

SEVERITY OF BORDERLINE LEVEL EATING DISORDERS IN STUDENTS


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The relevance of the study results from high significance of nutrition and the growing interest of today's researchers in the phenomenon of orthorexia nervosa (ON) as an obsessive desire for healthy, proper diet. The study aimed to assess ON severity in students. The students' anthropometric measurements (body height, body weight), body mass index (Quetelet Index), ON severity based on the ORTO-15 questionnaire, features of the diet based on the Food Frequency Questionnaire were assessed, with subsequent statistical processing of the results. High prevalence of ON among both girls and young men (80.2% of the respondents) was shown. Furthermore, there were no differences in the ON phenomenon severity between young men and girls, and the relationship between the ON severity and the anthropometric measurements was non-significant ($p > 0.05$). Food selectivity associated with the phenomenon of ON was found in 3.3% of cases. Imbalanced diet was found in the majority of the respondents. The study has made it possible to conclude that the subjects constitute the group at risk of eating disorders. Further research is needed to accurately diagnose ON and reveal the relationship between ON and possible risk factors of this condition.

Keywords: orthorexia nervosa, nutrition, healthy lifestyle, BMI, students

Compliance with ethical standards: all students submitted the informed consent to participation in the study.

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Received: 24.10.2023 **Accepted:** 20.06.2024 **Published online:** 25.11.2024

DOI: 10.24075/rbh.2024.110

ВЫРАЖЕННОСТЬ ПОГРАНИЧНОГО УРОВНЯ РАССТРОЙСТВ ПИЩЕВОГО ПОВЕДЕНИЯ У СТУДЕНЧЕСКОЙ МОЛОДЕЖИ


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Актуальность проведенного исследования обусловлена высокой значимостью питания и растущим интересом к феномену нервной орторексии (НО) как навязчивого стремления к здоровому и правильному питанию со стороны современных исследователей. Целью исследования было изучить выраженность НО у студенческой молодежи. У студентов изучали антропометрические показатели (рост, масса тела), индекс массы тела по формуле Кетле, выраженность явления НО по опроснику «ОРТО-15», особенности организации питания по опроснику «Food Frequency Questionnaire» с последующей статистической обработкой результатов. Показана высокая распространенность НО как среди девушек, так и среди юношей (80,2% опрошенных). При этом выраженность феномена НО у юношей и девушек не различалась и не была значимо связана с антропометрическими показателями ($p > 0,05$). Избирательность в питании, сопровождающая явление НО, обнаружена в 3,3% случаев. Нарушение сбалансированности питания выявлено у большинства опрошенных. Проведенное исследование позволило сделать вывод, что обследованные лица составляют группу риска формирования расстройств пищевого поведения. Необходимы дальнейшие исследования с целью точной диагностики и выявления связи НО с возможными факторами риска развития данного состояния.

Ключевые слова: нервная орторексия, питание, здоровый образ жизни, ИМТ, студенты

Соблюдение этических стандартов: все студенты подписали добровольное информированное согласие на участие в исследовании.

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Статья получена: 24.10.2023 **Статья принята к печати:** 20.06.2024 **Опубликована онлайн:** 25.11.2024

DOI: 10.24075/rbh.2024.110

Nutrition is of particular importance throughout human life, since it is a life-supporting factor that determines health. That is why food safety is a priority of state policy in the field of healthy eating aimed to provide the population with rational nutrition [1]. Multiple studies confirm the key role of nutrition in shaping the healthy lifestyle and prevention of nutrition-related diseases [2–4]. However, the features of modern lifestyle related to the changing nature of psychological aspects of shaping healthy diet, inadequate physical activity, disturbed daily routine present certain difficulties with the healthy lifestyle organization that are also typical for students [5–7]. Furthermore, there is a trend towards excess human desire for consumption of food products related exclusively to healthy diet, without taking into account the body's need for fundamental substances and energy [8], which creates conditions for eating disorders. Currently, an obsessive desire for healthy, proper diet represents the eating disorder referred to as orthorexia nervosa (ON) [9].

Despite the fact that ON is currently not considered as a distinct disease entity in Russia (not included in ICD-10

and abroad (not recognized by the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-V)), modern researchers study this disorder considering orthorexia as a syndrome that requires in-depth research [6, 8–11]. A number of psychological aspects are distinguished (emotional, social, personal) that bring together this condition and other eating disorders [11], which makes it possible to consider ON as a type of anorexic behavioral syndrome.

