

УДК 159.922.775 + 611.3

ESTIMATION OF THE ACTUAL NUTRITION AND PSYCHOLOGICAL FEATURES OF GIRLS WITH AND WITHOUT EATING BEHAVIOR DISORDERS

Nigorodova Svetlana Evgenievna

Student, Department of Biology, 4 course, Altai State University. Barnaul. Russia. E-mail: nigorodova96@mail.ru.

Kazakova Olga Mikhailovna

Candidate of Philosophy, Associate Professor, Professor. Department of Foreign Languages, Faculty of History Altai State University. Barnaul, Russia. E-mail: kazakova-olga@mail.ru.

Filatova Olga Viktorovna

Doctor of Biological Sciences, Professor. Department of Zoology and Physiology. Altai State University. Barnaul, Russia. E-mail: ol-fil@mail.ru.

Kutseva Elena Vladimirovna

Engineer. Department of Zoology and Physiology. Altai State University. Barnaul. Russia

ИЗУЧЕНИЕ ПИТАНИЯ И ПСИХОЛОГИЧЕСКИХ ОСОБЕННОСТЕЙ ДЕВУШЕК С НАРУШЕНИЯМИ ПИЩЕВОГО ПОВЕДЕНИЯ И БЕЗ НАРУШЕНИЙ

Нигородова Светлана Евгеньевна

Студент кафедры биологии, Алтайский государственный университет. Барнаул. Россия. E-mail: nigorodova96@mail.ru

Казакова Ольга Михайловна

Кандидат философских наук, доцент, профессор. Кафедра иностранных языков исторического факультета Алтайского государственного университета. Барнаул, Россия. E-mail: kazakova-olga@mail.ru

Филатова Ольга Викторовна

Доктор биологических наук, профессор. Кафедра зоологии и физиологии. Алтайский государственный университет. Барнаул, Россия. E-mail: ol-fil@mail.ru

Куцева Елена Владимировна

Инженер. Кафедра зоологии и физиологии. Алтайский государственный университет. Барнаул. Россия. E-mail: kucevaev@mail.ru

Следует цитировать / Citation:

Nigorodova S. E., Kazakova O. M., Filatova O. V., Kutseva E. V. 2019. Estimation of the actual nutrition and psychological features of girls with and without eating behavior disorders. *Health, Physical Culture and Sports*, 4 (15), pp. 297–302. (in English). URL: <http://journal.asu.ru/index.php/zosh>.

Нигородова С. Е., Казакова О. М., Филатова О. В., Куцева Е. В. Изучение питания и психологических особенностей девушек с нарушениями пищевого поведения и без нарушений // *Здоровье человека, теория и методика физической культуры и спорта*. — 2019. — № 4 (15). Спецвыпуск по гранту РФФИ № 19–013–20149\19. — С. 297–302. URL: <http://journal.asu.ru/index.php/zosh>

Поступило в редакцию / Submitted 03.09.2019

Принято к публикации / Accepted 28.10.2019

Abstract. The violations of eating behavior began to be actively studied since the mid-20th century and some aspects of this problem are being studied still. In recent years, researchers from different countries have found new evidence of the role of eating behavior in the development of obesity. **Aims:** was to study the psychological features, body composition and parameters of actual nutrition of girls with eating behavior disorders. **Methods.** We used the Dutch questionnaire DEBQ to analyze the types of eating behavior. To assess the severity of eating disorders inherent in eating disorders, the technique “Scale of Eating Behavior Assessment” was used. The actual mental state of the subjects was studied using a clinical and psychological test — a questionnaire of the severity of psychopathological symptoms (SCL-90-R). The evaluation of the actual nutrition by the method of frequency analysis was carried out with the help of the computer program “Analysis of the state of human nutrition”. The component composition of the body was assessed using the apparatus for bioimpedanceometry ABC-01 “Medass”. **Results.** In all groups of girls with eating behavior disorders, higher values on the scales of desire for thinness, bulimia and interoceptive incompetence, somatization, depressiveness, anxiety, psychotic. As the eating disorders worsened, the consumption of total fat, mono- and disaccharides and added sugar increased. **Conclusions.** In girls with eating disorders violations of personal and psychological characteristics, nutrition patterns were detected, which was expressed by an increase in the average daily energy intake, total fat, mono- and disaccharides, and added sugar. The imbalance in the consumption of fat, simple carbohydrates did not affect the amount of fat mass of the body, both in absolute and relative units.

