. Such design is vital to the nature of the study issue, having one or more group subjects observed on pre and post manipulations (Creswell, 2012)

### **Setting**

This study was carried out in all governmental primary schools in Sohag City, and it. Sohag City contains 10 primary schools

## Subjects

Overweight and obese primary school children who were in the 5<sup>th</sup> and 6<sup>th</sup> grades of both sex were eligible for inclusion in the study while excluded children suffering from chronic and physical health problems

A purposive sample of 300 overweight and obese primary school children were recruited using random sample technique in this study.

### Sample size calculation:

$$n = \frac{N \times P(1-P)}{N - 1 \times (d^2 \div z^2) + P(1-P)}$$

$$n = \frac{1178 \times 0.5(1-0.5)}{1178 - 1 \times (0.05^2 \div 1.96^2) + 0.5(1-0.5)} = 290$$

N = 1178 is the total population; Z is the level of significance equal to 0.95 and 1.96; D = 0.05(error rate), and P = 0.50.

According to the equation of Daniel p;(1999). Biostatistics: A Foundation for Analysis in the Health Sciences. 7<sup>th</sup> edition. New York: John Wiley & Sons.

Sample of students was calculated and chosen from the total population as the following technique. The total population number of primary school students was 15000 students, and the number of the target population was achieved from grade 5 and grade 6, which was 3750 students. All students in grades 5&6 were exposed to BMI measurement, and overweight and obese students were 1178. The total sample was drawn from those target populations that have high body mass index. The estimated sample size is 290 students. When the confidence level equals 95%, after adding the 10% to avoid drop-out and incomplete responses or withdrawal, the final sample size was = 290 +29= 319 students. Students in the sample were chosen from the target population according to the simple random sampling technique.

**Tools of data collection:**

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

**Tool 1:- A child's demographic data:** It included four questions related to the demographic characteristics of the child, such as the child's age, gender, residence and educational grade.

**Tool II: physical activity, dietary behaviors and anthropometric measurement questionnaire.**

**Divided to:**

**Part A: physical activity and dietary behaviors :**A questionnaire it developed by the researcher after reviewing relevant literature(Carlin, Murphy, & Gallagher,2016 ; Ikuomola 2018 ; Wijnhoven et al., 2014) in an Arabic language to assess physical activity and dietary behaviors included nutrition, lifestyle, and physical activity questions.The questionnaire contains 25 questions (5-point Likert scale). The answer questions ranged from "never equals 0 the lowest score" to "always equals four the highest score". Negative questions go from "always equals 0" to "never equals 4". The overall score was determined, and the nutritional status and daily physical activity ranged from 0 to 100. This questionnaire was validated by Feizi, Naghizadeh Baghi, Rahimi, & Nemati (2012).

**Part B: Anthropometric instrument:** This instrument was developed by Egyptian Standard Growth Charts established at the Faculty of Medicine at Cairo University and the National Research Center (Egyptian Growth charts 2002) included a child's anthropometric measurement, which is used to measure weight, height, and body mass index (BMI), which were calculated by dividing weight (kg) by height in square meters (kg/m<sup>2</sup>). ). The chart of age percentages from BMI is used to assess the developmental status. An assessment was made for both boys and girls based on the percentage scale according to Egyptian sections as follows: (1) Overweight, which is the segment in which the child has a body mass index equal to or greater than the 85th percentile but less than 95th and (2) obese is a child with a BMI equal to or greater than 95th percentile. Charting BMI versus Egyptian standard percentage curves for each different (Ghalli et al., 2008 ).

**Tool III: Body Image Questionnaire:** This tool was adopted by EL-Desouki , (2006) in the Arabic language to measure personal body dissatisfaction among children study. It consists of 20 statements about the sense of body image. With the use of a five-point Likert scale (1-5), which ranges from extreme negative emotions, which receives a rating of 1, to strong positive emotions, which receives a rating of 5. In which the gradations are classified according to the following degrees: 1 = forever, 2 = rare, 3 = some of the time, 4 = often, 5 = always.

**Scoring system:** The total score of the body image tool was (100) degrees which was divided as the following: scores from (1-32) were considered poor body image, scores (33- 65) were deemed moderate body image, and scores from (66-100) were considered to be good body image.

**Tool IV: Rosenberg Self-esteem scale:**

The self-esteem scale was developed by Rosenberg (1965) using the Arabic version by Hatata., Awaad, & Sheikh, M. (2009) to assess self esteem of children . It included the following items: (1) I am generally satisfied with myself. (2) I think I am not good at all at times (3) I feel I have many good qualities. (4) I can do things like other people. (5) I have the feeling that I don't have much to be proud of. (6) I have a sense of self-worth, equality with others. (7) I wish to feel respect for myself. (8) I feel like a failure in general (9) I feel useless sometimes. Likert scale (0-3): Strongly agree(SA) = 3, agree(A) = 2, disagree(D) = 1, strongly disagree(SD) = 0.

**Scoring system:** For questions numbered 1, 3, 4, 7 and 10 (SA score was 3, A equals 2, D equals 1, SD equals 0), while for questions numbered 2, 5, 6, 8, and 9 (score was SA) equals 0, A = 1, D equals 2, SD equals 3). A score of less than 15 is considered low self-esteem; A score between 15 and 25 is regarded as average self-esteem, and above 25 is deemed high self-esteem.

