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## ANALYSIS OF EATING BEHAVIOR OF HEALTH SCIENCE STUDENTS IN TERMS OF EMOTIONAL EATING AND RESTRAINED EATING

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### Abstract

**Background.** Two eating phenomena are associated with emotions and chronic stress: restrained eating and emotional eating. Restrained eating is defined as restricting food intake to control weight and mainly refers to the amount of food eaten. Emotional eating, on the other hand, focuses on eating in response to negative emotions. The literature emphasizes that people with orthorexia have significantly higher levels of stress, depression, and anxiety and lower life satisfaction than healthy individuals. **Objective.** The purpose of the conducted research was to assess the prevalence of emotionally driven eating behavior and restrained eating among health science students. The premise of the study was also to test whether there was a significant relationship between emotional eating and restrained eating and orthorexic behavior. **Material and methods.** The study was conducted among 200 randomly selected students of health sciences (dietetics and physical education). The TFEQ-13 and DOS scales were used in the study. **Results and conclusions.** Based on the study, it was concluded that there is no relationship between the occurrence of emotional eating and orthorexia in the studied group of people associated with health sciences. However, the hypothesis of the existence of these associations between restrained eating and the occurrence of orthorexia was supported. The group of restrained eaters was shown to include individuals with severe behaviors indicative of orthorexic tendencies or a full picture of the disorder.

**Keywords:** orthorexia, emotional eating, restrained eating, eating disorders

### Background

Emotional states have a significant impact on eating habits. Eating can reduce negative-tinged emotions, as well as heighten positive emotions. Attitude toward food is a factor regulating cognitive, behavioral, and affective processes. All are related to the way we eat. Food consumption has many functions such as biological, psychological, spiritual, sociocultural, economic, or interpersonal [1]. The need to satisfy a physiological need becomes necessary when the body begins to send specific signals (e.g., information transmitted through the contraction of our stomach walls), received in the right way. It is observed that patients who suffer from eating disorders are unable to properly distinguish between feelings of hunger and satiety.

Two eating phenomena are related to emotions and chronic stress: restrained (restriction) eating and emotional eating [2]. Restrained eating is defined as restricting food intake to control weight and mainly refers to the amount of food eaten. Emotional eating, on the other hand, focuses on eating in response to negative emotions [3]. Emotional eating is problematic for several reasons. First, individuals who engage in emotional eating may eat in response to signals that signal psychological stress rather than physiological signals that signal hunger, emotional eating is also associated with increased intake of high-calorie and high-fat foods, poor weight loss, weight gain, and obesity. Moreover, emotional eating is distressing and negatively affects the quality of life, and is associated with low self-esteem [4].

It is widely believed that stress leads to overeating [5]. Studies show that both men and women who have experienced high levels of stress are more likely to engage in emotional eating [6]. People may cope with stress by eating because food can distract them from thinking about things that are bothering them, or eating something that tastes good in itself is pleasurable [7]. Stress is closely linked to eating, not least because elevated cortisol levels in this state trigger feeling of hunger. One way to intuitively cope with stress is to reach for food since hunger is often mistaken for feelings of stress [8].

Research to date has shown that emotional eating was more characteristic of women, while restrictive eating was more common in men. Although women tend to have greater weight concerns and may be more inclined to eat restrained foods to control weight, they are also more likely to eat in response to stress and negative emotions [9]. A study conducted with a plot of 529 adult participants and 358 adolescents found that girls who scored higher on restrained eating had lower energy intake than other girls while emotional eaters had higher snack food intake [10]. According to the results, emotional eating and restrictive eating are positively correlated in both genders, with the association being stronger in females [11]. Additionally, the literature highlights that people with orthorexia have significantly higher levels of stress, depression, and anxiety, and lower life satisfaction than healthy individuals. However, it was found that most of the variance in these psychological variables was explained by general eating pathologies, such as emotional eating [12]. The association of the described phenomena with a particular lifestyle, defined by the educational and career path taken, was also confirmed [13-15].

Because of this, the purpose of the ongoing research was to assess the prevalence of emotional eating and restrained eating behaviors among health science students. The premise of the study was also to test whether there is a significant relationship between emotional eating and restrained eating and orthorexic behavior.

## **Material and methods**

The study was conducted among 200 randomly selected health sciences students (dietetics and physical education), as previous studies [13, 14] have shown that this group has an increased risk of orthorexic behavior, and in line with the purpose of the study, it was decided to expand the investigation to include questions about the relationship between emotional or restrictive eating behaviors and orthorexic behavior.

The study was conducted by indirect survey, a questionnaire technique using the author's survey questionnaire, which was augmented with commonly used standardized tools for psychometric variables related to eating behavior: TFEQ-13 to delineate a group of individuals exhibiting restrained eating or emotional eating behaviors and DOS scales to signify the presence of orthorexia (the scales are described in the article: <https://doi.org/10.12775/JEHS.2022.12.07.048>).

