

## EATING DISORDERS IN SILESIAN SCHOOLS – PILOT STUDY

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### SUMMARY

**Background:** Modern media have a huge impact on eating habits, which result in pathologies among young people, especially females. Fashion models have become a pattern for ordinary women, however the difference in a mean weight between these two groups is increasing. The aim of the study was to assess the correlation between school students' results in EAT-26 self-report questionnaire and their daily diet behavior and to analyze the occurrence of eating disorders among students in schools of the region of Silesia in Poland.

**Subjects and methods:** Our survey was based on the EAT-26 (Eating Attitude Test) and Behavioral Four Questions Test. 150 questionnaires were given to students of Secondary Schools, 116 were filled out correctly. The interviewed group consisted of 85 girls and 31 boys. Average age was  $17.24 \pm 1.18$ . All of the data were analyzed statistically.

**Results:** Average BMI was 21,06; half of the recruited subjects had correct BMI whereas over 40% of them presented underweight. Within 116 responses from the EAT-26 nearly 93% belonged to the group with a small risk of the development of future eating disorders. Nevertheless, over 6% of the survey participants were in the group at high risk. In the Behavioral Four Questions Test 10% participants turned out to be in the compulsive overeating group, other ones in the group of a probable development of anorexia (7%) or bulimia nervosa (3%).

**Conclusions:** There is a strong correlation between particular daily activities and the score achieved in EAT-26, however there is no significant correlation between the calculated BMI and EAT-26 results. Specific socio-cultural factors are faced by public services. They refer both to health promotion programs and the organization of spare time spent by teenagers outside schools.

**Key words:** EAT-26 - Behavioral Four Questions Test - eating disorders - secondary schools

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### INTRODUCTION

Dietary behavior is the basic element in the pro-health lifestyle of children and adolescents. Childhood is the proper period of life to create good dietary practices. Habits of regular and rational nutrition and properly balanced meals provide good physical condition and health while bad dietary habits in the childhood period are an early risk factor of overweight and obesity. In population studies, we can follow the occurrence of initial symptoms of abnormal eating behaviors which may, but do not have to, lead to clinical manifestation of serious associated health problems, such as overweight or obesity, anorexia nervosa or bulimia nervosa. The World Health Organization (2000) officially declared obesity a worldwide epidemic, which includes adults and children. In the twenty-first century, obesity is a major problem health of the world. This is mainly due to changes in lifestyle and diet, due to the tight distribution and shortage of time for regular diet meals as a family, and more uses of caterers serving high calorie food (Lustig et al. 2004). More and more young Poles are becoming overweight. Obesity affects 5% to 8% of the population of children and young people, and 8% to 12% of children in our country are at present overweight. The first larger study population of 1995 school-age children (7-15 years) showed obesity in a group of 1,8-3,5% boys and 1,5-4,1% girls; 4,3% -5,1% of boys and 4,3-6,4% girls were at the same time overweight (Oblacińska et al. 1995). Subsequent epidemiological studies were carried out in the region of Podkarpacie in 2000, and showed more than a twice

higher rate of obesity in boys and girls respectively; 7% and 10% of overweight boys and 8% and 10.5% in girls (Woynarowska 2004). The types of behaviour affecting the formation of obesity are the following. Many years of research have shown that depression is a predisposing factor to obesity as well as overweight in adolescence and in later years - although the associated practices are aimed at reducing or maintenance of body weight. Viner and Cole (2006) found that adolescents who at age 16 apply a diet in order to loose weight, were more likely to develop obesity at age 30 than with no history of using a diet. This observation was also confirmed in other studies (Steinberg et al. 2003). Neumark-Sztainer et al. (2006) discovered that adolescents who had used diet restriction at the beginning of the observation period, after 5 years of the follow up presented a three times higher incidence of obesity than happened among control groups. Similar conclusions are found in other reports in the literature (Nelson et al. 2007). Epidemiological reports show that in Western countries the incidence of anorexia nervosa stands at 0.1-5.7% among teenagers, while bulimia concerns 0,3-7,3% women at this age. Male adolescent bulimia concerns 0-2,1% of the population in this age group (Zuckerman et al. 1985). Other reports adopting the DSM-IV diagnostic criteria show that abnormal eating attitudes in non-Western countries have been gradually increasing (Makino et al. 2004). There are some psychological factors that are associated with selected eating behaviours. Negative behaviours, such as: dietary restrictions, uncontrolled eating and emotional eating may have a strong association with psychosocial factors

