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ANALYSIS OF EATING BEHAVIOR AND PHYSICAL ACTIVITY OF FIRST-YEAR MEDICAL UNIVERSITY STUDENTS

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Abstract. The beginning of student life is associated with significant changes in lifestyle, which can contribute to the emergence/intensification of eating disorders and changes in physical activity, which in turn can be a starting factor for a disadaptation to the learning process. To determine the type of eating behavior and level of physical activity, we studied interview data from 146 first-year medical students. The analysis of nutritional status was carried out based on the mass-growth index. Food behavior was tested using the EAT-26 and DEBQ questionnaires and motor activity was tested using IPAQ, MAQ23+ questionnaires. We discovered that a significant number of first-year university students have abnormalities in nutritional status, insufficient — 18.7%, overweight — 16.4% of students. Abnormal nutritional symptoms related to cognitive, behavioral, and emotional domains are present in one-third of female students. Restrictive nutrition was considered a risk factor by 26.6%. Approximately 80% of female students did not get enough physical activity and 60% displayed hypodynamy symptoms. The peculiarities of food behavior and motor activity, combined with the individual characteristics of female students, may be a marker of disadaptation to the educational process in the university.

Key words: *eating behavior; physical activity; students; nutritional status.*

АНАЛИЗ ПИЩЕВОГО ПОВЕДЕНИЯ И ФИЗИЧЕСКОЙ АКТИВНОСТИ ПЕРВОКУРСНИКОВ МЕДИЦИНСКОГО УНИВЕРСИТЕТА

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Резюме. Начало студенческой жизни сопряжено со значительными изменениями образа жизни, которые могут способствовать возникновению / усилению расстройств пищевого поведения и изменению двигательной активности, что, в свою очередь, может быть пусковым фактором дезадаптации к учебному процессу. С целью определить тип пищевого поведения и уровень физической активности мы изучили данные интервьюирования 146 студенток первого курса медицинского университета. Проведен анализ нутритивного статуса по массо-ростовому индексу; тестирование пищевого поведения по опросникам EAT-26 и DEBQ; двигательной активности — по опросникам IPAQ, ОДА23+. Нами выявлено, что у значительной

части студенток первого курса университета имеются отклонения в нутритивном статусе, обусловленные в равной степени как недостаточным (18,7%), так и избыточным весом (16,4%). Треть студенток демонстрируют абнормальные симптомы пищевого поведения, относящиеся к когнитивной, поведенческой и эмоциональной сферам. В группу риска ограничительного питания вошли 26,6%. У 80% студенток уровень физической активности недостаточен, признаки гиподинамии демонстрировали 60% респондентов. Выявленные особенности пищевого поведения и двигательной активности в сочетании с индивидуальными характеристиками личности студенток могут быть маркером дезадаптации к учебному процессу в вузе.

Ключевые слова: *пищевое поведение; физическая активность; студенты; нутритивный статус.*

INTRODUCTION

According to the World Health Organization (WHO) concept, of the many exogenous factors influencing the formation and maintenance of human health, the most significant are nutritional characteristics and level of physical activity. Malnutrition, both insufficient and overweight, is recognized as an important health and social problem. According to the WHO, nearly 1.9 billion adults are overweight or obese, while 462 million are underweight [15]. In 2016, the United Nations General Assembly declared a decade of unprecedented struggle against all forms of malnutrition. It approved the "Global Monitoring Framework for Nutrition. Operational guidance to track progress towards the 2025 goals" [14]. According to domestic research, for the period from 2000 to 2018, The share of increased obesity among young people has increased fourfold, and the frequency of obesity has increased 2.7 times [6, 8]. The prevalence of overweight ranges from 3.9 to 29.1%; obesity ranges from 1.2 to 25.3% in the younger age groups of the country, depending on gender and living conditions [2, 3, 16, 17]. The prevalence of body mass deficiency is less well understood.

