

# Factors Associated with Abnormal Eating Attitudes among Greek Adolescents

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## ABSTRACT

**Objective:** To estimate the prevalence of abnormal eating attitudes among Greek adolescents and identify possible risk factors associated with these attitudes.

**Design:** Cross-sectional, school-based study.

**Setting:** Six randomly selected schools in Patras, southern Greece.

**Participants:** The study population consisted of 540 Greek students aged 13-18 years, and the response rate was 97%.

**Main Outcome Measure:** The dependent variable was scores on the Eating Attitudes Test-26, with scores  $\geq 20$  indicating abnormal eating attitudes.

**Analysis:** Bivariate analysis included independent Student *t* test, chi-square test, and Fisher's exact test. Multivariate logistic regression analysis was applied for the identification of the predictive factors, which were associated independently with abnormal eating attitudes. A 2-sided *P* value of less than .05 was considered statistically significant.

**Results:** The prevalence of abnormal eating attitudes was 16.7%. Multivariate logistic regression analysis demonstrated that females, urban residents, and those with a body mass index outside normal range, a perception of being overweight, body dissatisfaction, and a family member on a diet were independently related to abnormal eating attitudes.

**Conclusions and Implications:** The results indicate that a proportion of Greek adolescents report abnormal eating attitudes and suggest that multiple factors contribute to the development of these attitudes. These findings are useful for further research into this topic and would be valuable in designing preventive interventions.

**Key Words:** Greek adolescents, eating attitudes, risk factors, EAT-26, eating disorder (*J Nutr Educ Behav.* 2010;42:292-298.)

## INTRODUCTION

In the past 3 decades, the incidence of eating disorders has risen, especially among adolescent females. Eating disorders are a major public health issue that usually occur among young people (anorexia nervosa occurs mainly among adolescents aged 15-19 years and bulimia nervosa between 15 and 25 years).<sup>1</sup> Recovery from eating disorders can be a long, difficult process interrupted by re-

lapses. About 50% of all patients with anorexia recover, whereas up to 20% die of complications of the disorder. Concerning bulimia nervosa, the recovery rate is slightly higher. Also, eating disorders have significant physical, psychological, and social consequences as well as high mortality and case fatality rate.<sup>2,3</sup> Furthermore, abnormal eating behaviors are linked with other health-compromising behaviors, such as smoking, alcohol and drug

abuse, unprotected sexual activity, and suicide attempts.<sup>4-6</sup>

Epidemiological studies of eating disorders are difficult to compare and interpret because of the low incidence and prevalence of eating disorders, the different methodologies employed, differing study populations, and the diversity of criteria used for diagnosis. The prevalence of anorexia nervosa is currently estimated at 0.2%-1% and of bulimia nervosa at 0%-2%.<sup>7</sup> The prevalence of abnormal eating attitudes among adolescents, as defined by the Eating Attitudes Test-26 (EAT-26), ranges from 5% to 30% in studies performed in several countries.<sup>8-19</sup>

The development of eating disorders is multifactorial, and several risk factors have been suggested; sociocultural, environmental, and lifestyle factors have been related to eating disorders and abnormal eating

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doi:10.1016/j.jneb.2009.06.005

attitudes. A great number of studies has confirmed that eating disorders occur more often among females than males.<sup>8,12,13,16,17,20,21</sup> Also, a greater prevalence of eating disorders in the urban setting compared to the rural one was found in Italy,<sup>22,23</sup> in Holland,<sup>24</sup> and in Japan.<sup>25</sup> Moderate exercise motivated by concern about healthful lifestyle is linked to reduction of the occurrence of eating disorders,<sup>18,26,27</sup> whereas cigarette smokers and alcohol drinkers are more likely to skip meals and not notice their hunger.<sup>28</sup> In addition, body dissatisfaction and perception of being overweight increase the risk of eating disorders.<sup>8,9,11,14,18,26,27,29</sup>

There is agreement on the importance of early identification of an eating disorder. In that case, it is possible that implementation of the most appropriate therapeutic treatment from the initial stages of the disorder can result in reduction in the frequency of physical and psychological complications and even death. The sooner a person with an eating disorder gets professional help, the better the chance of recovery. Thus, it is necessary that the general practitioner have full knowledge of the early warning signs as well as the adequate tools for diagnosis. Psychometric tests like the EAT-26 have been applied in recent years for the accurate evaluation of abnormal eating attitudes.<sup>23,29</sup> The EAT-26 does not provide a specific diagnosis, but it is an efficient screening instrument to identify those who should be interviewed to identify a possible eating disorder. The evaluation of abnormal eating attitudes in nonclinical populations is essential to monitor and track trends and changes and to plan preventive and treatment programs.

