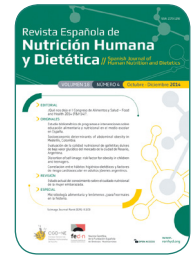


# Revista Española de Nutrición Humana y Dietética

Spanish Journal of Human Nutrition and Dietetics

www.renhyd.org



## ORIGINAL

### Distortion of self-image: risk factor for obesity in children and teenagers

Mercedes Rizo-Baeza<sup>a</sup>, Ernesto Cortés-Castell<sup>b</sup>, Nadia Brauer<sup>a</sup>, Isaac Kuzmar-Daza<sup>a,\*</sup>,  
Manuel Reig García-Galbis<sup>a</sup>

<sup>a</sup> University of Alicante, Spain.

<sup>b</sup> Miguel Hernandez University, Spain.

\* isaackuzmar@yahoo.es

Received: 15/05/2014; accepted: 16/07/2014.

#### Distortion of self-image: risk factor for obesity in children and teenagers

#### KEYWORDS

Body image;  
Self perception;  
Obesity;  
Risk Factors;  
Schools;  
Child;  
Adolescent;  
Health survey;  
Descriptive study.

#### ABSTRACT

**Introduction:** Self-image is important in the behaviour and lifestyle of children and adolescents. Analysing the self-image they have and the factors that might influence their distortion, can be used to prevent problems of obesity and anorexia. The main objective of present publication was to analyse the risk factors that may contribute to self-image distortion.

**Material and Methods:** A descriptive survey study was conducted among 659 children and adolescents in two social classes (low and medium-high), measuring height and weight, calculating BMI percentile for age and gender. Body image and self-perception were registered.

**Results:** The percentage of overweight-obesity is higher in scholars (41.8% boys, 28.7% girls) than in adolescents (30.1% and 22.2% respectively), with no difference between socioeconomic classes. The multinomial logistic regression analysis gives a risk of believing thinner higher ( $p=0.000$ ) among boys  $OR=2.9(95\%CI:1.43-3.37)$ , school ( $p=0.000$ )  $OR=2.42(95\%CI:1.56-3.76)$  and much lower ( $p=0.000$ ) between normally nourished  $OR=0.08(95\%CI:0.05-0.13)$ , with no differences according to socioeconomic status. The risk of believing fatter is lower ( $p=0.000$ ) between boys  $OR=0.28(95\%CI:0.14-0.57)$ , school( $p=0.072$ )  $OR=0.54(95\%CI:0.27-1.6)$ , and much higher among underweight ( $p=0.000$ )  $OR=9 \times 10^8(95\% CI:4 \times 10^8-19 \times 10^8)$ .

**Conclusions:** Are risk factors of believing thinner: males, being in a group of schoolchildren and overweight-obesity. Conversely, are risk factors of believing fatter: females, teen and above all, be thin.

## Distorsión de la auto-imagen: factor de riesgo para la obesidad en niños y adolescentes

### PALABRAS CLAVE

Imagen corporal;  
Auto-percepción;  
Obesidad;  
Factores de riesgo;  
Escuelas;  
Niño;  
Niña;  
Adolescente;  
Encuesta de salud;  
Estudio descriptivo.

### RESUMEN

**Introducción:** La autoimagen es importante en el comportamiento y el estilo de vida de los niños y adolescentes. El análisis de la autoimagen que tienen y de los factores que pueden influir en su distorsión, puede ser utilizado para prevenir problemas de obesidad y anorexia. El principal objetivo de este estudio fue analizar los factores de riesgo que pueden contribuir a una distorsión de la autoimagen.

**Material y Métodos:** Se estudiaron 659 niños y adolescentes en dos entornos socioeconómicos (bajo y medio-alto), midiendo altura y peso, calculando IMC y percentil según edad y sexo. Se preguntó a los sujetos cómo se consideraban: delgada/o, peso adecuado o gorda/o.