Eating behavior (EB) is understood as a lifestyle component that incorporates a nutrition stereotype and behaviors. There is a focus on the image of one's own body and the activities that shape that image. The formation of EB is influenced by a number of factors: social, economic, ethnocultural, personal, educational environment, etc. [8, 13]. The emotional sphere plays an important role in the formation of EB. Hunger satisfaction is associated with a sense of comfort, quality of life, and security. With the beginning of student life, the daily routine, the type of nutrition, and the volume of educational and psycho-emotional load change significantly. A number of studies have shown that people who are frequently subjected to stressors experience changes in EB, both through overeating and fasting [4, 11, 12]. At the same time, dietary habits can be considered a predictor of desadaptation to the education at the university [1, 5].

THE PURPOSE OF THE STUDIES

To determine the types of eating behaviors and levels of physical activity in medical university students at the beginning of their professional training.

MATHERIAL AND METHODS

The study involved 146 female students aged 17 to 20 (average age M=19.5; SD=1.4), studying in the first year of the Saint Petersburg State Paediatric Medical University, on the basis of voluntariness and confidentiality. The study used the method of conducting a sociological survey by means of a questionnaire. A survey form was compiled on the basis of the Internet platform "Google Forms". The questionnaire included anthropometric data (weight and height) and questions to identify eating behaviors and levels of physical activity.

The nutritional status of a person is usually evaluated by the mass-growth index Ketle (body mass index, or BMI) in global practice, the value of which is determined by dividing the body mass (kg) by the growth square (m^2). The weight-to-height ratio is considered optimal at a BMI between 18.5 and 24.9. At BMI, less than 18.5 were underweight; 25.0 to 29.9 were overweight; and those above 30 were obese [6, 15]. The screening evaluation of the EB was performed using the EAT-26 and DEBQ tests. The EAT-26 scale (Eating Attitudes Test) is the most popular tool that allows you to determine the nature of eating behavior and the propensity for eating disorders. In the case of people with a high probability of nutritional deprivation, advice from subject matter experts should be recommended [9]. The Dutch Eating Behavior Questionnaire (Dutch Eating Behavior Questionnaire) is a simple and validated

tool that provides a diagnosis of emotional, external, and restrictive types of EB disorder [5, 7]. The following tests were used to determine the level of physical activity (PA): a questionnaire that determines the PA level depending on the motivation for lifestyle changes. The international questionnaire IPAQ (International Questionnaire on Physical Activity) allows for the analysis of the PA for the last week to allocate persons with hypodynamy. The MAQ23+ questionnaire provides a dynamic assessment of the level and degree of PA [10]. Statistica 10.0 was used for quantitative data processing.

DISCUSSION OF THE RESULTS

The nutritional status assessment was based on the weights and height indicated by the girls in the questionnaire. The harmonious weight-to-height ratio was 64.9% of female students; weight deficiency was 18.7% of respondents. Overweight was found in 12.8% of female students; obesity was reported by 3.6% of female students, with BMI corresponding to morbidity obesity in two. In general, the nutritional status of students corresponds to the general trend of physical development of youth in the country [2, 6, 16].

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The EAT-26 test assesses three factors related to eating: 1) Dieting (dieting, avoiding eating calories, tending to lose weight); 2) Bulimia and Food Preoccupation (bulimia symptoms and concern with food-related thoughts); 3) Oral Control (self-control of eating behavior and perceived intention of others to make the respondent eat more). For the quantitative estimation of the respondents' answers, we used the ranking from 0 ("never") to 5 points ("always"), followed by recoding according to the requirements of the original version, where the answers "never", "rarely" and "sometimes" are assigned 0 points, "often" is 1 point, "usually" is 2 points, and "always" is 3 points. This is how all points were evaluated, except for the 26th, which was evaluated in reverse order.