The available scientific research results suggest high prevalence of this syndrome among young adults adherent to specific dietary behavior involving restricted alcohol consumption and smoking restriction [6, 12]. On the one hand, this trend can be regarded as positive, however, individuals with ON are characterized by higher anxiety levels and feeling guilty. Some consider ON as a type of obsessive-compulsive neurosis or hypochondria [11]. From another perspective, ON is associated with the presence of obsessive-compulsive features [13]. Among risk factors of ON, modern researchers distinguish innate psycho-physiological characteristics,

such as characteristics of the central nervous system (CNS) and temper, high birth weight; genetic factors, including family history of eating disorders and inherited constitutional type; social factors, i.e. appearance standards accepted by the society, relationship with parents, discipline, culinary culture in family. Moreover, personality traits, such as suggestibility degree, system of life priorities and values, are also considered the risk factor of ON [6].

The issue is of interest to foreign researchers, who propose definitions of ON [6], develop the diagnosis methods [14, 15] and diagnostic criteria [13], assess prevalence of the condition in various population groups [6, 9–11]. At the same time, there is no reliable data on the ON severity in the Russian youth, therefore, the study aimed to assess severity and specifics of ON manifestations in students.

METHODS

The data provided were obtained by conducting the field hygienic survey of 160 medical students aged 19 ± 0.4 , among them 72 were young men and 88 were girls. The inclusion criteria were as follows: the subject's age (18–20 years), fact of attending medical university, voluntary consent to take part in the study. The criteria for students' exclusion from the study were age below 18 and over 20 years, as well as the lack of voluntary informed consent.

Examination was performed in the middle of the semester. We assessed anthropometric measurements (body height, body weight). The subjects' standing height was measured using the RM medical stadiometer (TZMT; Russia), while body weight was measured using the VEM-150-Massa-K (AZ) medical floor scales (Massa-K; Russia). Body mass index (BMI) was calculated using the Quetelet's formula as a ratio of body weight (kg) to the square of the height (m^2). In accordance with the WHO guidelines [16], BMI values below 16 were considered as severe underweight; 16–18.4 — underweight; 18.5–24.9 — normal weight; 25–29.9 — overweight; BMI values of 30–34.9 indicated obesity of the 1st degree; 35–39.9 — obesity of the 2nd degree; BMI > 40 indicated obesity of the 3rd degree. Since modern foreign studies have revealed body weight alteration in patients with ON [13], we have found it appropriate to study BMI as a possible phenomenon severity criterion.

The ORTO-15 questionnaire was used to detect signs of ON in the subjects, with subsequent assessment of point ON prevalence using the threshold ORTO-15 score < 35 [14, 15]. The questionnaire was selected due to its high diagnostic value (98.9%) according to [15].

The eating habits, frequency of food and beverage intake within a certain period were assessed using the semiquantitative Food Frequency Questionnaire [17] convenient in terms of statistical processing and allowing one to simultaneously determine the frequency and quantitative characteristics of the diet for the long period [18]. The questionnaire contained the list of foods and beverages with the portion size or weight specified, as well as estimates of the frequency of intake by categories “never”, “less than once a month”, “1–3 times per month”, “once a week”, “2–4 times per week”, “5–6 times per week”, “once a day”, “2–3 times a day”, “4–5 times a day”, and “more than six times a day”. The intake frequency values reflected the period of 12 months. When assessing the diet in general, the number of requested foods and beverages combined into major food groups was 185. The results of the questionnaire survey of the respondents were assessed in accordance with the data used for the questionnaire validation and reproducibility estimation in the studies [18].

Statistical processing of the results was performed using the StatTech 4.0 software package (StatTech; Russia). The differences were considered significant at the two-tailed significance levels $p < 0.05$; $p < 0.01$; $p < 0.001$ for all the results obtained; the minimum significance of differences was 95%. Correlations between the values of the data obtained were determined using the nonparametric Spearman's rank correlation coefficient. Positive values of the coefficient corresponded to positive correlation, negative values corresponded to negative correlation, $p = 0$ corresponded to no correlation. The correlation strength was estimated based on the coefficient values: the correlation was considered to be weak at p between 0 and 0.3, moderate at p between 0.3 and 0.5, strong at p between 0.5 and 0.7, very strong at p exceeding 0.7. The sample distribution was tested for normality using the Mann–Whitney U test at $p = 0.05$. When testing the hypothesis H_0 , it was found that the hypothesis H_0 was true, since $U_{kr} < U_{emp}$.

RESULTS

The results obtained (Table) showed that the subjects' average BMI values were 22.6 ± 2.6 kg/m² and corresponded to normal weight (18.5–24.9 kg/m²).

Significant differences in BMI between young men and girls were revealed based on the data processing applied. Thus, the number of underweight girls was 20.4%; it was significantly higher compared to that of young men ($p < 0.001$). The number of overweight young men was 25%, it was significantly higher compared to that of girls ($p = 0.02$).