**II. Operational design:**

It included the following steps;

**A-Preparatory phase**

Before starting up the program, the tools of anthropometric measurement were applied among 5<sup>th</sup> and 6<sup>th</sup> grades of primary school children. Children's weights were measured using an electronic weighing scale, and the scale records weights in kilograms. Children's heights were measured using a plastic measuring tape in centimetres, and the scale records heights in centimetres. Body mass index: Body mass index is calculated by dividing the kilogram by the squared height in metres. The percentile BMI was obtained by assessing growth status (overweight and obesity) by writing the BMI in front of the Egyptian standard percentile curves for each sex. Therefore, a BMI of more than 85 and less than 95 percentile for age and sex is defined as overweight. A BMI of more than 95 percentile for age and sex is known as obesity, according to the Egyptian Standard Growth Charts established at the Faculty of Medicine at Cairo University and the National Research Center (Egyptian Growth charts 2002). The researchers selected the children with overweight and obese randomly to the study who received the program.

**The validity of the tools:**

The tools validity was tested for clarity, comprehensiveness, appropriateness and reviewed by five experts in the Pediatric Nursing field, Community Health Nursing field, and professors of nutritional sciences. Modifications were done according to the panel ruling to ensure the fitness and clarity of the content.

**Reliability of the tools:**

The reliability of the tools was assessed through Cronbach's alpha test  $\alpha = 0.89$  in the first and second tool, the third tool  $\alpha$  was 0.90, and the fourth was 0.86.

**Pilot study**

The pilot study was performed on 10% of the sample (30) primary school children to observe the clarity and testing of the feasibility of the research process needed for modifications to develop the final form of the tools. Primary school children involved in the pilot study were excluded from the study. The researchers changed some items in the form of Arabic translation to make them more suitable for children's perception. The researchers omitted unnecessary details for advancing or reducing the instrument's lengthy test.

**Fieldwork**

Data were collected from the beginning of October 2019 to April 2020. All the researchers collected data according to every school policy during the school day.

**The educational guideline program:****Construction**

The researcher developed the educational program Booklet using the baseline information gathered in the assessment phase. It was designed according to the desires and needs of the children and upon the instructions in the updated literature. It was written in simple Arabic language.

The content of the program consisted of five sessions. The first session defines overweight and obesity, complications of overweight and obesity, body requirements from food groups and ways to achieve physical fitness. The second session dealt with the concept of calories and the balance between energy intake and consumption. It also covered the body's requirements of the major food groups by servings and the benefits of fruits, vegetables and dairy products. The third session included physical activity and exercise in a few lines, ways to improve health with exercise, and ways to achieve abundance and joy with exercise. The fourth session deals with personalized exercise programs, how to properly initiate exercise regimens, characteristics of a regular exercise program, benefits of exercise, warm-up, exercise and cool-down as elements of an exercise program, and exercise regimens. After three months of implementation, the 5<sup>th</sup> sessions summarise the sessions to refresh knowledge and encourage children to continue.

**Implementation Phase:**

The educational program was carried out in ten primary schools for the study and lasted for ten weeks: the overweight and obese children in the study about 20-35 children in each school according to the number of primary schools. The educational guidelines program was implemented for each school separately in one week. The total number of sessions was five, one session per day. According to the school policy, the time allocated for training was two hours daily. This mainly was between 9:00 and 11:00 AM,

The intervention educational program was presented in clear and concise form and focused on the issue of interactive learning. It was carried out using various methods of teaching such as; discussion, demonstration, and real object. The researcher designed a booklet and distributed it to the overweight and obese children to help them follow the knowledge. The demonstration was done through animations, lectures, posters, pamphlets, whiteboards, markers, educational videos, education handouts, demonstrations, group discussion, and free sessions to answer questions.

**Evaluation Phase:**

Evaluation of children was carried out three times, before the program construction, after program implementation three and six months after implementing the educational program using the same tool's format (II). Tools (III, IV) that were used to evaluate the impact of the educational program on the body image change and self-esteem among overweight and obese primary school children by comparing children's scores before and after the implementation

**III. ADMINISTRATIVE DESIGN:**

Before conducting the study, written permission was obtained from the pertinent educational authorities in Sohag. The aim of the present study was clarified, and a written formal letter was received, including the consent of the director of learning and education administration, addressed to every school director for carrying out this study. Written consents were obtained from the parents of each student before selection and participation in the program. The privacy of the study sample data was assured. The participant has the right to refuse or retreat at any time from the study. The manoeuvres of the study could not entail any harmful effects on students.

**Ethical considerations:**

Approval was taken from the research ethics committee of the nursing faculty; Port Said University add code number NUR(12/12/2021)(8). Written consent was obtained from the parents of children to participate in the study. Oral permission was obtained from the primary school children after the study's objective was explained to them. The researchers informed the studied children that the study was voluntary; and they have right to refuse or retreat at any time from the study. Moreover, the privacy of the study sample data was assured.