Key words: eating behavior, bioimpedanceometry, body fat, actual nutrition.

Аннотация. Нарушения пищевого поведения начали активно изучаться с середины XX в. и некоторые аспекты этой проблемы до сих пор изучаются. В последние годы исследователи разных стран находят все новые подтверждения роли пищевого поведения в развитии ожирения. Цель: изучение психологических особенностей, состава тела и параметров фактического питания у девушек с нарушением пищевого поведения.

Для исследования типов пищевого поведения использовали Голландский опросник DEBQ. Для оценки выраженности присущих расстройством пищевого поведения характеристик использовалась методика «Шкала оценки пищевого поведения». Актуальное психическое состояние испытуемых изучали с помощью клинико-психологического теста — опросника выраженности психопатологической симптоматики (SCL-90-R). Оценку фактического питания методом частотного анализа проводили с помощью компьютерной программы «Анализ состояния питания человека». Компонентный состав тела оценивали при помощи аппарата для биоимпедансометрии ABC-01 «Медасс».

Во всех группах девушек с нарушениями пищевого поведения выявлены более высокие значения по шкалам стремления к худобе, булимии и interoceptive некомпетентности, соматизации, депрессивности, тревожности, психотизма. По мере усугубления нарушений

пищевого поведения возросло потребление общего жира, моно- и дисахаров, добавленного сахара.

Нарушение пищевого поведения у девушек сопровождается изменением психологических признаков, расстройствами приема пищи, что выразилось возрастанием потребления жиров, моно- и дисахаров, добавленного сахара. Дисбаланс в потреблении жиров и простых углеводов никак не отразился на величине жировой массы тела как в абсолютных, так и в относительных единицах.

Ключевые слова: пищевое поведение, жировые отложения, фактическое питание.

Introduction. Every fourth inhabitant of our planet is suffering from obesity/overweight. Obesity is some of the most common diseases in economically developed countries [1]. Overeating is key factors leading to the development of obesity [2, 3, 4]. The similar eating behavior disorders appear a long time ago, but they began to be actively studied since the mid-20th century [5]. Over the last years, researchers from different countries are finding new evidence of the role of eating behavior in the development of obesity [2, 3, 4, 5]. Eating behavior of human is directed at satisfying biological, physiological, psychological and social needs [6].

Aims. To study the psychological features, body composition and parameters of actual nutrition of girls with eating behavior disorders.

Methods. The study was conducted on the basis of the Department of Zoology and Human and Animal Physiology of the Altai State University. We surveyed of the 65 girls at the ages from 16 to 20. All participants provided written and informed consent.

Anthropometric research methods included measurement of body length (BL) and body weight (BW). Mass-growth ratios were assessed using the body mass index (BMI or Quetele-II index) calculated using the formula: $BMI = BW (kg) / BL (m)^2$ using computer program WHO AnthroPlus v 1.0.4 (<http://www.who.int/growthref/tools/en/>).

The component composition of the body was assessed using the apparatus for bioimpedanceometry ABC-01 "Medass", which is capable of you to determine fat mass (FM), lean fat free mass (LFFM), active cell mass (ACM), mass of skeletal muscle (MSM), the total fluid in vivo, extracellular fluid, fasting metabolism (FM), specific fasting metabolism (SFM).

Psychological research methods included the Dutch Eating Behavior questionnaire DEBQ [7] for identifying restrictive, emotional or external eating behavior. Regulatory data, according to the DEBQ questionnaire, on external eating behavior — 2.7, on emotional eating behavior — 1.8, on restrictive eating behavior — 2.4.

To assess the severity of eating disorders inherent in eating disorders, the technique "Scale of Eating Behavior Assessment" was used. The actual mental was studied using a clinical and psychological test — a questionnaire of the severity of psychopathological symptoms (Symptom-90 Revision Revision — SCL-90-R), responses to 90 statements that formed 9 basic scales (somatization, intrusiveness, interpersonal sensitivity, depressiveness), anxiety, hostility, phobic anxiety, paranoiac, psychotic).

The evaluation of the actual nutrition by the method of frequency analysis was carried out with the help of the computer program "Analysis of the state of human nutrition", version 1.2.4 (State Research Institute of Nutrition of the Russian Academy of Medical Sciences, 2003–2006).

All statistical analyses were completed using SPSS Statistics v.21.0. In the text, quantitative features with a normal distribution are presented in the form of arithmetic mean (M), standard deviation (SD).