DOS this test consists of 10 questions that can be answered with either 'agrees' or 'disagree.' A total of 10 to 40 points can be obtained in the test. A score of between 25 and 29 is indicative of orthorexic tendencies and a score above 30 indicates orthorexia.

Statistica 13.0 software was used for data analysis, and the Mann-Whitney U test and Kruskal-Wallis test were used for statistical inference. A significance level of  $p=0.05$  was adopted.

## **Results**

The study group consisted of 104 women (52%) and 96 men (48%) with a mean age of  $22\pm 1$  years.

The survey found that among the emotions experienced during the day, contentment dominates, and boredom is less common. Several times a week, boredom appears most often, and sadness least often. On the other hand, anger-inducing emotions predominate several times a month, with nervousness and contentment the least frequent. Respondents denied experiencing anxiety the most. Nearly half (42%) of respondents said they were unlikely to deal with their emotions. The most common emotions selected from the questionnaire are shown in Table I.

**Table I. Type of emotions experienced in the study group (N=200).**

Perceived emotion	Frequency	%
Satisfaction	Never	40
	Sometimes	51
	Often	9
Sadness	Never	31
	Rarely	25
	Often	44
Anger	Never	29
	Rarely	29
	Often	42
Fear	Never	75
	Rarely	22
	Often	3
Nervousness	Never	22
	Rarely	27
	Often	51
Bored	Never	27
	Rarely	23
	Often	50
Loneliness	Never	12
	Rarely	33
	Often	45

Source: own study.

Perceptions of satisfaction did not influence the majority of respondents (75%) in terms of a change in the amount of food consumed. The most common food choices were fast food and salads. Rarely were salty snacks, baked goods, and other sweets. Juices and other products were not among the products chosen, and only less than 5% of respondents specified that they always reach for vegetables or fruits. More than half of the respondents eat more during sadness. Respondents most often eat other confectionery products (other than chocolate), while they rarely reach for bread. Respondents showed that in moments of anger they most often eat more (38%), while one-third of respondents say they keep their food intake the same. Salty snacks were the most common in moments of anger. More than 70% of respondents answered that fear causes no change in the amount of food consumed, with only 3% declaring an increase in consumption. Snacks of choice in fear are often (12% of respondents) salty snacks and vegetables, and rarely (37% of respondents) bread and salty snacks. In moments of feeling fear, 68% of respondents never eat fast-food products. Feeling nervousness causes more than 45% of respondents to have an increased desire to reach for a snack. In moments of nervousness, respondents mostly eat leftover sweets (45%), rarely fast food (22%), and never eat salads (45%), among others. Experiencing boredom was the only one that was not associated in any of the respondents with a reduction in food intake, with more than half of the respondents (54%) declaring an increase in consumption during this period. As for the products consumed during boredom, salty snacks (37%) and chocolate (33%) are the most common choices, white bread (41%) and other sweets (38%) are rarely chosen. Other products (69%) and fruits and vegetables (58%) are never chosen. Loneliness is another feeling that is compensated for by eating by 45% of respondents.

In situations unrelated to feeling an excess of positive or negative emotions, respondents are unlikely to have a problem with constant feelings of hunger (40%), as well as unlikely to experience (58%) very strong hunger. In addition, they can refrain from eating larger amounts of food suggested by their appetite (59%). When emotions do not affect the increased need to consume above-normal food intake, the women surveyed try to consciously control the amount of food they take in. More than a third of respondents control meal volume to avoid weight gain, including 43% who refrain from eating foods they associate with weight gain.

Based on the TFEQ-13 scale scores, 45% (n=90) of respondents were shown to exhibit eating behaviors indicative of emotional eating (EE), while 38% (n=76) of respondents exhibited eating behaviors indicative of restrained eating (RE). Tables II and III show a comparison of these two phenomena with the occurrence of orthorexic (ON) behavior.

**Table II. Emotional eating and prevalence of orthorexia in the study group (n=90).**

EE/ON	0-24 points (no orthorexia)	25-29 points (orthorexic tendencies)	≥30 point (orthorexia)	p-value
Male	25 (27.7%)	15 (16.7%)	0 (0.0%)	>0.05
Female	30 (33.4%)	18 (20.0%)	<b>2 (2.2%)</b>	<b>0.03</b>
Total	55 (61.1%)	33 (37.7%)	2 (2.2%)	-

Source: own study.

**Table III. Restrained eating vs. prevalence of orthorexia in the study group (n=76).**

RE/ON	0-24 points (no orthorexia)	25-29 points (orthorexic tendencies)	≥30 point (orthorexia)	p-value
Male	12 (13.7%)	13 (17.1%)	<b>10 (13.2%)</b>	<b>0.002</b>
Female	18 (24.7)	11 (14.5%)	<b>12 (15.8%)</b>	<b>0.001</b>
Total	30 (38.4%)	24 (31.6%)	22 (29.0%)	-

Source: own study.