**Resultados:** El porcentaje de sobrepeso-obesidad fue mayor en escolares (41,8% niños; 28,7% niñas) que en adolescentes (30,1% y 22,2% respectivamente), sin diferencias entre entornos socioeconómicos. El análisis de regresión logística multinomial ofreció un riesgo de creerse más delgados mayor ( $p=0,000$ ) entre los chicos  $OR=2,19$  ( $IC95\%:1,43-3,37$ ), escolares ( $p=0,000$ )  $OR=2,42$  ( $IC95\%:1,56-3,76$ ), y mucho menor ( $p=0,000$ ) entre normonutridos  $OR=0,08$  ( $IC95\%:0,05-0,13$ ), sin diferencias según estatus socioeconómico. El riesgo de creerse más gordo fue al contrario, menor ( $p=0,000$ ) entre chicos  $OR=0,28$  ( $IC95\%:0,14-0,57$ ), escolares ( $p=0,072$ )  $OR=0,54$  ( $IC95\%:0,27-1,06$ ), y muchísimo mayor entre delgados ( $p=0,000$ )  $OR=9 \times 10^8$  ( $IC95\%:4 \times 10^8-1,9 \times 10^9$ ).

**Conclusiones:** Son factores de riesgo de creerse más delgados el sexo masculino, estar en grupo de escolares y en sobrepeso-obesidad. Contrariamente, son factores de riesgo de creerse más gordos el sexo femenino, adolescente y sobre todo estar delgados.

### CITA

Rizo-Baeza M, Cortés-Castell E, Brauer N, Kuzmar-Daza I, García-Galbis MR. Distortion of self-image: risk factor for obesity in children and teenagers. Rev Esp Nutr Hum Diet. 2014; 18(4): 212 - 217.

### INTRODUCTION

Body image can be defined as the way we perceive our self in relation to our body. This concept is closely related to self-esteem and interpersonal skills, especially during childhood and adolescence. At the same time the perception<sup>1</sup> of its own image plays a central role in many behaviours and feelings and with children and adolescent lifestyles<sup>2</sup>. It is therefore necessary to include the perception of body image in health promotion and prevention programs<sup>3</sup>.

The body image distortion has been studied in detail as a central factor for food, and emotional disorders such as depression and anxiety. When you perceive yourself in a distorted way, this false knowledge can lead to an erroneous behaviour. Many studies in this direction, has been made in relation to eating disorders, like anorexia and bulimia nervosa. Anorexia nervosa is a disease in which the

body image that an individual has of himself is overweight or obese<sup>4</sup>, being followed by the distorted picture, a food restriction and weight loss behaviour.

The relationship between body image distortion and obesity in children has been investigated to a lesser extent<sup>5,6</sup>, despite being of great importance, since perceiving oneself overweight/obesity has been linked to increased a lifestyle<sup>7,8</sup> change motivation<sup>9</sup>, it is essential to be aware of the weight problem to face it. It is known that obesity in childhood has passed in recent years to be a health problem being one of the most frustrating disorders and very difficult to treat. Prevalence data in children and adolescents have increased to the point where one of five children is overweight. In the U.S. the rate of obesity in children has increased from 15% to 22.3% between 1961 and 1995<sup>10</sup>. In Spain this rate was over 30% around 2000<sup>11</sup>.

It is proposed in this paper, to investigate the correspondence between the real nutritional status and the perception of its own image among school children and adolescents, and to elucidate possible risk factors of distortion of the image itself, both default appreciation excesses as excess weight.

## MATERIAL AND METHODS

This study was conducted in primary schools and secondary schools in the City of Alicante (Spain), differentiating two socioeconomic environments: low to medium-high. The sample consists of 659 children and adolescents aged 8-17 years, were included in the sample all those children who have accepted the informed assent by their parents. Socioeconomic groups have been established by study of occupation and educational level parameters of the population census in which schools are located, resulting groups belonging to a peripheral area of low socioeconomic status (S1, n=170), and upper-middle socioeconomic status (S2, n=489).