The EAT-26 (≥20) was taken as the critical value to place respondents at risk for EB disorder. The dietary risk group was 26.6%; bulimia and food anxiety 25.1%; and food control 23.2%. In our study, the number of respondents with a propensity for violating EBs was higher than the number of female students in Moscow, Ryazan, and Arkhangelsk (13.5%) who took part in similar testing [9].

In the Dutch DEBQ questionnaire, the first ten questions concern restrictive EB, which is characterized by deliberate efforts to achieve or maintain desired weight through self-restraint in nutrition. The average for this category of people is 2.4 points. If the result is greater and the respondent limits himself to eating, anorexia may be a threat. In our study, the average was 2.86 [min=1.0; max=4.5], indicating an increased prevalence of restrictive EB among female students.

Questions from the 11th through the 23rd address emotional eating behavior, where the desire to eat arises in response to negative emotional states. The nine points on the scale refer to certain emotional states such as irritation, depression (confusion), anger, anticipation of an unpleasant event, anxiety (tension, anxiety), feeling that everything is bad, fright, disappointment, and emotional shock (disorder); and four points refer to states with mixed emotions (when there is nothing to do, a state of boredom or excitement). The average score in this group is no higher than 1.8 points; at a higher score, there is a tendency to "eat" stress. Our participants had an average of 2.36 [min — 1.0; max — 4.8], which indicates an increased frequency of violation of the EB of emotional etiology.

In other questions, DEBQ analyzes the externality of behavior (dietary temptation). In this form of violation of EBs in people, the desire to eat is not stimulated by a real sense of hunger. The appearance of food, its smell, texture, or watching others eat stimulates a sense of hunger. The average score is 2.7 points. If the figure is higher, then there is a difficulty in keeping from appetizing food. In our study, the average was 3.33 [min —1.7; max —4.0]. According to a number of authors, 7.2 to 13.1% of the population of economically developed countries regularly overeat; over the past 30 years, the prevalence of overeating has increased by a factor of 6, with a consequent increase in obesity [1, 5, 13].

A survey of students on their level of physical activity based on motivation showed that 80.5%

of girls try to increase their physical activity. Intensive or moderate PA is performed three times a week and more in the last six months by 12.9% of respondents. However, the remaining girls (6.6%) do not participate in sports and do not plan to increase the PA in the near future.

The IPAQ International Questionnaire identifies people with hypodynamy, which occurs when muscle contraction is reduced. Hypodynamy is indicated by a total of less than 21 points during testing. We measured the frequency of physical activity for 7 days and the time spent on moderate, high-intensity PA in 5 sections: work, movement, housework, leisure, and sitting. Of the girls, 63.6% had normal PA; 12.1% had borderline PA; and 24.3% had hypodynamy. According to MAQ23+ testing, most respondents had moderate levels of physical activity (63.9%). High (5.5%) and very high PA levels (0.7%) were less common than low (29.9%).

CONCLUSION

We have found that a large proportion of female first-year students at the university have abnormalities in nutritional status due to being both insufficient and overweight. The high incidence of physical abnormalities in girls may be related to low physical activity and eating disorders. One-third of female students exhibit abnormal nutritional symptoms related to cognitive, behavioral, and emotional domains. The level of physical activity of female students is insufficient, at 80%. The signs of hypodynamy were demonstrated by 60% of respondents. Among the factors contributing to eating disorders, along with a high level of intellectual and psychoemotional stress during the period of study at the university, special attention should be paid to the individual characteristics of the student's personality.

ADDITIONAL INFORMATION

Author contribution. Thereby, all authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

Competing interests. The authors declare that there have no competing interests.

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Consent for publication. Written consent was obtained from the patient for publication of relevant medical information within the manuscript.

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Вклад авторов. Все авторы внесли существенный вклад в разработку концепции, проведение исследования и подготовку статьи, прочли и одобрили финальную версию перед публикацией.

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

Источник финансирования. Авторы заявляют об отсутствии внешнего финансирования при проведении исследования.

Информированное согласие на публикацию. Авторы получили письменное согласие пациентов на публикацию медицинских данных.

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