BODY MASS INDEX (BMI) WAS ASSOCIATED WITH MENTAL HEALTH, BUT IT HAD NO ASSOCIATION WITH SELF-ESTEEM IN IRANIAN GIRLS: A CASE-CONTROL STUDY

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ABSTRACT

Introduction: Overweight and obesity are known as one of the major problems in girls' physical and mental health. This study aimed to evaluate the association between body mass index (BMI) with mental health and self-esteem in Iranian girls.

Methods: In this case-control study, 160 girls (47 obese or overweight as the case group and 113 normal weight as the control group) aged 13 to 18 years old were recruited. Adolescents' height and weight were measured according to international standards, and BMI was calculated. Mental health status and self-esteem were measured using the validated general health questionnaire (GHQ) and the Rosenberg self-esteem questionnaire, respectively. Comparison of the variables was performed using chi-square test.

Results: The mean BMI in the case group was 26.73 Kg/m² and in the control group was 20.13 Kg/m². 78% of cases and 21% of controls had mental disorders which significantly differed from each other (P <0.001). Moreover, 31% of cases and 24% of controls had sufficient self-esteem. However, this difference was not statistically significant.

Conclusion: Mental health disorders in obese girls were much higher than normal weight girls. However, there was not a significant association between obesity and self-esteem. It seems that obesity is not associated with the reduced self-esteem of Iranian girls. Further longitudinal studies with larger participants were required to achieve the psychological effects of obesity in Iranian girls.

Keywords: Body Mass Index, Mental Health, self-esteem, Adolescent Girls.

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Introduction

Reduced self-esteem is a mental disorder that has been frequently assessed in overweight and obese girls1-3. A 26-year follow-up cohort study from reported that BMI is related to lower self-esteem4.

On the other hand, lack of self-esteem is considered as a risk factor for obesity and overweight in adolescent girls5. Actually, earlier studies had shown that obesity and overweight are associated with a lack of self-esteem mutually.

Self-esteem has been rarely evaluated as an independent factor in previous studies which performed to assess the relationship between mental disorders and BMI in adolescent girls. Therefore, due to the increased prevalence of obesity and overweight in adolescents and its possible association with mental disorders and decreased self-esteem in girls, this study aimed to evaluate the association between BMI with mental health and self-esteem in Iranian adolescent girls.
Methods

This case-control study was carried out on 160 adolescents’ girls (47 obese or overweight and 113 normal weight) from three high schools in a randomly chosen district (district 5) of Tehran, Iran. In the pre-determined day, students’ weight and height were measured and categorized according to the World Health Organization BMI chart. The inclusion criteria for the control group was normal weight and the inclusion criteria for the case group was overweight or obese. The exclusion criteria included: uncontrolled chronic diseases affecting weight such as thyroid dysfunction or psychiatric diseases and taking medications affecting weight. Finally, written informed consent was obtained from both parents and students prior to joining the project.

Girl’s self-esteem was assessed using the Rosenberg’s Validated Self-esteem Questionnaire (6) and mental health was assessed by using the 28-item General Health Questionnaire (GHQ-28) (7).

Statistical Analysis

Individuals were categorized into two groups: “normal/lean” and “obese/overweight”. Comparison of the variables was performed using chi-square test. Statistical analysis was performed using SPSS software version 16 and P value was significant at <0.05.

Results

The mean age was 15 years and the mean BMI in the case group was 26.73 Kg/m² and in the control group was 20.13 Kg/m². Demographic characteristics of participants were demonstrated in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Case (Obese/overweight)</th>
<th>Control (Normal/lean)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td>15.38 ± 1.48</td>
<td>14.84 ± 1.71</td>
<td>0.07</td>
</tr>
<tr>
<td>Weight (Kg)</td>
<td>70.91 ± 8.54</td>
<td>53.15 ± 6.96</td>
<td>0.01</td>
</tr>
<tr>
<td>Height (m)</td>
<td>1.63 ± 0.88</td>
<td>1.63 ± 6.36</td>
<td>0.7</td>
</tr>
<tr>
<td>BMI (Kg/m²)</td>
<td>26.73 ± 2.32</td>
<td>20.13 ± 1.85</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Table 1: Demographic characteristics of participants.

The score Mental Health disorders of two groups were summarized in Table 2. 78% of cases and 21% of controls had mental health disorders, which was significantly different (P value <0.001).

<table>
<thead>
<tr>
<th></th>
<th>Case (Obese/overweight)</th>
<th>Control (Normal/lean)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental health disorders</td>
<td>30 (78%)</td>
<td>8 (21%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Low self-esteem</td>
<td>20 (42%)</td>
<td>32 (28%)</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Table 2: Mental health disorders in case and control groups.

Self-esteem was also compared in two groups. As shown in Table 2, 31% of cases and 24% of controls had sufficient self-esteem. The difference between two groups was not statistically significant.

Discussion

We found that mental health disorder was associated with higher BMI in adolescent girls. In Mailey et al. study on 9957 students, a positive association between the students’ mental health disorders and their weight status was indicated. Overweight and obese students had higher psychological and behavioral disorders (8). Another perspective study was examined correlation between body mass, mental disorders, and functional disability in the participants of 6 European countries and reported an association between obesity and mental disorders (9).

In the current study, sufficient self-esteem was not associated with BMI (P value=0.2), in contrast with the results of some other studies. For example, in the Makinen et al. study that performed in Finland, the high BMI levels had inversely association with self-esteem in adolescents. In this study, which was performed on 86 teenage girls and boys during one year, weight loss interventions resulted in improving self-esteem (10). However, some previous studies have reported similar findings with our study. For example, Ozmen et al. reported no significant association between self-esteem and BMI in adolescents (11).

The association between BMI and self-esteem can be influenced by different factors. A yearly study of the US adults ages 18-44, 45-64, and ≥65 years old showed that association of BMI with self-reported health differed significantly across ages and sexes (4).

Moreover, the different findings of current study might also be explained by cultural context and socioeconomic factors. Obesity was considered as a good character for many decades. It’s possible that this trend has not completely changed in some developing countries such as Iran. It’s also suggested that
BMI and FFQ are not good indicators in the assessment of obesity in adolescents and we need to use body composition measurements along with BMI. Although our study had some limitations including the cross-sectional nature (meaning that causal inferences are difficult) small sample size, self-reported data, and limited generalization to other countries due to different cultural context. In addition, we did not assess dietary intake in our study. Dietary components may have a key role in mental health and self-esteem.

Conclusion

The results of this study showed a significant association between BMI and mental health disorders, although there was no significant relationship between self-esteem and BMI. A comprehensive survey with larger participants and both genders is required to better understand the psychological effects of obesity.

References


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