Was performed a physical examination in which weight and height were measured, data collection was performed individually. The perception of body image was assessed by the question "how do you think is your weight?". This perception has been divided into three categories: (1) Thin / or (2) an appropriate weight, (3) obese. The data were collected in schools, where children and adolescents were interviewed, with parental and teacher informed assent.

Weight and height were used to calculate Body Mass Index (BMI), nutritional status adjusting to the age percentiles using tables<sup>12</sup>, and classifying the sample into three groups: underweight (BMI<15th percentile), normal (BMI≥15%≤ 85%) and overweight (BMI> 85%)<sup>13</sup>.

From the image itself and its true nutritional group status has been verified for each individual, encompassing three groups: if their perception was real, to have less weight than real (underestimation), or having a higher weight (overestimation).

The study results have been evaluated using the IBM version 22.0 Statistics programs, calculating percentages and performing the Chi<sup>2</sup> Test and multinomial regression analysis of the discrepancy between the actual state of nutrition and personal perception in relation to sex, age group, socioeconomic status and true nutrition group. It was considered as significance level p<0.05.

## RESULTS

The total percentage of overweight and obesity in the studied population (Table 1) is higher in schools with 41.8% of boys and 28.7% in girls, than adolescent, 30.1% and 22.2% respectively; noteworthy that the highest percentage of overweight and obesity are observed in males in both age groups, presenting gender distributions that are significantly different (Chi<sup>2</sup> Test p=0.034) between the scholars and almost significantly among adolescents. If this comparison between the sexes is made, the distribution of male schoolchildren and adolescents is almost significantly different (p=0.080), especially for the highest percentage of overweight and obesity among school children; and in women becomes significantly different (p=0.033) to be also lower the percentage of overweight and obesity among adolescents. No significant difference was found between nutritional status distributions between the two groups in socioeconomic status, with percentages of 10% in thinner in the low status, and 6.3% in the medium-high status, and overweight and obesity, 29,4% and 30.5% respectively.

**Tabla 1.** Distribution of the sample (n and %) in three BMI groups according to age group and sex.

Percentile BMI	8-12 years		13-17 years	
	Boys	Girls	Boys	Girls
<15%	8(5.7%)	17(5.9%)	15(8.2%)	8(4.7%)
15-85%	74(52.5%)	100(61.0%)	113(61.7%)	125(73.1%)
>85%	59(41.8%)	47(28.7%)	55(30.1%)	38(22.2%)
<b>X<sup>2</sup> p=</b>	<b>0.034</b>		<b>0.066</b>	

In total, of the 650 responding to the question about personal perceptions about their weight, 60 analysed believed to have more weight than they actually have, 398 perceived as they are, and 192 have the perception of having less weight than they have in reality.

If the data of perception of body image are analysed by performing an analysis of multinomial regression in those who believed that they are thinner, same or fatter than their BMI indicates (Table 2), compared to sex, socioeconomic status, a group of school age and adolescents, BMI group, it appears that the risk of having the perception of being thin is significantly greater (p=0.000) between males with an OR=2.19 (95% CI: 1.3 to 3.37) and between scholars (p=0.000) with an OR of 2.42 (95% CI: 1.56 to 3.76), and much less significant risk (p=0.000) of believing thinner than they are among normally nourished than among overweight or obese, with an OR=0.08 (95% CI: 0.05-0.13) presenting no greater risk of being thin between the two groups in socioeconomic status. The risk of believing fatter than it really is, is on the contrary, significantly lower (p=0.000) between male OR=0,8 (95% CI: 0.14 to 0.57), lower among scholars but not significant (p=0.072) with an OR=0.54 (95% CI: 0.27 to 1.06) and much higher among leaner than among normally nourished (p=0.000) with an OR = 9x10<sup>8</sup> (IC95%: 4x10<sup>8</sup> - 19x10<sup>8</sup>).