The analysis of the subjects' diet showed that it was decentralized. The surveyed young men and girls preferred homemade food, less often public food services. According to the ORTO-15 questionnaire data, there were no significant differences between the average scores of the groups of young men and girls; the average scores were 36.3 ± 6.7 and 36.1 ± 0.1 , respectively. At the same time, the results of the questionnaire data processing made it possible to reveal high ON severity in both girls and young men, since 80.2% of the respondents (128 individuals) scored below 35 based on the ORTO-15 questionnaire results. Predisposition to orthorexia was found in 13.7% of subjects (22 individuals), and there was no risk of this condition only in 6.8% of cases (11 individuals). However, in 93.1% of cases (149 individuals), answers to the questions “When eating, do you pay attention to the calories of the food?”, “Are you willing to spend more money to have healthier food?”, “Do you feel guilty when transgressing?” showed propensity for food selectivity, obsessive desire for healthy diet.

According to the Food Frequency Questionnaire results, significant food selectivity was found only in 3.3% of cases. However, the test made it possible to reveal nutritional imbalance represented by refusal (in some cases) to eat dairy products (28.3% of cases), by-products (51.6% of cases), and vegetables (13.3% of cases), as well as by limited consumption of foods with high simple carbohydrate content (48.3% of cases) and various beverages (21.6% of cases) by female students. Chicken dishes, various side dishes and soups were most common in the girls' diet.

Among young men showing signs of eating disorders, only one subject stuck to a diet and restricted himself in eating sweets, pastry, and products containing large amounts of oil. The majority of students (64.6%) refused to eat animal source foods (meat) or consumed these less than once a month. Both young men and girls showed reduced consumption

Table. Results of the subjects' BMI assessment

BMI values (kg/m ²)	Young men, % (n)	Girls, % (n)	P-values
< 16	–	–	–
16–18.4	–	20.4 (18)	< 0.001
18.5–24.9	69.4 (50)	57.9 (51)	0.13
25–29.9	25 (18)	11.3 (10)	0.02
30–34.9	6.9 (5)	10.2 (9)	0.46
35–39.9	–	–	–
< 40	–	–	–

of by-products (40% of respondents), vegetables (30%), and fish (23.3%); foods high in simple carbohydrates predominated in the diet of 63.3%.

The results of statistical data processing suggest no significant correlation between BMI values and ON manifestations (Spearman's rank correlation coefficient is 0.182 in the group of surveyed girls and 0.108 in the group of young men; $p > 0.05$). Thus, it was considered that body weight alteration was not typical for the subjects showing signs of ON. Furthermore, significant food selectivity was determined only in 3.3% of cases, while signs of ON we reported in 80% of the respondents.

DISCUSSION

The findings of modern scientific research suggest vulnerability of students to borderline mental disorders associated with insufficient stability of personal convictions, lack of life experiences, everyday stress, specifics of studying in institutions of various profiles [19].

Our study revealed considerable ON severity in students, which confirmed the view that the prevalence of this phenomenon is extremely high based on the findings of previous studies. Thus, the studies [6] revealed signs of ON in 69.4% of respondents, while the studies [11] revealed these in 100% of subjects. Foreign researchers found ON in 88.7% of students [20]. The prevalence of this phenomenon in the U.S. adult population varied between 41.9 and 81.9% [21]. The research showed that girls were more prone to ON [22]. However, we revealed equal severity of this phenomenon in young men and girls, without any significant differences in the data obtained ($p > 0.05$). Thus, young men need more attention from appropriate medical specialists for timely implementation of preventive measures.

Based on the ORTO-15 questionnaire results, signs of ON have been found in 80.2% of the respondents ($p < 0.05$), which

suggests high prevalence of this phenomenon. Furthermore, young men and girls showed the same ON severity that was not significantly correlated to anthropometric measurements (Spearman's rank correlation coefficient was 0.182 in the group of girls and 0.108 in the group of young men; $p > 0.05$).

However, the findings of modern research make it impossible to determine the causes of this condition. Our findings showed some differences in the subjects' anthropometric measurements. Despite the fact that the students' average BMI values were 22.6 ± 2.6 kg/m², which corresponded to normal values, a significantly larger number of girls were underweight ($p < 0.001$) and a significantly larger number of young men were overweight ($p = 0.02$).

It is believed that ON is associated with food selectivity. The Food Frequency Questionnaire data did not confirm this belief, but made it possible to reveal some concerns about eating in both young men and girls. The surveyed young men and girls reduced consumption of dairy products, by-products, and foods high in simple carbohydrates, which was combined with violations of the rational nutrition principles. However, food selectivity accompanying the ON phenomenon was found only in 3.3% of cases.

CONCLUSIONS

It has been found that the issue of orthorexia nervosa (ON) is relevant for students. The study conducted makes it possible to conclude that the surveyed individuals constitute the group at risk of eating disorders, since they show high vulnerability to the effects of environmental factors. Further research is required aimed to accurately diagnose ON and reveal the correlation with the risk factors of this condition. It is necessary to organize screening for the youth in order to ensure early detection of the group at risk and subsequent provision of adequate prevention and treatment.

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