Results and discussion. The subjects were divided into four groups. 6% (N = 4) of the subjects did not suffer from eating behavior disorders (The first group). According to the results of the Dutch Eating Behavior questionnaire DEBQ, the violations of eating behavior were examined in various combinations of 62 subjects (94%). A violation of the restrictive type of eating behavior revealed of the subjects 31% (N = 20) (The second group).

Among all the subjects, combinations of emotiogenic and limited types of eating behavior are most often detected (54%, N = 35) (The third group). A combination of 3 types of the violations of eating behavior were diagnosed of 6 people (9%) (The fourth group).

According to the results of the Food Evaluation Scale questionnaire in the third and fourth groups, of girls with experienced higher values on the scales of desire for thinness, bulimia, interoceptive incompetence on a statistically significant level (Fig. 1).

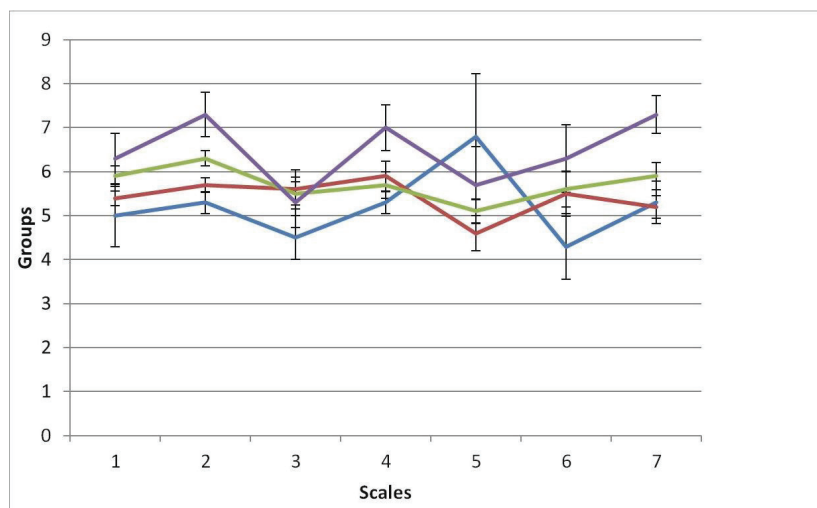


Fig. 1. Indicators of questionnaire "Scale of Eating Behavior Assessment" of girls with eating behavior disorders. Notes: Groups: 1 — the girls with eating behavior disorders; 2 — the girls with violation of the restrictive type of eating behavior; 3 — the girls with combinations of emotiogenic and limited types of eating behavior; 4 — the girls with a combination of 3 types of the violations of eating behavior. Scales: 1 — desire for thinness, 2 — bulimia, 3 — body dissatisfaction, 4 — inefficiency, 5 — perfectionism, 6 — mistrust, 7 — interoceptive incompetence

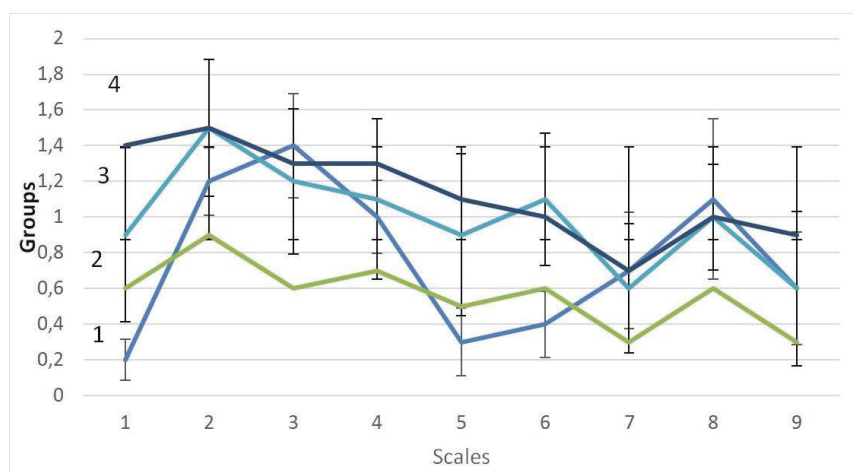


Fig. 2. Indicators of SCL-90-R of girls with eating behavior disorders. Notes: The groups like to Fig. 1. The scales: 1 — somatization, 2 — obsession, 3 — interoceptive sensitivity, 4 — depressiveness, 5 — anxiety, 6 — hostility, 7 — phobias, 8 — paranoid, 9 — psychotic