## DISCUSSION

The percentages of overweight and obesity in this study are similar to those of other studies in Spain and the rest of Europe. This relationship confirms the high prevalence of childhood and adolescent obesity in developed countries<sup>14</sup>. Comparing the prevalence between the two different social and economic environments, the percentage of overweight and obesity is almost as about 30%, but the low weight is higher in lower status (10%) than in the medium-high (63%), this is similar to other studies<sup>15</sup> where it is confirmed that the lower socioeconomic scholars have a tendency to have lower BMI values and are most active.

Regarding the perception of their own body image<sup>16</sup>, the results of this study are similar to others<sup>17</sup> where a high percentage of that having overweight, answer that they are good or have low weight to the question of "how do you think is your weight?". Differences like other authors<sup>18</sup> are higher in the scholar age group and especially among boys (one in three overweight kids was good or underweight). This difference is smaller in the group of adolescents, increasing the percentage of lower weight women who believed to have normal weight or overweight (13.8%), confirming the risk of a possible behaviour of anorexia nervosa in this group.

**Tabla 2.** OR values of the multinomial regression analysis of the discrepancy between actual state of real nutrition and personal perception.

	OR	CI 95%	p
<b>Perceived to be thinner than they are (n= 192)</b>			
men vs women	2.19	1.43-3.37	0.000
school vs teens	2.42	1.56-3.76	0.000
BMI 15-85% vs BMI >85%	0.08	0.05-0.13	0.000
status low vs medium-high	-	-	ns
<b>Perception of being fatter than they are (n= 60)</b>			
men vs women	0.28	0.14-0.57	0.000
school vs teens	0.54	0.27-1.06	0.072
BMI <15 vs BMI 15-85%	9x10 <sup>8</sup>	4x10 <sup>8</sup> -19x10 <sup>8</sup>	0.000
status low vs medium-high	-	-	ns

Children and adolescents who are overweight and have a distorted<sup>19</sup> body image perception<sup>20,21</sup> of having a normal weight, are more prone to adverse effects such as bad habits and eating disorders<sup>22</sup>, so increased body awareness seems to be a fundamental step in programs to reduce obesity. It is well known that motivation and family are key factors in the success of strategies for the treatment of obesity; for this reason, there should be also consider strategies for increasing awareness of parents, because as some authors mention<sup>23,24</sup>, parents also shown difficulties in recognizing the nutritional status of their children.

## CONCLUSIONS

There are found high overweight and obesity percentages similar to other Spain places, confirming the need to find strategies for its prevention and treatment. Such strategies need to know how children perceive the problem. Are risk factors of believing thinner: males, being in a group of schoolchildren and overweight-obesity. Conversely, are risk factors of believing fatter: females, teen and above all, be thin.

## ACKNOWLEDGEMENTS

Thanks to the children of primary schools and institutes of Alicante and San Juan who participated, and their guardians who showed great interest in working selflessly in this study.

## COMPETING INTERESTS

Authors declare no conflict of interest.

