

# OBESITY AND COMPULSIVE EATING IN CHILDREN AGED 8 TO 11 YEARS

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**Keywords:** paediatric compulsive eating, overweight, obese

**Abstract:** The present study aims to measure binge or compulsive eating in the case of 95 children from a general school of Sibiu city in Romania. For this measurement, a six-item self-reporting instrument adapted after Compulsive Eating Scale (CES) created first by Kagan & Squires in 1984, was used. Questionnaire items are regarding eating habits and inability to control eating habits. Data were stratified by body mass index (BMI) in order to analyze the association between obesity and binge eating. Univariate analysis showed levels of significance below the threshold of 0.05 in case of four of the six items, and below the threshold of 0.1 in case of for the other two. Scale scores for CES in case of overweight and obese children were significantly higher than those in case of normal weight children reinforce the idea of association between this type of eating and obesity.

## INTRODUCTION

Preadolescence is a developmental period in which eating problems are appearing.(1) Restrained or emotional eating in children and adolescents suggests relationships with body weight or obesity, development of eating disorders (anorexia, bulimia).(2,3,4,5,6) Factors other than hunger, such as emotional distress, restrained eating (suppress the feelings of hunger and reduce their caloric intake), negative feelings can lead to emotional eating, bingeing and overweight.(7,8)

Considering this context, it is very important to investigate these eating problems and their predictors in early life and also, the development of prevention measures of disordered eating and obesity (both important public health concerns). Real data preprocessing and data analysis (9,10) are very useful tools in funding investigations and prevention measures.

## PURPOSE

In this study, an attempt was made to assess measurement of binge or compulsive eating of children aged 8 to 11 years in the context of childhood obesity.

## MATERIALS AND METHODS

### Study population

The subjects are 95 children, 8 to 11 years of age, randomly chosen, from general schools from Sibiu city in Romania, during November 2017. During the sports class they were weighted one by one on a digital scale without shoes, and were measured on a straight wall. We made individual evidence papers with all 95 children. The BMI was calculated by dividing the body weight to height (kg/m<sup>2</sup>) and obesity was defined as BMI greater than the 95th percentile for age and gender. Data were stratified by BMI.

### Compulsive eating questionnaire

A six-item self-reporting instrument adapted after Compulsive Eating Scale (CES) created first by Kagan & Squires in 1984 (11) was administrated. The questionnaire items refers to features such as eating habits and inability to control

eating habits, considering items questions such as: Eat because you are feeling lonely, feel completely out of control when it comes to food, eat so much that your stomach hurts, eat too much because you are upset or nervous, eat too much because you are bored, go out with friends for the purpose of avoiding over-stuffing yourselves with food. The answers to these questions were coded on a 5 point Likert scale, with values 1- never, 2- once or twice a year, 3- once a month, 4- once a week and 5-more than once a week. For the descriptive analysis, new variables were created, considering a 3 point scale with 1 for never, 2 for once or twice a year and 3 for several times. A score was obtained as sum of all items (in 5 point Likert scale version), with a range between 6 and 30. Severe eating disorder is considered in case of higher score.

### Data analysis

Data analysis and graphical representations were done using IBM SPSS Statistics v20 and Microsoft Office Excel v13 programs.(12,13) For each item of the questionnaire, the results were presented in numerical and percentage, both for the whole group and for the three subgroups. For continuous variable age, both frequencies and percentages of respondents for each year of age and for continuous age and score variable mean and standard deviation for the subgroups were determined. For subgroups comparison, Chi-Square test was used in case of qualitative variables and ANOVA test in case of quantitative variables.(14) Significance level considered was 0.05.

## RESULTS

### Overall results

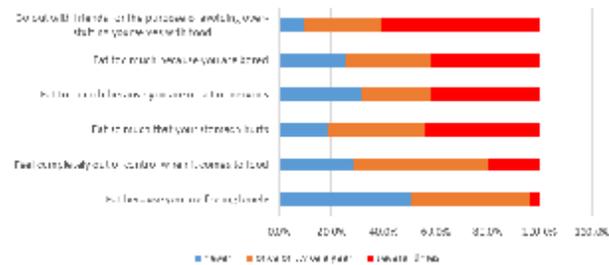
The 95 respondents were children with an average age of M = 9.51 (SD = 1.21), of whom 58% were girls. Of the respondents, nearly 50% were overweight (25%) or obese (23%). 59% of the normal weight respondents were girls and the proportion of girls was also higher for overweight respondents (67%) while in case of obesity it was slightly higher (p = 0.832 > 0.05) in favor of boys (54%). Analyzing the whole group, it is noticed that over 50% of respondents never think they eat because they feel lonely, and 45% of them have this feeling