**Limitations of the study**

At the follow-up phase, 29 children did not participate (5 withdrawal and 24 children were absent during evaluation )

**Statistical Analysis:**

The content of each questionnaire was analyzed, classified, and then coded by the researchers. Using SPSS software version 21, the data were tabulated and analyzed. Excel used for figures. Descriptive statistics were used to present frequencies, percentages for qualitative variables, and quantitative variables were described utilizing means and standard deviations. Two groups used a paired T-test to measure children's knowledge before and after the program and analyze the differences. Pearson correlation analysis was used at the P-value( $p \leq 0.05$ ) to evaluate the inter-relationships among quantitative variables.

**RESULTS:**

**Figure (1):** Clarifies that 42% of primary school children were overweight, and more than half of them (58%) were obese. In the current study, **table (1)** illustrates that the mean age of primary school children was  $10.24 \pm 2.43$ , the age group from 11- < 12 years was the most prevalent (48 %). More than half of the sample (57%) were girls, whereas 43% were boys, and 56% of primary school children were in sixth-grade primary education. Also, the table showed that most of the sample (83%) were living in urban areas, and 17% were from rural areas.

**Table (2):** shows the relationship between body image and demographic characteristics among studied samples. Twenty seven % of those with poor body image were between the ages of 10 - < 11, while 30% of those with moderate body image were 11- < 12. As for a good body image, it is negligible at all ages with highly statistically significant. In general, boys' body image is better than girls', as 17% of boys have a moderate body image and 13% have a good body image, while 26% of the girls have a moderate body image and 11% is good with highly statistically significant. 45% of those who live in rural area have an average body image, and 14% have a good image, compared (to 8% and 4% in urban area , respectively), but not reach significance as for educational level.

**Table (3):** demonstrates the relationship between self-esteem and demographic characteristics among studied samples. Self-esteem was low by 27% in the 10 - < 11 age group and 20% in the 11- ≤ 12 age group, while it was moderate at 21% in the 11- < 12 age group with highly statistically significant.

**Table (4):** shows the comparison of nutritional pattern, physical activity, and body mass index of the studied sample before and after applying the educational program (three and six months). it was found that mean score of nutritional pattern increased from  $51 \pm 13.7$ ,  $76.2 \pm 12.7$ ,  $76.5 \pm 12.3$  respectively, physical activity increased from  $57.1 \pm 16.4$ ,  $75.4 \pm 12.6$ ,  $76.2 \pm 12.8$  respectively, and BMI decreased from  $24.61 \pm 2.8$ ,  $24.50 \pm 2.8$ ,  $24.34 \pm 2.8$  respectively.

**Table (5):** shows the relation between BMI (overweight/obese) and body image and self-esteem among the studied sample before and after applying the educational program demonstrates statistically significant between body image self-esteem and BMI (overweight/obese) ( $P < 0.001$ ,  $P < 0.005$ ), respectively, among the studied sample.

**Table (6):** shows the correlation between nutrition pattern, physical activity and self-esteem and body image among the studied sample post-program intervention. demonstrates statistically significant positive correlations between nutrition pattern, self-esteem and body image ( $P < 0.002$ ,  $P < 0.005$ ), respectively, among the studied sample. Conversely, there was no correlation between physical activity and body image among the studied sample

**Table (7):** shows the study sample's satisfaction with implementing the educational program after six months of the intervention. It is clear from this table that the sample was satisfied with the program. It changed the misconceptions about obesity and overweight and that the scientific material was appropriate and the teaching framework. This table shows the satisfaction of the sample in terms of the appropriateness of the place of implementation of the program in terms of breadth and lighting and the suitability of preparing participants in each session, in addition to the recommendation to repeat this program in other schools in different regions.



**Figure (1):** Distribution of body mass index among primary school children (n=300)

**Table (1):** The demographic characteristics of the studied sample (n=300)

Demographic characteristics	No	%
<b>Age (Yrs.)</b>		
● 10 - < 11	93	31.0
● 11- < 12	144	48.0
● 12- ≥ 13	66	22.0
<b>Mean± SD 10.24 ± 2.43</b>		
<b>Gender</b>		
● Boy	129	43.0
● Girl	171	57.0
<b>Educational level</b>		
● Fifth grade	132	44.0
● Sixth grade	168	56.0
<b>Residence:</b>		
● Urban	249	83%
● Rural	51	17%

**Table (2):** The relationship between body image and demographic characteristics among studied samples.

Items	Body image						x <sup>2</sup>	P-value
	Poor		Moderate		Good			
n=300	N0.	%	N0.	%	N0.	%		
● 10 - <11	82	27	8	2	3	1	<b>9.799</b>	<b>&lt;0.01</b>
● 11- <12	30	10	90	30	24	8		
● 12- ≥ 13	21	7	30	10	15	5		
<b>Gender</b>							<b>19.575</b>	<b>&lt;0.01</b>
● Boys	40	13	50	17	39	13		
● Girl	62	21	77	26	32	11		
<b>Educational level</b>							<b>.054</b>	<b>&gt;0.05</b>
● Fifth grade	45	15	52	17	40	13		
● Sixth grade	70	23	80	27	42	14		
<b>Residence</b>							<b>1.444</b>	<b>&gt;0.05</b>
● Rural	72	24	136	45	41	14		
● Urban	15	5	23	8	13	4		