## BIBLIOGRAPHY

- Chung AE, Perrin EM, Skinner AC. Accuracy of child and adolescent weight perceptions and their relationships to dieting and exercise behaviors: a HANES study. *Acad Pediatr*. 2013; 13(4): 371-8.
- Lameiras FM, Calado OM, Rodríguez CY, Fernández PM. Hábitos alimentarios e imagen corporal en estudiantes universitarios sin trastornos alimentarios. *Int J Clin Hlth Psych*. 2003; 3(1): 23-33.
- Campbell K, Waters E, O'Meara S, Nelly S, Summerbell C. Interventions for preventing obesity in childhood. A systematic review. *Obes Rev*. 2001; 2(3): 149-57.
- Ballester FD, De Gracia BM, Patiño MJ, Suñol CC, Ferrer AM. Actitudes alimentarias y satisfacción corporal en adolescentes: un estudio de prevalencia. *Actas Españolas de Psiquiatría*. 2002; 30: 207-12.
- Mushtaq MU, Gull S, Abdullah HM, Shahid U, Shad MA, Akram J. Prevalence and socioeconomic correlates of overweight and obesity among Pakistani primary school children. *BMC Public Health*. 2011; 11: 724.
- Wang Y, Liang H, Chen X. Measured body mass index, body weight perception, dissatisfaction and control practices in urban, low-income African American adolescents. *BMC Public Health*. 2009; 9:183.
- Zhai Y, Sulayman X, Li WR, Shen C, Zhao WX, Shin XM. The relationship between socioeconomic status and overweight and obesity among elementary school children in China. *Zhonghua Yu Fang Yi Xue Za Zhi*. 2013; 47(10): 945-8.
- Zhang YX, Wang SR. Differences in development and the prevalence of obesity among children and adolescents in different socioeconomic status districts in Shandong, China. *Ann Hum Biol*. 2012; 39(4): 290-6.
- Maximova K, McGrath J, Barnett T, O'Loughlin J, Paradis G, Lambert M. Do you see what I see? Weight status misperception and exposure to obesity among children and adolescents. *Int J Obes (Lond)*. 2008; 32(6): 1008-15.
- Troiano RP, Flegal KM. Overweight children and adolescents: Description, Epidemiology and Demographics. *Pediatrics*. 1998; 101(3 Pt 2): 497-504.
- Serra ML, Ribas BL, Aranceta BJ, Pérez RC, Saavedra SP, Peña QL. Obesidad infantil y juvenil en España. Resultados del Estudio enKid (1998-2000). *Med Clín (Barc)*. 2003; 121(19): 725-32.
- Tojo R. Curvas, tablas y nomogramas antropométricos y de composición corporal. *Tratado de Nutrición Pediátrica*. 2001: 1300-69.
- WHO. Obesity: Preventing and Managing the Global Epidemic. Geneva: WHO. 1998.
- Sánchez CJJ, Jiménez MJJ, Fernández QF, Sánchez M. Prevalencia de obesidad infantil y juvenil en España en 2012. *Rev Esp Cardiol*. 2013; 66: 371-6.
- Adjemian D, Bustos P, Amigo H. Nivel socioeconómico y estado nutricional. Un estudio en escolares. *Arch Latinoam Nutr*. 2007; 57(2): 125-129.
- Lee B, Chung SJ, Lee SK, Yoon J. Validation of self-reported height and weight in fifth-grade Korean children. *Nutr Res Pract*. 2013; 7(4): 326-9.
- Al-Sendi AM, Shetty P, Musaiger PO. Body weight perception among Bahraini adolescents. *Child Care Health Dev*. 2004; 30(4): 369-76.
- Edwards NM, Pettingell S, Borowsky IW. Where perception meets reality: self-perception of weight in overweight adolescents. *Pediatrics*. 2010; 125(3): e452-8.
- Legenbauer T, Thiemann P, Vocks S. Body image disturbance in children and adolescents with eating disorders. Current evidence and future directions. *Z Kinder Jugendpsychiatr Psychother*. 2014; 42(1): 51-9.
- Gee L, Peebles R, Storfer-Isser A, Golden NH, Horwitz SM. Underestimation of weight status in Californian adolescents. *Child Obes*. 2013; 9(2): 132-6.
- Zach S, Zeev A, Dunskey A, Goldbourt U, Shimony T, Golsmith R, Netz Y. Perceived body size versus healthy body size and physical activity among adolescents – Results of a national survey. *Eur J Sport Sci*. 2013; 13(6): 723-31.

22. Khor GL, Zalilah MS, Phan YY, Ang M, Maznah B, Norimah AK. Perceptions of body image among Malaysian male and female adolescents. *Singapore Med J.* 2009; 50(3): 303-11.
23. Aparicio G, Cunha M, Duarte J, Pereira A, Bonito J, Albuquerque C. Nutritional status in preschool children: current trends of mother's body perception and concerns. *Aten Primaria.* 2013; 45(Suppl2): 194-200.
24. Guevara CM, Serralde ZA, Frigolet VM, Blancas GL, Islas OL. Association between maternal perceptions and actual nutritional status for children in study group in Mexico. *Nutr Hosp.* 2012; 27(1): 209-12.