

The Relationship between Emotional Intelligence with Obesity and Some Associated Factors in Children Girls

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1. Abstract

1.1. Background and Aim: Obesity, as a serious health challenge, is a leading cause of several chronic diseases, and decreasing the quality of life. This study aimed to investigate the relationship between emotional intelligence with obesity and some associated factors in children girls.

1.2. Methods: In this cross-sectional study, a total of 260 female students (aged 6-7 years) were chosen randomly from the 19 educational districts of Tehran, Iran. Variables consist of anthropometric indices, dietary intakes, physical activity level, Emotional Intelligence (EI), and some socioeconomic factors were assessed. Statistical analysis was performed using SPSS-V 23 software.

1.3. Results: There was no significant correlation between EI with BMI ($P = 0.37$) and body fat mass percentage % ($P = 0.42$) in the participants. Also, no significant correlation between EI and dietary intakes of energy, carbohydrate, protein, and total fat was observed in the children ($P > 0.05$). But, there was a significant correlation between physical activity level and EI ($P = 0.04$) among the subjects. Among the socioeconomic variables, only, a significant difference between maternal education level for the mean score of EI ($P = 0.02$) was observed, and there was no significant difference for others ($P > 0.05$).

1.4. Conclusion: According to this study, in these female participants, there was no significant relationship between obesity and EI, and in the children, EI was associated with physical activity level and socioeconomic status.

2. Keywords: Psychosocial; Socioeconomic status; Obesity

3. Introduction

Obesity, explained by accumulation of excess adipose tissue, has become a global concern. As a result of the elevated frequency with which childhood obesity presents clinically and the focused global attention, related health conditions have become more obvious, one of which is the co-existence of obesity and psychosocial problems.

The mental health aspects of obesity are wide and include body image disturbances, low self-esteem, social stigma or impaired social relationships, low health-related quality of life, depression, risk for

eating disorders, anxiety, and behavioral problems [1-5].

The onset of psychiatric and psychological symptoms and disorders is more common in obese children and young adults. Research has established a relationship between childhood overweight/obesity and psychological disorders, and onward detrimental impacts on the psychosocial aspect and overall quality of life [2-4].

It is widely accepted that evaluating intelligence quotient alone is inadequate to completely measure cognitive ability [6]. In fact, more precise measures are necessary. Emotional Intelligence (EI) provides

a frame for measuring the ability to recognize and manage one's own emotions and those of others. EI originates from the phrase "social intelligence", which was used to explain the skills involved in managing and understanding others [6].

Social-emotional wellbeing in early years of life contributes to form behavior later in life [7]. Children living in poverty receive less cognitive stimulant at home and may indicate decreased attention span and weaker acquiring skills and in turn affect cognitive development [7].

The present study aimed to evaluate the relationship between EI with obesity and some associated factors in children girls in Tehran.

4. Methods

This cross-sectional study has been conducted among children girls aged 6-7 years in Tehran, 2015-2016. A random sample of 260 healthy girls was chosen in multistage sampling from government elementary schools. One school from each of the 19 educational districts of Tehran city was selected randomly. Then, first grade students were chosen randomly from each school. Children girls could participate in the study if they were first grade students, healthy (were not suffering from any chronic and/or acute disease), were not mental retarded, with gestational age between 37-42 weeks and birth weight 2500-4000 g, and were not taking vitamin, mineral, laxative, or hormonal medication.

In this study, parents were invited to the schools. The aims and the method of the research were explained for them. This study was approved by the Medical Ethics Committee of Iran University of Medical Sciences. Written informed consent was obtained from the parents of all children.

Weight and height of the children were evaluated. Weights were measured using a portable Beurer scale with minimum clothing and without shoes to the nearest 0.1 kg. Heights were measured in standing situation and without shoes, using a fixed tape meter. Body mass index (BMI) was calculated using the formula kg/m^2 . Body fat mass percentage was assessed by Beurer scale (Beurer body composition monitor).

EI score was determined by using the 33-item emotional intelligence scale [8]. Two trained psychologists performed these tests. Each child was evaluated in the school.

Dietary intakes were evaluated with 24-h food recall for 3 days (2 week day and 1 weekend day), and energy and macronutrients (total fat, carbohydrate, protein) intake were determined by using Nutritionist 4 software. Physical activity level was estimated by the Persian and short form of the International Physical Activity Questionnaire

(IPAQ) and described as Met-Min/week [9].

