Body image distortion in fifth and sixth grade students may lead to stress, depression, and undesirable dieting behavior

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Abstract

The widespread pursuit of a thin physique may have a detrimental impact on the wellbeing of preadolescents. The influence of body image distortions on the lifestyles, dieting behaviors, and psychological factors was investigated in 631 fifth and sixth grade children in Kyeonggi-do, Korea. Children were classified into three weight groups (underweight, normal, and overweight) and three perception groups (underestimation, normal, and overestimation). Necessary information was obtained by questionnaire, and each subject’s weight status was determined by the Röhrer index calculated from the annual measurement records, which were obtained from the school. According to their current weights, 57.4% of children were normal and 32.2% were overweight or obese. 16.6% of the children overestimated their body weight, and 55.2% had an undistorted body image. Overweight children had desirable lifestyles and dietary habits and presented reasonable weight control behaviors. Compared to those without distortion, the overestimated group had greater interest in weight control ($P=0.003$) and dissatisfaction with their body weights ($P=0.011$), presented unhealthy reasons to lose weight ($P=0.006$), and had higher scores for “feeling sad when comparing own body with others” ($P=0.000$) and for “easily getting annoyed and tired” ($P=0.037$), even though they had similar obesity indices. More subjects from the overestimation group ($P=0.006$) chose drama/movies as their favorite TV programs, suggesting a possible role for the media in body image distortion. These findings suggest that body image distortion can lead preadolescents to develop stress about obesity and unhealthy dieting practices, despite similar obesity indices to those without distorted body images. These results emphasize the importance of having an undistorted body image.

Key Words: Preadolescents, body image, depression, dietary habit, obesity stress

Introduction

Although obesity is a disease that should be treated, too much effort is being given to lose body weight, particularly by the younger generation. Weight reduction efforts may be necessary for those who are overweight; however, it may be harmful particularly for those in growth and developmental stages. Unhealthy weight control behavior often results from weight misperceptions, principally overestimating body weight. Weight misperception is partly due to unrealistic media portrayals [1], and the resulting dissatisfaction with weight associated with low self-esteem, depression, and eating disorders [2]. Various studies have shown that a negative body image is an antecedent to obesity through unhealthy weight-control behaviors such as fasting, vomiting, or laxative abuse [3].

An increasing number of studies indicate the importance of a healthy body image, particularly in association with unhealthy weight control behaviors, eating disorders, and suicidal thoughts and attempts. Studies around the world, such as those on US adolescents [2,4], Palestinian schoolchildren [5], Dutch adolescents [6], and Chinese adolescents [7], suggest that subjective weight perception, rather than objective weight status, is more associated with an individual’s well-being. However, most previous studies in Korea investigated how subjects perceive their bodies, and how this affects a subject’s psychological symptoms according to obesity [8-10], gender, and different areas [11], whereas nutritional knowledge, dietary habits, and dieting practices have been assessed based on body dissatisfaction [12]. As a result, no study has examined the lifestyles, dieting practices, dietary habits, and psychological factors in children according to weight misperceptions, particularly in those who overestimate their weight.

The fifth and sixth grades in elementary school are usually the period when puberty starts. Nutritional imbalance can affect a child’s physical and mental growth and development as well as their health status for the rest of their life. The pursuit of

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extreme thinness seems widespread among Korean preadolescents. Among 543 fifth graders in Korea, 55.6% were normal and 29.2% of underweight girls wanted to lose weight [13]. Determining the association between body weight misperceptions and lifestyle, dieting behavior, and psychological aspects of preadolescents will be useful for developing evidence-based nutrition education for these children. Therefore, lifestyles, dietary habits, and weight loss behaviors, as well as psychological aspects were determined in children with different body weights and body weight perceptions.

Subjects and Methods

Study subjects

A total of 647 fifth and sixth grade students were recruited from seven elementary schools located in Gyeonggi-do, Korea. Students with uncompleted questionnaires were excluded; thus, 631 students (349 boys and 282 girls) were included. The survey was conducted in November 2009.

Anthropometry

The heights and weights of the subjects were obtained from the annual measurement records, which were determined between April and May 2009. The Rohrer index, which is the official tool to categorize elementary school children into weight categories in Korea, was calculated by the following formula.

Rohrer index = \[
\frac{\text{weight (kg)}}{\text{height (cm)}^3} \times 10^7
\]

Rohrer index values < 92, 92-109, 110-140, 141-156 and > 157 were categorized as severe underweight, underweight, normal, overweight, and obese, respectively.

Subgroup classification

Table 1 summarizes the distribution of subjects according to weight status and body image perception. Subjects who were overweight and obese were categorized into the overweight group, which was compared to the normal weight group.

As shown in Table 1, subjects were divided into three body-image perception groups. Subjects in the severe underweight, underweight, normal, overweight, and obese group who perceived their own body shape as very thin \((n = 0)\), somewhat thin \((n = 41)\), normal \((n = 208)\), somewhat fat \((n = 70)\) and very fat \((n = 28)\), respectively, were categorized into the normal perception group. Subjects in the severe underweight group who perceived their own body shape as somewhat thin \((n = 2)\), those in the underweight group who perceived their own body shape as normal \((n = 15)\) and somewhat fat \((n = 1)\), those in the normal weight group who perceived their own body shape as somewhat fat \((n = 70)\) and very fat \((n = 7)\) and those in the overweight group who perceived their own body shape as very fat \((n = 10)\) were categorized into the overestimation group. The remaining children were categorized into the underestimation group.

Considering increasing concerns of “being fat” and “feeling fat” compared to underweight or underestimation of body image in this society, variables were compared only between the overestimation group and normal perception groups as well as between the overweight and normal weight groups to identify the characteristics of children who had distorted body image perceptions by overestimation.

Table 1. Body image perception of subjects by weight status

<table>
<thead>
<tr>
<th>Body image perception</th>
<th>Weight status by actual weights and heights</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Severe underweight</td>
<td>Underweight</td>
</tr>
<tr>
<td>Very thin</td>
<td>0 (0.0)</td>
<td>7 (10.9)</td>
</tr>
<tr>
<td>Somewhat thin</td>
<td>2 (100)</td>
<td>41 (64.1)</td>
</tr>
<tr>
<td>Normal</td>
<td>0 (0.0)</td>
<td>15 (23.4)</td>
</tr>
<tr>
<td>Somewhat fat</td>
<td>0 (0.0)</td>
<td>1 (1.6)</td>
</tr>
<tr>
<td>Very fat</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Total</td>
<td>2 (0.3)</td>
<td>64 (10.1)</td>
</tr>
</tbody>
</table>

1) Normal perception group
2) Overestimation group
3) Underestimation group