Significant ( $p \leq 0.05$ )

Highly significant ( $p \leq 0.01$ )

**Table (3):** The relationship between self-esteem and demographic characteristics among studied samples.n=300

Items	Self-esteem						x <sup>2</sup>	P-value
	Low		Moderate		High			
	No.	%	No.	%	No.	%		
• 10 -< 11	82	27	3	1	6	2	15.328	<0.01
• 11- < 12	60	20	63	21	21	7		
• 12- ≥ 13	18	6	21	7	27	9		
Gender							1.191	>0.05
• Boy	56	19	38	13	35	12		
• Girl	70	23	61	20	40	13		
Educational level							.921	>0.05
• Fifth grade	35	12	60	20	42	14		
• Sixth grade	70	23	90	30	32	11		
Residence							.306	>0.05
• Rural	102	34	114	38	33	11		
• Urban	14	5	25	8	12	4		

Significant ( $p \leq 0.05$ )Highly significant ( $p \leq 0.01$ )

**Table 4:** Comparison of nutritional pattern, physical activity, and body mass index of the studied sample before and after applying of the educational program (n=300)

VasVariables	Before the educational program M+SD	three months after the educational program M+SD	Six months after the educational program M+SD	P-value
<b>Nutritional pattern</b>				
The studied children	51 ± 13.7	76.2 ± 12.7	76.5± 12.3	< 0.001
<b>Physical activity</b>				
The studied children	57.1 ± 16.4	75.4 ± 12.6	76.2 ± 12.8	< 0.001
<b>BMI</b>				
Primary school children	24.61±2.8	24.50±2.8	24.34±2.8	0.242 NS

Significant ( $p \leq 0.05$ )Highly significant ( $p \leq 0.01$ )**Table (5):** Relation between BMI and body image and self-esteem among studied sample before and after applying for the educational program (n=300).

Body image	Pre- educational program			Post - educational program			X <sup>2</sup>	P
	Overweight (n = 126) N (%)	Obese (n = 174) N (%)	Total N=300	Over weight (n = 126) N (%)	Obese (n = 174) N (%)	Total		
Poor	75 (60)	90 (52)	165(55%)	15(11.8)	37(21)	52(17.3)	12.45	<0.001
Moderate	43 (34)	70 (40)	113(37.6 %)	36 (28.2)	50(29)	86(28.6)		
Good	8(6)	14(8)	22(7.3)	75 (60)	87(50)	162(54)		
<b>Self-esteem</b>								
Low Self-esteem	73 (58)	90 (52)	163(54.3 %)	36 (28.2)	50(29)	86(28.7)	92.35	<0.05
Average Self-esteem	43 (34)	74 (42)	117(39 %)	15(11.8)	37(21)	52(27.3)		
High Self-esteem	10(8)	10 (6)	20(6.7)	75 (60)	87(50)	162(54)		

Significant ( $p \leq 0.05$ )Highly significant ( $p \leq 0.01$ )

**Table (6):** Correlation between nutrition pattern, physical activity and self-esteem and body image among the studied sample post-program intervention ( 300)

Variables	Body image	
	r	P-value
• Nutritional pattern	0.052	0.002
• Physical activity	0.128	0.008
• self- esteem	0.103	0.005

Significant ( $p \leq 0.05$ )

Highly significant ( $p \leq 0.01$ )

**Table (7):** The distribution of the studied sample satisfaction regarding the implementation of the educational program after six months ' post-intervention ( n=300)

Items	Satisfied		dissatisfied	
	N	%	N	%
The program sessions corrected misconceptions related to obesity and overweight	250	83.3	50	16.7
The language of the program sessions was clear, easy to understand, and efficient.	275	91.7	25	8.3
The aim of the program sessions corresponded with its content.	270	90	30	10
The place of implementing program sessions were well ventilated and lighting and comfortable.	261	87	39	13
The number of participants for each session was appropriate to the program implementation place.	255	85	45	15
The implemented program sessions contribute to the development and updating of individual 'information regarding self-esteem and body image	235	78.3	65	21.7
Session' schedule did not interfere with the time of school teaching plan	275	91.7	25	8.3
The educational program sessions were recommended to be replicated in another school and other places in the future.	235	78.3	65	21.7
The program teaching methods and media supported the learning process	277	92.3	23	7.7

## **DISCUSSION**

School-age is the active phase of growth of childhood, representing the dynamic period of both physical and mental development. The global prevalence of childhood obesity is high. Lifestyle changes towards a healthy diet, increased physical activity, and reduced sedentary activities are recommended to prevent and treat obesity. The program's application concentrated on reducing the prevalence of obesity among young children and adolescents, which may be important mainly because suffering from obesity during adolescence increases the risk of obesity in the adult stage. (Vizcaíno et al., 2018). So the present study applied to evaluate the effect of educational programs on changing body image among overweight and obese primary school children.