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once or twice a year ( $p = 0.000$ ). When asked about self-control when it comes to food, 51% think they lose control in this regard once or twice a year, 18% once a month, while 28.4% have never had this problem ( $p = 0.000$ ). A slightly over 35% of respondents think they eat so much that their stomach hurts once or twice a year and a similar percentage once a month and 8% once a week while about 20% do not this has never happened ( $p = 0.008$ ). Anger and nervousness are considered the cause of excess food once or twice a year by 26%, once a year by 33% and once per week by 7% of respondents ( $p = 0.158$ ). Boring is another factor that causes excess food once or twice a year by 32%, once a year by 25% and once per week by 15% of respondents ( $p = 0.131$ ). In about 30% of cases it happens that once a week (29.5%), once a month (30.5%), once or twice a year (29.5%) go out with friends only to avoid eating excessively ( $p = 0.000$ ).

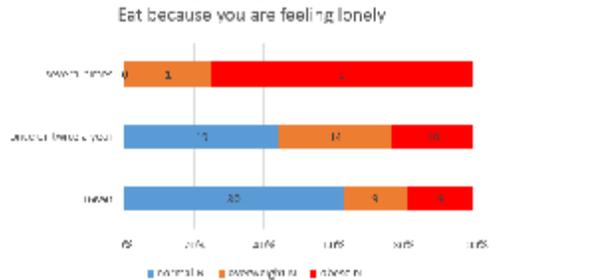
Figure no. 1. Compulsive eating, overall results



BMI stratification results

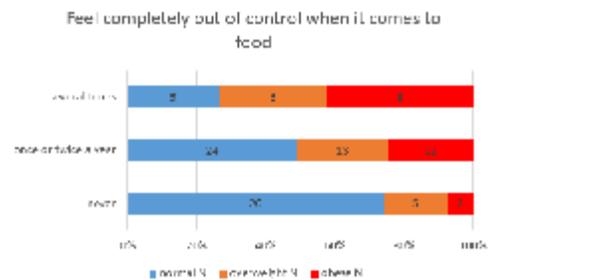
At 58% of the overweight and 45% of the obese are considering that they are eating because they feel lonely while 61% of the normal weight responders have answered that that this has never happened to them ( $p = 0.034$ ).

Figure no. 2. Feeling lonely, BMI stratification results



Approximately 70% of the overweight and 90% of the obese have lost control when it comes to eating, while in case of normal weight this happens once or twice a year (49%) or never (41%). ( $p = 0.019$ ).

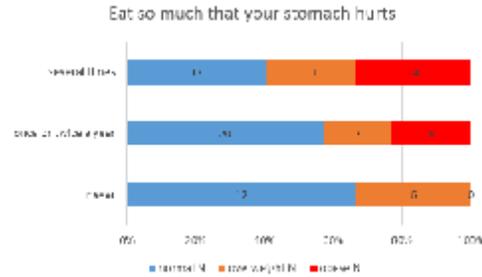
Figure no. 3. Out of control, BMI stratification results



To obese (64%) and overweight (46%), it is common for them to eat so much that their stomach hurts, while this

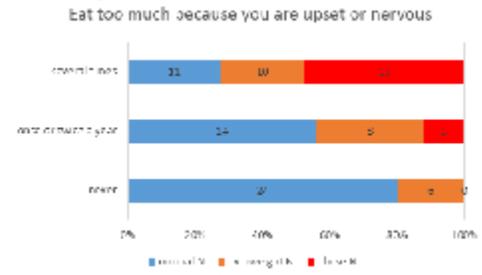
aspect also occurs in normal weight (35%) but in a smaller proportion ( $p = 0.063$ ).