The socioeconomic level of participants was obtained, from their parents, using an economic indicator according to the presence or absence of private bedroom, computer, automobile, and travelling on holidays. Based on this scale, three economic levels were determined: low, medium, and high. The level of education of parents was assessed as a social determinant (primary, secondary, or university). This socioeconomic frame has been routinely used in Iran [10].

4.1. Statistical Analysis

Data analysis was done using SPSS-V 23 software. The normality of variables was examined and confirmed by Kolmogorov-Smirnov test. All results were described as mean \pm SD. Categorical variables are shown as frequencies. Pearson correlation was used to detect all probable bivariate associations. ANOVA was performed for comparing the mean of EI among the socioeconomic levels in children. A two-tailed P value < 0.05 was considered statistically significant.

5. Results

The characteristics of the study subjects who were enrolled in the current study are demonstrated in (Table 1).

The results of the correlations between EI with BMI and fat mass percentage (FM %) are shown in (Table 2). Based on this table, there was no significant correlation between EI with BMI ($P = 0.37$) and FM% ($P = 0.42$) in the participants. Even, these correlations were not statistically significant after adjusting for age, food intakes, physical activity level, and socioeconomic status ($P > 0.05$) (data not shown).

We found no significant correlations between EI and dietary intakes of energy ($P = 0.68$), carbohydrate ($P = 0.75$), protein ($P = 0.90$), and total fat ($P = 0.33$) in the children girls (Table 3). But, there was a significant correlation between physical activity level and EI ($P = 0.04$) among the subjects (Table 3).

In addition, ANOVA showed that among the participants, there was no significant difference between low, middle, and high levels of economic status for the mean score of EI ($P = 0.06$). Also, according to this analysis, there was no significant difference between primary, secondary, and university levels of paternal education for the mean score of EI ($P = 0.15$). But, we found a significant difference between maternal education level for the mean score of EI ($P = 0.02$) (Table 4). Among the mothers with university educational level, the highest score of EI for their children was observed (Table 4).

6. Discussion

In the present study, there was no significant correlation between

Table 1: General characteristics, food intakes, and physical activity levels of the participants (n = 260)

Variable	Value ^a	Min	Max
Age, years	6.45±0.49	6.00	7.00
Height, cm	120.11±5.65	106.00	140.00
Weight, kg	24.23±5.50	15.10	48.50
BMI, kg/m ²	16.64±2.70	12.30	25.80
Fat mass, (%)	22.20±9.08	3.07	35.30
EI, (total score)	45.02±8.58	19.00	64.00
Energy intake, kcal/day	1327.94±404.67	384.70	3247.00
Carbohydrate intake, g/day	157.01±67.13	24.47	554.10
Protein intake, g/day	46.42±17.61	11.11	150.40
Total fat intake, g/day	60.35±21.27	16.13	132.00

^a Values are shown as mean±SD. Abbreviations: BMI, body mass index; EI, emotional intelligence.

Table 2: Association between emotional intelligence with BMI and FM% in the participants (n = 260)

	BMI (kg/m ²)		FM (%)	
	r*	P	r*	P
EI (total score)	0.05	0.37	0.05	0.42

*Pearson Correlation.

Abbreviation: BMI, body mass index; FM%, fat mass percentage; EI, emotional intelligence.

Table 3: Association between emotional intelligence with food intakes and physical activity in the participants (n = 260)

EI (total score)	r*	P
Energy intake, kcal/day	0.03	0.68
Carbohydrate intake, g/day	0.02	0.75
Protein intake, g/day	0.01	0.9
Total fat intake, g/day	0.6	0.33
Physical activity, Met-Min/week	0.12	.04 ^a

Table 4: Comparison of the emotional intelligence in the participants in socioeconomic levels (n = 260)

EI (total score)			
Socioeconomic variables	N	mean±SD	P*
Economic status			0.06
Low	76	43.42±9.35	
Middle	127	45.14±8.14	
High	57	46.89±8.23	
Paternal education Level			0.15
Primary	58	43.09±9.53	
Secondary	119	45.58±8.20	
University	83	45.57±8.33	
Maternal education level			.02 ^a

Primary	41	42.29±10.08	
Secondary	136	44.81±8.67	
University	83	46.72±7.26	

*P value obtained from ANOVA (analysis of variance).

^aStatistically significant at P < 0.05.