With a comparable degree of the severity of psychopathological symptoms, determined using the SCL-90-R scale, in all groups of girls with eating behavior disorders, higher values on the scales of somatization, interoceptive incompetence, depressiveness, anxiety, psychotic (Fig. 2). Higher values on the scale of somatization appeared in the

third and fourth groups as compared to the first and second (Fig. 2). Interoceptive incompetence averages were lower in the third and fourth groups as compared to the first and higher as compared to the second group. The subjects of the third and fourth groups have higher average scores on the parameters of depression at a statistically signifi-

cant level as compared to the second group. The subjects of the third and fourth groups have higher average values on the scales of anxiety as compared to the first and second group (Fig. 2). Higher values on the scale of psychotic were identified in the third and fourth groups as compared to the second group (Fig. 2).

The average daily intake of energy and nutrients of girls all over the studied groups was compared with the corresponding norms of physiological consumption (NPC). The values of daily intake of saturated fatty acids (SAFA), added sugar were compared with the recommended values proposed by the WHO [8]. According to the obtain results, the total carbohydrate intake stand at close or slightly below as compared to NPC. Mono- and disahars intake increased from the first group to the fourth (129.7 ± 93.39 g — the first group; 144.2 ± 116.39 g — the second group; 97.2 ± 56.91 g — the third group; 193.5 ± 176.90 g, $P_{3-4} = 0.036$ — the fourth group).

The average energy intake from food in the studied group as a whole is 15% lower compared as compared to NPC for the corresponding sex and age [9]. There is a tendency to increase the average daily intake of energy, macro- and micronutrients from the first group to the fourth (1492.3 ± 161.06 kcal —

the first group; 1558.0 ± 954.33 kcal — the second group; 1672.2 ± 1563.34 kcal — the third group; 2583.5 ± 1820.51 kcal, $P_{2-4} = 0.103$, $P_{3-4} = 0.173$ — the fourth group). The energy value of the daily diet of girls of the fourth group exceeds NFP by 29%.

Distinctively identified problems the violations of structure of energy intake. First, attention is drawn to the high values of total fat intake in absolute terms — by 25% in the first, by 53% in the second, by 47% in the third, and twice as high as NPC in the fourth group. The average content of SAFA in these groups is 2.0–2.3% of dietary energy.

Added sugar intake in the fourth group was maximum as compared to the second and third groups (86.7 ± 93.68 g — the second group; 46.8 ± 41.63 g — the third group; 109.0 ± 86.65 g, $P_{2-4} = 0.042$, $P_{3-4} = 0.05$ — the fourth group).

The imbalance in the simple carbohydrates intake not affect one way or the other on BMI and BFM. The average BMI in all groups corresponds to the interval from the 25th to the 75th centile (19.1 ± 2.19 — the first group, 21.4 ± 4.02 — the second group, $22, 3 \pm 3,21$ — the third group, 21.8 ± 2.78 kg/m² — the fourth group). The resting metabolism rate tends to increase from the first group to the fourth (Fig. 3).

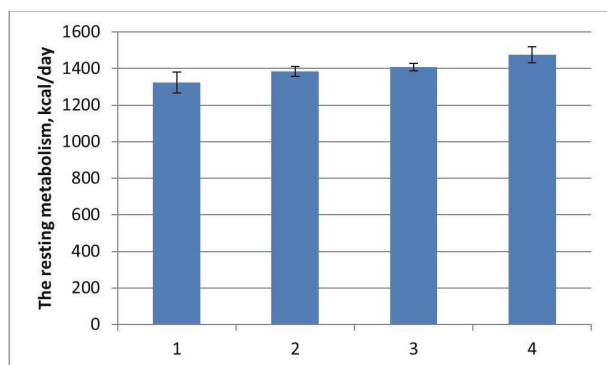


Fig. 3. The resting metabolism of girls with eating behavior disorders. Note: The groups like to Fig. 1