Figure no. 4. Stomach hurts, BMI stratification results



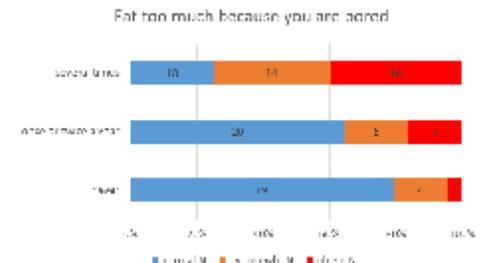
For 86% of the obese and 42% of the overweight, it is common to eat too much because they are upset or nervous, while in normal weight cases, to 50% them this has never happened to them and to 22% them this are frequent ( $p = 0.000$ ).

Figure no. 5. Upset or nervous, BMI stratification results



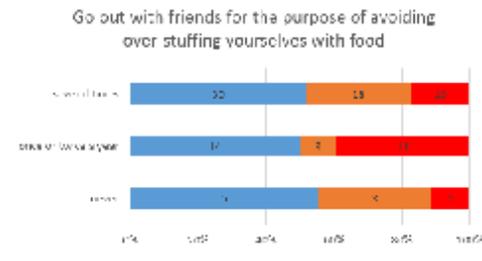
Boring is another factor associated with over-eating at obese (73%) and overweight (58%), while in normal cases (20%) it occurs only in fewer situations ( $p = 0.000$ ).

Figure no. 6. Boring, BMI stratification results



To avoid eating too much, 61% of norms are often out with friends. This is also the case for overweight (75%) while in the case of the obese, at 46% this is often the case respectively at 50% this is happening once a year ( $p = 0.093$ ).

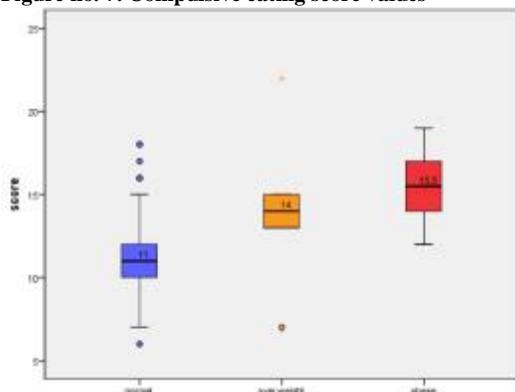
Figure no. 7. Go out with friends only to avoid eating excessively, BMI stratification results



The mean score for the CES scale for the entire group was 13.22 (SD = 2.09). Analyzing the values for this scale in the

context of BMI stratification, it is noted that the values obtained in the case of overweight ( $M = 14.08$ ,  $SD = 2.38$ ) and obesity ( $M = 15.73$ ,  $SD = 2.07$ ) are significantly higher ( $p = 0.000$ ) than those from normal weight cases ( $M=11.67$ ,  $SD=2.48$ ).

Figure no. 7. Compulsive eating score values



### DISCUSSIONS

Data preprocessing and analyzing allowed extracting the following characteristics of compulsive behavior: 50% of respondents eat because they feel lonely and 90% go out with friends just to avoid eating too much. In 70% of respondents it happened at least once to lose control when it comes to eating respectively at 80% it happened at least once to eat so much that their stomach hurts. Boring and annoyance or nervousness are factors that can lead to excess food (75% and 69% respectively).

By univariate analysis, in the case of overweight and obese, it can be observed that in all six items of the scale measuring uncontrolled, compulsive feeding, we have higher percentages for situations where this type of feeding is encountered once or twice a year and especially several times. Also, for four of the six items, obtained levels of significance were below the threshold of 0.05 and for the other two levels the significance was at the limit, below the threshold of 0.1, which underlines the association between obesity and eating habits, especially the inability of control over them in case of overweight and obesity children.

The idea observed from the univariate analysis is also supported by the analysis of the scores obtained for this scale in the three subgroups (BMI stratification). The much higher scores obtained in the case of overweight and obese compared to normal weight cases also indicate a high compulsivity in the diet of the children in the first two categories. Binge eating behavior association with obesity, and also with others psychical and mental disorders, was also found in literature studies.(15,16,17,18)

### CONCLUSIONS

The results of this study confirm high compulsivity in the diet of overweight and obese children compared to normal weight cases. The study also confirms the childhood overweight and obesity association and psychological factors (from compulsive eating behavior). As a continuation of the study we consider the determination of the children characteristics from dental disorders point of view, respectively the analysis of the association between the compulsive eating, dental disorders and BMI stratification.

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