Schools are considered one of the most critical channels for implementing the program because they contain many students and provide the opportunity to formalize the implementation of the program. However, program implementation in schools did not focus on overcoming obesity. School-wide interventions among children did not focus on reducing obesity but addressed cardiovascular disease sparsely and inconspicuously

The present study results indicated that less than half of the study sample of primary school children were overweight; more than half of them were obese. This is similar to rates reported by Mohammed, Ibrahim, Hagag, & Mohamed (2019) in Alexandria Governorate, Egypt, who found 26.5% of children and adolescents were overweight, and 13.3% were obese. This may be explained by overweight and obesity is multi-factorial health problems. The main known risk factors are faulty eating habits (snacks and fast food), lack of physical activity, and spending more time watching TV and using the internet.

Several studies that evaluated risk factors for obesity and programs implemented to prevent obesity and its impact on children showed that the effectiveness of intervening in physical activity among children from 6 to 12 years of age to avoid obesity is available and remarkable. (Berkowitz, 2010 ; Cuenca et al., 2014; Mohamed et al 2019).

The implementation of the educational program led to improvements in overweight and obese children's lifestyles (nutrition and physical activity), leading to improved BMI in the study group. This was shown three months after the program and continued through the follow-up phase, where the average scores of lifestyle scores related to

nutrition and physical activity showed a significant difference between before and after the program implementation ( $p < 0.001$ ). This is reflected in that intervention of the guidelines program achieved its first objective of improving overweight /obese primary school children lifestyles. A similar success was reported by Dobbins, Husson, DeCorby, & LaRocca (2013); Kelsey, Zaepfel, Bjornstad, & Nadeau (2014)) the lifestyle interventions included dietary and exercise components lead to improvement of weight outcomes among children. Average BMI decreased in the intervention group and increased in control one. In congruence with this, (Waters et al. 2011; Yusop, Shariff, Hwu, Talib, & Spurrier 2018) in the latest Cochrane review focused on evaluating interventions to prevent obesity in children. It concluded that the evidence on the effectiveness of physical activity for children aged six to twelve years to avoid obesity is sufficient. Results similar to these current study findings were also reported in a study in Iran by Sharareh, Hossein, & Akbar (2017), who studied " Effects of Tailored Health Education Program on Overweight Elementary School Students' Obesity-Related Lifestyle: A School-Based Interventional Study " the mean lifestyle scores related to nutrition and physical activity after one and four months of education showed a significant difference between the two groups ( $P < 0.001$ ).

Body image refers to how the child feels about his body and physical appearance (Vilhjalmsson et al.,2012). It is known that personal beliefs and attitudes strongly influence individuals' image of their bodies in their minds. Hence, the image of the body changes according to the patterns of life and does not remain fixed (Duncan, Woodfield, O'Neill, & Al-Nakeeb 2009). Dissatisfaction with body shape and abnormal eating attitudes and behaviors can put children at risk for eating problems such as anorexia nervosa problem and bulimia nervosa, which may cause many health effects (Burnette, Kwitowski & Mazzeo 2016).

Regarding the relationship between body image and demographic characteristics among studied samples As for a good body image; it is negligible at all ages with highly statistically significant and, boys' body image is better than girls .This result is in the same line with Satghare et al. (2019) who conducted a study about "The Relative Associations of Body Image Dissatisfaction among Psychiatric Out-Patients in Singapore" and found a positive and significant relation between dissatisfaction and females, risk for obesity, depression, and eating disorders among females than males. Similarly, Silva et al. (2011) reported in their study about factors associated with body

image in physical education students that females were more likely to be associated with dissatisfaction due to weight increases. 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.

The study's result indicated that after implementation of a well-designed applied intervention program provide to improve lifestyle (nutrition and physical activity), this was reflected in body image where the present study found the majority of overweight primary school children and more than two-thirds of overweight and obese primary school children had poor body image attitude before educational program, this result improvement to good (positive) body image after the educational program, with a highly statistically significant relationship between body image and overweight and obese before and after the program ( $p = 0.006$ ). This body image develops and grows through the stages of human development. It is an essential element of personality; Accordingly, the physical self and self as part of a person's identity are influenced by the opinions, judgment and feelings, that a person consciously reports. So a person who has a specific type of subjective judgments and subjective opinions has the same feelings and views about his body. These results are supported by the study conducted by Latiff, Muhamad, & Rahman (2018); Satghare, Mahesh, Abdin, Chong, & Subramaniam (2019) found negative attitude about body image is correlated with BMI among primary-school students. Similarly, Silva, Saenger, & Pereira (2011) 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 increases.

When children see these images, they do not understand the difference between the image of their actual body and the image of their body that they want to reach, resulting in devastating results. Therefore, the relationship between distorted body image among children and low self-esteem was addressed. The results of the current study indicated that the minority of overweight and obese children had high self-esteem before the program; this percentage increased to more than half of them (53%) with statistical significant between before and after the program ( $<0.05$ ). This result is in the same line with Mendiratta (2014), who studied "Child Obesity and Self Esteem" and reported that obesity is related to self-esteem; obesity affects the mental health of children and adolescents. Also, Nemiary, Shim, Mattox, Holden (2017) conducted a study about "The Relationship between Obesity and Depression Among Adolescents", and Radziwiłłowicz

& Macias 2014 studied "Self-esteem and achievement motivation level in overweight and obese adolescents", and they reported that low self-esteem is prevalent among children who are overweight and obese. Also in a study done by Griffiths, Parsons, & Hill( 2010) titled "Self-esteem and quality of life in obese children and adolescents" and showed that obese children had a significant decrease in self-esteem and quality of life globally.