in adolescence. In this period of life the highest association of psychosocial factors with emotional eating and the lowest with dietary restrictions may be found. Knowledge about disordered eating predictors may become the basis for providing more effective intervention programs (Mazur et al. 2011). The aim of the study was to assess the correlation between student's results in EAT-26 self-report questionnaire and their daily diet behaviour as well as the appearance of eating disorders among students in Silesian schools.

## SUBJECTS AND METHODS

### Subjects

During the 2011/2012 school year, the authors conducted peer-support lectures on the most common eating disorders (ED) at the secondary schools situated in Chorzow and Siemianowice Slaskie (Silesian region). After a 45-minutes' presentation and usually a short discussion anonymous questionnaires were given to all the pupils aged between 15-18. 150 questionnaires were distributed, responded to by 116 – 85 girls and 31 boys.

### Methods

Our survey was based on the EAT-26 (Eating Attitude Test) and Behavioral Four Questions Test. The score result in the EAT-26 is supposed to be in strong straight correlation with the daily eating disorders and the future threat of anorexia or bulimia. Each of the 26 questions could be scored from 0 (never) to 3 (always). A result below 20 points indicates no risk. 20 to 37 is considered as a group at higher risk. Scores over 37 diagnose one of the eating disorders, and this diagnosis should be made more precise by further tests and examinations. The Behavioral Four Questions Test allows pre-diagnosis in four simple questions (yes/no) of one of the three eating disorders - bulimia, anorexia and compulsive overeating.

### Data analysis and statistics

The value of the statistical data is hard to interpretate directly, so all the results are given using a probability test. The p-value can be interpreted as the degree of simplification of the truth of the null hypothesis. In this paper a general rule applies:  $p < 0.05$  indicates statistical significance. All results are significant, difference from this is marked in the text. As for the correlation Pearson's Linear Correlation Coefficient ( $r$ ) was calculated. All of the answers given were analyzed by the Pearson's Correlation by Analysis ToolPak.

## RESULTS

60 students from a secondary school in the city of Chorzów, Poland and 56 from a secondary school in the city of Siemianowice Śląskie, Poland were asked to fill out questionnaires. We have received 116 properly completed tests (the rest of the tests were not filled

fully, and if there was any missing reply, the questionnaire was rejected from the research). The average age of the surveyed participants was 17,24 (standard deviation = 1,18). In terms of sex differences it was 16,98 for girls and 17,97 for boys. The BMI of the students was also checked by the use of a standard formula (weight in kilograms divided by squared height in meters). The results show that average BMI is 21,06 with a minimum of 16,01 and a maximum of 30,49. In terms of sex differences it was 21,08 for girls and 21,02 for boys. Half of the surveyed participants had the correct BMI whereas over 40% presented underweight. Only two of the students had a BMI indicating obesity.

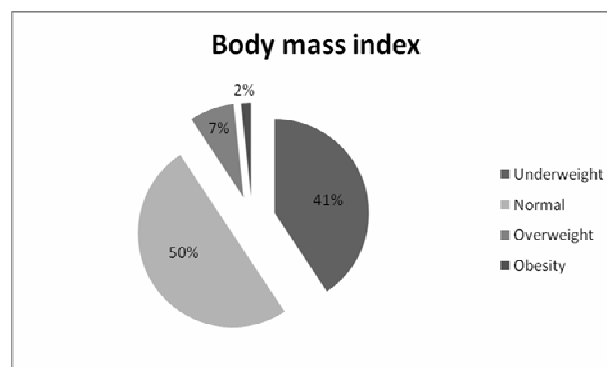


Figure 1. Distribution of BMI among respondents

The average result achieved in EAT-26 analysis was 7,48 for girls and 5,16 for boys. The average score is just below 7 (6,87) out of 78. With a minimum of 0 and a maximum of 34, median value 5. As for the cities, the average equals to 8,57 for Chorzów and 5,12 for Siemianowice Śląskie. Within 116 responses from the EAT-26 nearly 93% are in the group of low risk of the development of future eating disorders. Nevertheless, over 6% of surveyed participants are in the group of high risk of development of eating disorders (8 persons, including 7 girls and 1 boy). None of the students was diagnosed with one of the previously mentioned eating disorders.