Abbreviation: EI, emotional intelligence.

obesity and EI. It was demonstrated that overweight/obesity had a clear negative effect on self-esteem [11, 12], and lead to an elevated child body dissatisfaction [12, 13]. Findings established that overweight/obese children had significantly lower self-esteem than normal weight peers, as evaluated by different focused questionnaires [11-13].

Self-esteem of obese children seems to reduce with age and older children with obesity report significant decrease in self-esteem associated with physical appearance than younger children [13, 14]. It should be noted that parenting is not related to child body dissatisfaction but their responsiveness to overweight/obesity is positively related to child self-esteem [12]. In a study, overweight/obese children were more probably to experience numerous and clinically significant related psychological problems than their normal weight peers [13, 15]. The relationship between symptoms and overweight/obesity was reported to be stronger with elevating age in childhood [16]. Overweight/obese adolescents most suffered from weight-associated teasing exhibited lower self-esteem and higher depressive problems [17, 18]. Obese children may also have less favorable conduct, social circumstances, and social involvement when compared to normal-weight peers [19]. Obesity-associated teasing is an important risk factor for the development of psychological problems such as social stigmatization/peer rejection [20]. The precise extent of the psychiatric, psychological, and psychosocial complications related to childhood obesity remains uncertain resulted from different methodological approaches and methods used in studies. Underlying mechanisms are not yet fully understood, but they are probably to involve a complex of biological, psychological, and social factors.

In compared to normal-weight children and adolescents, there appears to be a constant heightened risk of psychological problems such as depression and anxiety, low self-esteem, depression, and behavioral disorders. In turn, these problems related to obesity have a constant adverse effect on their quality of life, psychiatric, psychological, and psychosocial problems. These may continue into adult life and lead to life-long health problems.

As a whole, findings have confirmed that childhood obesity was negatively related to psychological problems including depression, emotional and behavioral disorders, and self-esteem in childhood [21,

22]. Interventions are necessary to prevent childhood and adolescent obesity [23]. Children are specifically vulnerable because both obesity and psychiatric status often have their origins throughout this critical development period [24].

In contrast to some commonly reports, surplus body weight condition in early childhood does not predict the development of new internalizing or externalizing behavior problems throughout the first 2 years of school [25]. While, as children mature and experience elevated peer and adult interactions, perception of their weight state and the reaction to their weight state affect their self-perceptions. Wang et al. [26] reported that obesity in 10 and 11 years old children independently predicted self-esteem 2 and 4 years later, and obese children significantly more probably than normal-weight children to show low self-esteem 4 years later. In another research, Cui et al. [27] found that BMI significantly predicted lower health-related quality of life, especially in pre-pubertal children and early adolescence, a finding established by other investigators [28, 29].

Despite of these findings, it was reported that the causality could not be determined, because of the cross-sectional nature of the study left open the likelihood that other effectual variables may have been related to the observed results.

In addition, Galvan et al. [7] in a study evaluated the association between childhood obesity, cognitive development, physical fitness and social-emotional wellbeing in children. The authors reported that only in non-obese children, there is a positive trend between intelligence quotient and socioeconomic condition [7].

In the present study, there was no significant correlation between EI and food intake. In a study, Kata et al. [30] evaluated the relationship between dietary pattern and EI among 8-years old children. They found that consuming a diet with high fat, sugar, and processed foods in early childhood may be associated with little reduces in intelligence quotient in later childhood. In the current study, misreporting of food intake and snack foods could occur by parents, because of social appealing. It should be also noted that many other environmental factors, regulate the effects of nutrition on cognition and behavior.

Findings showed that among the children girls, there was a significant relationship between physical activity levels with EI. Data suggest that the time spent for physical activities is useful because it can elevate overall health and function [31, 32].

Among the participants, EI was positively correlated to maternal education level. But, there was no significant relationship between EI and other socioeconomic variables. In study conducted by Galvan et

al. [7] concluded that in normal-weight children intelligence quotient alters based on socio-demographic features; but in obese children, early nutrition also had a major role. Children living in poverty and less educated environments receive less cognitive stimulant at home and may indicate deficient memory and weaker acquiring skills and in turn affect cognitive development [7].

In conclusion, in this aged children girls group, there was no significant relationship between obesity and EI, and in these children, EI was associated to physical activity level and socioeconomic status.

The strengths of this study are: evaluating the obesity based on both BMI and body composition, and assessment of the potential confounders. Some limitations of our study should be noted: cross-sectional nature of this study, and measuring the body composition by e-body.

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