Furthermore, there was a statistically significant correlation between body image and lifestyle (nutrition) and self-esteem; within the same context, the findings of (Abdulnabi 2014; Farghale 2013; Clay, Vignoles & Dittmar 2009 had similar findings that found a positive correlation existed between body image and self-esteem. These results support the potential effect of body image on self-esteem without any doubt. Body image is an essential issue in attracting and maintaining young people's involvement in different activities. And also, this is mainly due to the belief that body weight and appearance are socially essential and positive or negative self-assessment about one's body weight

In agreement with these present study findings, Johnson and Wardle (2015) stated that disturbances in the body affected body image and had a significant negative impact on physical and psychological health among adolescents. This depends on personal agents (self-esteem and personality ), interpersonal agents (family relation, peers group, messages of the media ), biological agents (genetic features, high body mass index, complications of diseases), and cultural agents (social beliefs and norms values). (Naigaga et al., 2018).

The study results indicated that after implementing a well-designed applied intervention program provided to improve lifestyle (nutrition and physical activity), this was reflected on their lifestyle practices leading to improved BMI. This improvement was retained throughout the six-month follow-up with better body image & self-esteem. The study summarized a highly statistically significant correlation between BMI, lifestyle (nutrition and physical activity) and body image ( $p = 0.005$ ). The result was the study sample's satisfaction with implementing the educational program after six months of the intervention. It changed the misconceptions about obesity and overweight and that the scientific material was appropriate and the teaching framework, the satisfaction of the sample in terms of the appropriateness of the place of implementation of the program in terms of breadth and lighting and the suitability of preparing participants in each session,

in addition to the recommendation to repeat this program in other schools in different regions.

## CONCLUSION AND RECOMMENDATIONS

It concluded from the present study results that there was a statistically significant correlation between lifestyle (nutrition-physical activity), self-esteem and body image among primary school children. The study concluded that after implementation of a well-designed applied intervention program improve lifestyle (nutrition and physical activity), this reflected on their lifestyle practices leading to improved BMI. This improvement was retained throughout the six-month follow-up with better body image & self-esteem. The study concluded a highly statistically significant correlation between BMI, lifestyle (nutrition and physical activity), and body image. So, educational programs should be applied for overweight children to prevent complications associated with obesity both physically and physiologically. Moreover, It recommended raising awareness of the primary school children about healthy behaviors and healthy lifestyles by incorporating this information in their curricula.

## REFERENCES

Abdulnabi, S. (2014). Body image and its relationship with self-esteem and depression in a sample of university students. *College of Education Journal. Banha University*, 29(3), 45-101.

Anand, S. S., Hawkes, C., De Souza, R. J., Mente, A., Dehghan, M., Nugent, R., & Popkin, B. M. (2015). Food consumption and its impact on cardiovascular disease: the importance of solutions focused on the globalized food system: a report from the workshop convened by the World Heart Federation. *Journal of the American College of Cardiology*, 66(14), 1590-1614.

Barlow, S. E., & Expert Committee. (2007). Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*, 120(Supplement\_4), S164-S192

Berkowitz I (2010): Cardiovascular Diseases are killing us: The Official Bulletin of the international academy of cardiovascular science; 9 (1): 1-4.

Burnette, C. B., Kwitowski, M. A., & Mazzeo, S. E. (2017). "I don't need people to tell me I'm pretty on social media:" A qualitative study of social media and body image in early adolescent girls. *Body Image*, 23, 114-125.

Carlin, A., Murphy, M. H., & Gallagher, A. M. (2016). Do interventions to increase walking work? A systematic review of interventions in children and adolescents. *Sports Medicine*, 46(4), 515-530.

Centers for Disease Control and Prevention (CDC)(2008). "Obesity Prevalence Among Low-Income, Preschool-Aged Children-United States, 1998-2008." *MMWR. Morbidity and mortality weekly report* 58, no. 28 (2009): 769-773.

Clay D, Vignoles V & Dittmar H (2009): Body image and self-esteem among adolescent girls: Testing the influence of sociocultural factors. *J Res Adolesc*; 451-77.

Crow, S., Eisenberg, M. E., Story, M., & Neumark-Sztainer, D. (2006). Psychosocial and behavioral correlates of dieting among overweight and non-overweight adolescents. *Journal of Adolescent Health*, 38(5), 569-574.

Cuenca-García, M., Ortega, F. B., Ruiz, J. R., Labayen, I., Moreno, L. A., Patterson, E., ... & HELENA Study Group. (2014). More physically active and leaner adolescents have higher energy intake. *The Journal of paediatrics*, 164(1), 159-166.

Dobbins, M., Husson, H., DeCorby, K., & LaRocca, R. L. (2013). School-based physical activity programs promote physical activity and fitness in children and adolescents aged 6 to 18. *Cochrane database of systematic reviews*, (2).

Duncan, M. J., Woodfield, L. A., O'Neill, S. J., & Al-Nakeeb, Y. (2009): Relationship between body image and per cent of body fat among British schoolchildren: Perceptual and Motor Skills.94, 197-203.