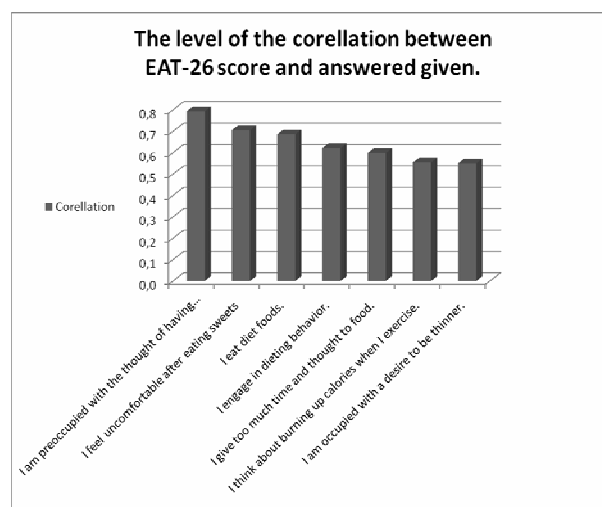
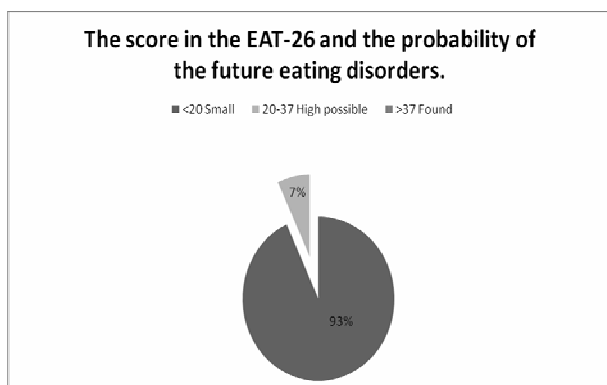


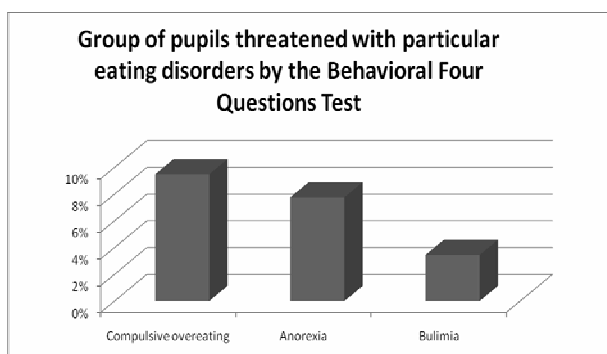
Figure 2. Correlation between answers given in EAT-26 and the final score in the survey

The Behavioural Four Questions Test results and the obtained significant co-relations are presented as follows. When analyzing 116 answers given, nearly 10% of them are in the group with compulsive over-eating. 7% are in the group of which have the probability of developing anorexia. This coincides with the results from the EAT-26 (where the result was over 6%). The percentage of results indicating bulimia is 3% and they should not be omitted in terms of the future treatment and prevention.