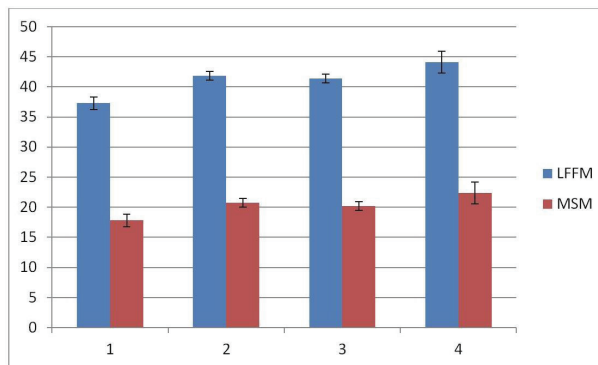


Fig. 4. The mass of skeletal muscle (MSM) and lean fat free mass (LFFM) in kg of girls with eating behavior disorders. Note: The groups like to Fig. 1

This is explained by an increase of such indicators as LFFM and MSM from the first group to the fourth (Fig. 4).

The subject with eating behavior disorders have increased the scales desire for thinness and a tendency to depression. Although from 3/4 to 4/5 of the girls in the second, third and fourth groups have had a normal and lowered BFM%. On a psy-

chological level, they have the violations of eating behavior, the cause of which was the mass media and the desire for physical attractiveness.

The evaluation of the actual nutrition allowed us to detect the imbalance in the consumption of nutrients towards the consumption of carbohydrates — in particular, added sugar, mono- and disahars — in groups with eating behavior disorders.

Obviously, not only psychogenic, but also biological factors can affect eating disorders. Namely, the exchange of serotonin or 5-hydroxytryptamine. Serotonin plays an important role not only in the development of eating behavior disorders, but also in the regulation of circadian and seasonal rhythms, the mechanisms of personal and sexual disorders, aggressive behavior. As evidence of the close relationship between food and affective disorders, a significant decrease in the concentration in the spinal fluid of patients with neuropeptide 5-HIAA is the main metabolite of serotonin, which, according to some

authors, plays a crucial role in the development of not only eating disorders, but also obsessive-compulsive and depressive violations [10].

Conclusions. In girls with eating behavior disorders violations of personal and psychological characteristics, nutrition patterns were detected, which was expressed by an increase in the average daily energy intake, total fat, mono- and disahars, and added sugar. The imbalance in the consumption of fat, simple carbohydrates did not affect the amount of fat mass of the body, both in absolute and relative units.

REFERENCES

1. James W. F. T. Epidemiology of obesity // *Internat J Obes*, 1992. № 16. P. 23–6.
2. Azagba S., Sharaf M. F. Eating Behavior and Obesity in Canada. *Journal of Primary Care & Community Health*. 2012. № 3 (1). P. 57–64.
3. Lee H. A., Lee W. K., Kong K. A., Chang N., Ha E. H., Hong Y. S., Park H. The effect of eating behavior on being overweight or obese during preadolescence. *Journal of Preventive Medicine & Public Health*. 2011. Vol. 44 (5). P. 226–233.
4. Hays N. P., Bathalon G. P., McCrory M. A., Roubenoff R., Lipman R., Roberts S. B. Eating behavior correlates of adult weight gain and obesity in healthy women aged 55–65 y 13. *The American Journal of Clinical Nutrition*. 2002. Vol. 75 (3). P. 476–483.
5. Eliseeva P. S., Granskaya Yu. V. Psychological features of women experiencing weight loss // *Scientific studies of graduates of the Faculty of Psychology, St. Petersburg State University*. 2014. T. 2. P. 101–108.
6. Shin A., Lim S. Y., Sung J., Shin H. R., Kim J. Dietary intake, eating habits, and metabolic syndrome in Korean men. *Journal of the American Dietetic Association*. 2009. Vol. 109 (4). P. 633–640.
7. Solovyov A. V. Risk factors of formations of eating disorders in people with overweight and obesity // *Medical Almanac*. 2013. T. 6. P. 178–180.
8. Guidance on sugar consumption by adults and children. Summary. Who, 2015. 11 p. (available on the WHO website www.who.int).
9. Norms of physiological needs in energy and nutrients for various groups of the population of the Russian Federation. *Methodical recommendations Mr 2.3.1.2432–08*. (in Russian).
10. Marilov V. V., Artemyeva M. S., Suleimanov R. A., Bryukhin A. E. The results of a long-term longitudinal study of eating disorders. *Vestnik Rossijskogo universiteta druzhby narodov. Seriya: Medicina*. [Bulletin of Peoples' Friendship University of Russia. Series: Medicine]. 2006. № 2: 129–133. (in Russian).