Egyptian Growth charts. (2002): Diabetic Endocrine & Metabolic Pediatric unit and national research center – Cairo, collaborating with Wright State University. School of Medicine Department of Community Health Life Span. Health Research Center.

El- Desouki M.( 2006): Eating disorder Handbook, Series of Arabic Psychiatric Disorders, The Anglo Egyptian Bookshop.

Farghale, H. (2013). Body Image and Self-Esteem and Their Relationship with Eating Disorder in Children. *Journal of Childhood and Development*, 3(11), 87-98.

Feizi, E., Naghizadeh Baghi, A., Rahimi, A., & Nemati, S. (2012). The relationship between body mass index and depression in Ardabil University of Medical Sciences students. *Journal of Ardabil University of Medical Sciences*, 12(2), 213-220.

Griffiths, L. J., Parsons, T. J., & Hill, A. J. (2010). Self-esteem and quality of life in obese children and adolescents: A systematic review. *International Journal of Pediatric Obesity*, 5(4), 282-304.

Hamed, A. M., Hassan, A. E. A., Younis, M. M. S., & Kamal, A. M. M. (2019). Prevalence of obesity and overweight among primary schools children in Qena, Egypt. *The Egyptian Journal of Hospital Medicine*, 77(2), 4899-4905.

Hatata, H., Awaad, M., & Sheikh, M. (2009). Body image dissatisfaction and its relationships with psychiatric symptomatology, eating beliefs and self-esteem in Egyptian female adolescents. *Curr Psychiatry [Egypt]*, 16, 35-45.

Johnson, F., & Wardle, J. (2015). Dietary restraint, body dissatisfaction, and psychological distress: a prospective analysis. *Journal of abnormal psychology*, 114(1), 119-125.

Kelsey, M. M., Zaepfel, A., Bjornstad, P., & Nadeau, K. J. (2014). Age-related consequences of childhood obesity. *Gerontology*, 60(3), 222-228.

Kelishadi, R., & Azizi-Soleiman, F. (2014). Controlling childhood obesity: A systematic review on strategies and challenges. *Journal of research in medical sciences: the official journal of Isfahan University of Medical Sciences*, 19(10), 993.

Kelishadi, R., Mirmoghtadaee, P., Najafi, H., & Keikha, M. (2015). A systematic review on the association of abdominal obesity in children and adolescents with cardio-metabolic risk factors. *Journal of research in medical sciences: the official journal of Isfahan University of Medical Sciences*, 20(3), 294.

Ghalli, I., Salah, N., Hussien, F., Erfan, M., El-Ruby, M., Mazen, I., ... & Ismaail, A. E. D. S. (2008). Egyptian growth curves for infants, children and adolescents. Sartorio A, Buckler JMH, Marazzi N, Crecere nel mondo. Ferring Publisher, Italy.

Latiff, A. A., Muhamad, J., & Rahman, R. A. (2018). Body image dissatisfaction and its determinants among young primary-school adolescents. *Journal of Taibah University Medical Sciences*, 13(1), 34-41.

Ikuomola, A. D. (2018). The Stars Must Shine Nollywood Talent Scouts' Influence on Theatre Arts Students' Body Image in Nigerian Universities. *Africa Development*, 43(1), 139-156

Lifshitz, F. (2008). Obesity in children. *Journal of clinical research in pediatric endocrinology*, 1(2), 53 -60.

Luppino, F. S., de Wit, L. M., Bouvy, P. F., Stijnen, T., Cuijpers, P., Penninx, B. W., & Zitman, F. G. (2010). Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. *Archives of general psychiatry*, 67(3), 220-229.

Lobstein, T. (2019). Obesity prevention and the Global Syndemic: Challenges and opportunities for the World Obesity Federation. *Obesity Reviews*, 20, 6-9.

Mendiratta, P. (2014). Child Obesity and Self Esteem: A Co-relational Study. *International Proceedings of Economics Development and Research*, 78(11), 54-58.

Mohammed, A. E., Ibrahim, M. H., Hagag, S. A., & Mohamed, H. M. (2019). Obesity and self-esteem among school adolescent students, Alexandria City, Egypt. *Egyptian Journal of Community Medicine*, 37(3), 16-24.

Mohammed, S. S. I. (2017). Obesity and Body Image among Adolescent Female Nursing Students. *Port Said Scientific Journal of Nursing*, 4(2), 144-158.

Nemiary, D., Shim, R., Mattox, G., & Holden, K. (2017). The relationship between obesity and depression among adolescents. *Psychiatric Annals*, 42(8), 305-308.

Naigaga, D. A., Jahanlu, D., Claudius, H. M., Gjerlaug, A. K., Barikmo, I., & Henjum, S. (2018). Body size perceptions and preferences favor overweight in adult Saharawi refugees. *Nutrition Journal*, 17(1), 1-8.

Poh, B. K., Ng, B. K., Haslinda, M. D. S., Shanita, S. N., Wong, J. E., Budin, S. B., ... & Norimah, A. K. (2013). Nutritional status and dietary intakes of children aged 6 months to 12 years: findings of the Nutrition Survey of Malaysian Children (PEANUTS Malaysia). *British Journal of Nutrition*, 110(S3), S21-S35.