**Figure 3.** The final score in the EAT-26 and the possibility of the development of eating disorders

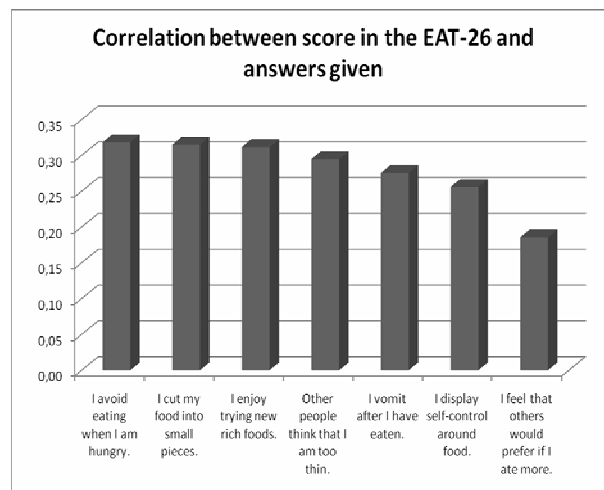
The answers given in our EAT-26 survey shows that a significant number of them are very strongly correlated with the final score. The top three ones shows a correlation, which is nearly higher than  $r > 0.7$ . The sentence: “I am preoccupied with the thought of having fat on my body” ( $r = 0.79$ ) shows the highest correlation. The second strongest correlation with the level  $r = 0.71$  refers to the sentence: “I feel uncomfortable after eating sweets”. The correlation  $r = 0.68$  refers to the sentence “I eat diet foods”. The other questions are: “I give too much time and thought to food” ( $r = 0.62$ ), “I think about burning up calories when I exercise” ( $r = 0.6$ ), “I am occupied with a desire to be thinner is also significant” ( $r = 0.55$ ).



**Figure 4.** Behavioral Four Questions Test and the probability of the development of eating disorders

Behaviours commonly referred to as “bad eating habits” are surprisingly not statistically significant. This means that in the group with  $r$  that can be marked with a

value between 0,35 and 0,20 we may find answers such as: “I avoid eating when I’m hungry”, “I vomit after I have eaten” or “I display self-control around food”. The lowest correlation can be observed with the statement “I feel that others would prefer if I ate more”.



**Figure 5.** Habits generally referred to as “bad dietary habits”. The correlation between scores in the EAT-26 and answers given

Surprisingly the correlation between BMI and the score in the EAT-26 is not even weak ( $r = 0.07$ ). The same situation can be observed in correlation with weight ( $r = 0.03$ ) and height ( $r = 0.007$ ).

## DISCUSSION

There is no single cause for eating disorders. Although concerns about weight and body shape play a role in all eating disorders, the actual cause of these disorders appear to result from many factors, including cultural and family pressures and emotional and personality disorders. Studies show, that there may be a relationship between negative body-related attitudes and self-representation among patients with anorexia and bulimia nervosa (Brytek-Matera 2011). There are also reports postulating the biological, e.g. genetic background for these disorders, however they are still inconsistent (Janas-Kozik et al. 2009, Pjetri et al. 2012). The most common psychological factors are low self-esteem, feelings of inadequacy or lack of control in life and depression, anxiety, anger or loneliness. Therefore anorexia nervosa and bulimia nervosa may coexist with other psychiatric disorders, such as depression (Dębska et al. 2011). As for intrapersonal factors troubled family and problems in personal relationships, difficulty expressing emotions and feelings as well as history of being teased or ridiculed based on size or weight should be taken into consideration. There is also a strong social influence, especially in Western countries, that glorifies “thinness” and places a value on obtaining the “perfect body”. This cultural pressure narrows the definitions of beauty. However there is still no consensus among

researchers as to how the above factors interact in the complex ethological process (Portela de Santana 2012). Eating disorders as shown in many studies, occur primarily in young age. 20% of female teenagers have the symptoms of anorexia nervosa (Shroff et al. 2006). Eating disorders are more common among young white women than among women of other races and male adolescents (10% men enrolled in U.S. college type schools) (Winkleby et al. 1996, Killen et al. 1996). One in four high school students in Poland misses satisfaction with his or her body image, and the main reason for it is excessive body weight. Observations show that with the increase of the proportion of being overweight and obese in adolescents and the lack of or insufficient amount of effort, the problem grows, referring to the lack of physical satisfaction with the appearance of the body among adolescents, especially among girls (Wojtyła et al. 2011). In a study on the knowledge in the society about eating disorders (with a particular emphasis on anorexia nervosa and bulimia nervosa) almost all respondents associate with these diseases. A more detailed knowledge about anorexia and bulimia is less prevalent, especially among men. The main sources of information are the media. One third of surveyed participants replied that this knowledge affects their eating habits (Murray et al. 1990).

## CONCLUSIONS

There is a strong correlation between particular daily activities and score in EAT-26, however there is no significant correlation between calculated BMI and points gained in the test.

Conducted studies to date indicate that the problem of eating disorders exist in the Silesian schools.

Specific socio-cultural factors are a challenge for the public service- both, in terms of health promotion programs and the organization of free after school hours.

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