Based on the study, it was shown that there is no relationship between emotional eating and the occurrence of orthorexia in the study group. Admittedly, it was shown that 2.2% of women who exhibit emotional eating exhibit behaviors characteristic of orthorexia at the same time, but this group is only two people, which may not sufficiently prove this relationship. Instead, an association was detected between the occurrence of orthorexia and restrained eating. In this group, 17.1% of men and 14.5% of women were found to have orthorexic tendencies, while 13.2% of men and 15.8% of women suffered from orthorexia ( $p < 0.05$ ).

## Discussion

Recently, there has been a growing interest in health and healthy eating habits. A healthy diet is a prerequisite for health and promotes proper immunity and recovery. However, excessive focus on food quality can be paradoxically unhealthy [16]. The term orthorexia nervosa was used by Steven Bratman in 1997, who signaled the potential existence of a new eating disorder. It is defined as a pathological focus on the point of healthy eating and is characterized by excessive attention to the quality of food, its preparation, and strict standards of dietary norms. According to the author of the definition, this eating style can be considered a psychological disorder due to its physical (e.g., strict diet regime), psychological, and social (e.g., social isolation) consequences [17]. Symptoms of orthorexia are associated with making healthy lifestyle choices, such as eating more fruits and vegetables, eating fewer refined grains, shopping at health food stores, increasing physical activity, and reducing alcohol consumption [18, 19]. Increasingly, this phenomenon is also linked to emotional eating and restrained eating, as previously described and studied.

A growing body of research, including the results of our study, suggests that chronic stress affects our health not only by affecting mood and well-being but also by influencing changes in behavior such as food choice and consumption [20]. Naturally occurring episodes of stress are associated with the consumption of more caloric and fatty foods, as well as sweets (especially chocolate), increased frequency of snacking between meals, and increased meal irregularity [20, 21]. These observations remain consistent with the results of our study, in which respondents most frequently reported consuming these types of snacks during periods of experiencing negative emotions. This dietary pattern results in the consumption of high-calorie snacks that reduce the intake of vegetables and wholesome meals. However, the results of studies on this topic remain inconclusive. One showed that only 30% of people increase their food intake under stress, while an average of 48% of stressed people reduce their food intake [22]. The results of another study show that among women who increased their intake under stress, 71% were on a diet, while among those who declared no change in diet or a reduction in intake, 35% were on a diet [20]. In our study, one-third of the subjects declared that they were on a diet or planned to undertake one. This may suggest that a restrictive diet is the most important predictor of overeating during stress [21]. The effect of experiencing boredom on increased food consumption among both normal-weight and obese individuals was recognized as early as 1977 [23]. Boredom is a unique trigger for eating, and the results of studies conducted on it provide surprisingly clear conclusions. Both the healthy population and, for example, bariatric surgery patients eat more often when they feel bored [23, 24]. The findings remain consistent with our results, where half of the subjects reported changes in their eating patterns under the influence of boredom. Numerous studies have shown that negative and positive emotions have significantly different effects on eating patterns. Negative emotions such as anger, fear, or sadness can increase impulsive eating and the consumption of "junk food," while decreasing the pleasure of eating. In contrast, the impact of positive emotions has the opposite effect and can increase the enjoyment of eating and consumption of healthy foods [22, 25]. The results of our study remain partly consistent with these observations, as female

respondents reached for both healthy meals like salads in positive moments, but at the same time, some of them consumed so much fast food products. Positive emotions promote hedonistic eating, that is, eating for pleasure, to provide pleasant sensory experiences [25]. Most studies remain consistent in terms of the effect of negative emotions on favoring food cravings in the overweight group [24, 26]. In contrast, the effect of positive emotions may depend on the ability to constrain and control eating behavior. Individuals who manifested a high ability to restrict eating ate less during exposure to food in a state of well-being. While those who reported difficulty controlling their eating ate more during exposure to positive stimuli. These findings support the hypothesis that the general tendency to emotional eating is related only indirectly to food consumption and directly to uncontrolled eating style [27]. Interesting results and conclusions were provided by a study that found that experiencing anger is associated with increased motivation to eat in both men and women. Food was used as a way to cope with anger, and increased consumption occurred in those who did not participate in anger distraction learning. Respondents who completed the anger management course did not increase their consumption under the influence of this emotion [28]. Similarly, in our study, when feeling upset, the subjects increased their food intake. Thus, it can be assumed that developing strategies other than eating to cope with emotions can effectively reduce emotional eating attacks.

### Conclusions

Based on the study, it was concluded that there was no relationship between the occurrence of emotional eating and orthorexia in the studied group of people associated with health sciences. However, the hypothesis of the existence of these associations between restrained eating and the occurrence of orthorexia was supported. The group of restrained eaters was shown to include individuals with severe behaviors indicative of orthorexic tendencies or a full picture of the disorder.

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