Radziwiłłowicz, W., & Macias, M. (2014). Self-esteem and achievement motivation level in overweight and obese adolescents. *Health Psychology Report*, 2(2), 132-143.

Sharareh, H., Hossein, S., & Akbar, H. (2017). Effects of tailored health education program on overweight elementary school students' obesity-related lifestyle: a school-based interventional study, *Oman Medical Journal*, Vol. 32, No. 2: 140–147.

Satghare, P., Mahesh, M. V., Abdin, E., Chong, S. A., & Subramaniam, M. (2019). The relative associations of body image dissatisfaction among psychiatric outpatients in Singapore. *International journal of environmental research and public health*, 16(24), 5162.

Silva, T. R. D., Saenger, G., & Pereira, E. F. (2011). Factors associated with body image in Physical Education students. *Motriz: Revista de Educação Física*, 17, 630-639.

Vilhjalmsson, R., Kristjansdottir, G., & Ward, D. S. (2012). Bodily deviations and body image in adolescence. *Youth & Society*, 44(3), 366-384.

Vizcaíno, V. M., Aguilar, F. S., Gutiérrez, R. F., Martínez, M. S., López, M. S., Martínez, S. S., ... & Artalejo, F. R. (2018). Assessment of an after-school physical activity program to prevent obesity among 9-to 10-year-old children: a cluster randomized trial. *International journal of obesity*, 32(1), 12-22.

Yusop, N. B. M., Shariff, Z. M., Hwu, T. T., Talib, R. A., & Spurrier, N. (2018). The effectiveness of a stage-based lifestyle modification intervention for obese children. *BMC Public Health*, 18(1), 1-10.

Waters, E., de Silva-Sanigorski, A., Burford, B. J., Brown, T., Campbell, K. J., Gao, Y., ... & Summerbell, C. D. (2011). Interventions for preventing obesity in children. *Cochrane database of systematic reviews*, (12). 128-129.

Wijnhoven, T., Van Raaij, J., Sjöberg, A., Eldin, N., Yngve, A., Kunešová, M., ... & Breda, J. (2014). WHO European Childhood Obesity Surveillance Initiative: school nutrition environment and body mass index in primary schools. *International journal of environmental research and public health*, 11(11), 11261-11285.

World Health Organization. (2020). UNICEF/WHO/The World Bank Group Joint Child Malnutrition Estimates: levels and trends in child malnutrition: key findings of the 2020 edition.

websites

[www.infanchart.com/child/](http://www.infanchart.com/child/),

<http://dempuegypt.blogspot.com/2008/11/egyptian->

## تأثير البرنامج التعليمي لأطفال المدارس الابتدائية الذين يعانون من زيادة الوزن والسمنة فيما يتعلق بنمط حياتهم وصورة أجسادهم واحترام الذات

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### الخلاصة

الخلفية: يعتبر الوزن الزائد والسمنة من أشد المشاكل الغذائية والصحية التي تصيب الأطفال في جميع أنحاء العالم وترتبط باستمرار بعدم الرضا عن صورة الجسم. الهدف: هدفت هذه الدراسة إلى تقييم تأثير البرنامج التعليمي لأطفال المدارس الابتدائية الذين يعانون من زيادة الوزن والسمنة فيما يتعلق بنمط حياتهم وصورة الجسم واحترام الذات. الطريقة: استخدمت الدراسة تصميم بحث شبه تجريبي. الإعدادات: أجريت الدراسة على 300 طفل من طلاب المرحلة الابتدائية يعانون من زيادة الوزن والسمنة بالصفين الخامس والسادس بمدينة سوهاج. الأدوات: تم استخدام أربع أدوات لجمع البيانات؛ الأول كان عبارة عن بيانات ديموغرافية للطفل، والثاني استبيان عن النشاط البدني، والسلوكيات الغذائية وقياس كتلة الجسم، والثالث معيار لتقييم صورة الجسم. و، والرابع كان تقدير الذات. اهم النتائج: وجد أن أكثر من نصف أطفال المدارس الابتدائية يعانون من السمنة المفرطة، وأظهرت النتائج فرقاً بين ما قبل البرنامج وبعده مع وجود دلالة إحصائية بين صورة الجسد، احترام الذات ومؤشر كتلة الجسم (زيادة الوزن / السمنة). الاستنتاج: خلصت الدراسة إلى أنه بعد تنفيذ برنامج تدخل تطبيقي جيد التصميم للأطفال الذين يعانون من زيادة الوزن و السمنة المفرطة، قاموا بتحسين نمط حياتهم (التغذية والنشاط البدني)، وهذا انعكس علي ممارسات أسلوب حياتهم مما ادي إلى تحسين مؤشر كتلة الجسم. مع الحفاظ على هذا التحسن طوال ستة أشهر من المتابعة مع صورة أفضل للجسم واحترام الذات. لذلك أوصت الدراسة بتنفيذ البرنامج على نطاق أوسع لتأكيد مزاياه وتحسينه.

الكلمات المرشدة: صورة الجسد، أسلوب الحياة، سمنة أطفال المدارس، زيادة الوزن، احترام الذات.