Many epidemiological studies on eating disorders and abnormal eating attitudes among adolescents have been conducted primarily among Northern European and North American populations, with a few studies from other regions including Greece, Turkey, Australia, Israel, and South America.<sup>8-19</sup> Studies on various populations are needed to bridge this gap. The objectives of the present study were to estimate the prevalence of abnormal eating attitudes as defined by an EAT-26 score above the cutoff of 20 in a school-based population of

Greek adolescents and to identify possible risk factors associated with abnormal eating attitudes.

## METHODS

### Participants

Based on a reported prevalence of abnormal eating attitudes (14.2%) among Greek adolescents in a previous study,<sup>19</sup> 518 participants were needed to detect the estimated prevalence with 95% level of confidence, 80% statistical power, and precision of  $\pm 3\%$ . The study population consisted of 540 Greek students aged 13-18 years who consented to participate in a confidential, cross-sectional self-report study of eating attitudes and behavior.

The present study was conducted between April and June of 2008, on 2 samples drawn from the schools of an urban district (Patras) and a rural one (Vrachnaiika). Patras is a high-density (1,358 residents per km<sup>2</sup>) urban city surrounded by a network of suburbs and villages, with 193,843 residents at the time of study. Concerning population ranking in Greece, Patras is in third place. Vrachnaiika is a part of the Patras area, as it belongs to the network of Patras's villages, and is a low-density (137 residents per km<sup>2</sup>) rural area, with 5,049 residents in 2008. Schools in which studies were already taking place or that reported that they were short staffed were not approached. Five (out of 60) secondary schools from Patras and the only one from Vrachnaiika were therefore recruited. Two hundred sixty eight out of the 540 participants were urban residents, whereas 272 were rural residents.

Oral informed consent was received by the headmasters of all schools and by the parents of the students who participated in the study. Students were informed that this study was about eating attitudes and behavior, they were individually asked to participate and invited to complete an anonymous, self-reported questionnaire on a voluntary basis. Participants were assured of the anonymity and strict confidentiality of their responses. They were informed that the questionnaire was not an examination, that there were no right or wrong answers, and that they could withdraw from the study any time. With the assistance of

teachers, the questionnaires were distributed to the students during classroom hours. The questionnaires were returned in sealed envelopes to ensure confidentiality. The questionnaires and the envelopes did not require any means of identification.

The study protocol was approved by the ethical board of the Faculty of Nursing of the University of Athens, Greece.

### Measures

The study questionnaire consisted of 3 parts: (1) demographic and lifestyle characteristics; (2) risk factors for abnormal eating attitudes; and (3) the 26-item version of the EAT-26. Participants' age, sex, place of residence (urban/rural), number of siblings, number of close friends, and status of parents' employment were collected in the study. Also, other factors closely linked with abnormal eating attitudes, such as cigarette smoking (number of cigarettes per week), watching TV/DVDs (hours per week), use of personal computer/video game consoles (hours per week), exercise outside of school (hours per week), and eating out of the home (times per week) were examined. Subjective self-image in relation to body weight (overweight or not overweight), body satisfaction, existence of a family member on a diet, recent death of a family member, and existence of a family member with an eating disorder were explored as possible risk factors for abnormal eating attitudes.

Researchers measured each participant's height and weight on standardized equipment. Weight was measured in light clothing to the nearest 0.1 kg (Seca 750, Seca Corporation, Ontario, Canada, 2007), and height was measured without shoes using an aluminum anthropometer (Seca 217, Seca Corporation, Ontario, Canada, 2007). Body mass index (BMI) was calculated by dividing body weight (kg) by height squared (m<sup>2</sup>). According to a World Health Organization expert committee recommendations, weight status for adolescents aged 10-19 years was categorized into underweight (BMI < 5<sup>th</sup> percentile), normal weight (5<sup>th</sup> percentile  $\leq$  BMI < 85<sup>th</sup> percentile), and overweight (BMI  $\geq$  85<sup>th</sup>

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