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Prevention Of Obesity And Metabolic Syndrome In Young People

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Abstract. Obesity and metabolic syndrome (MS) are significant risk factors for cardiovascular and endocrine diseases among young people. The purpose of the study is to assess metric indicators, the prevalence of body mass disorders, and potential risk factors for MS among students. The study involved 382 students of the Central Asian Medical University (Fergana city, Uzbekistan) aged 18-25. An assessment of height, waist circumference (WC), body mass index (BMI) was conducted, and the distribution of students by BMI categories was calculated. It was established that 21.8% of students have a metabolic risk, of which 23.8% have excess body weight and 1.6% have obesity of the 1st degree. The average BMI value was 23.8 ± 2.1 kg/m2. The results obtained confirm the necessity of implementing preventive programs aimed at reducing the prevalence of obesity risk factors among university students.
Keywords: metabolic syndrome, obesity, prevention, body mass index, youth, physical inactivity, nutrition, stress.

Relevance. Overweight and obesity have become increasingly common in recent decades and are now a major nutritional problem worldwide [1, 2]. Obesity occurs when dietary calorie intake exceeds energy expenditure and is occurring in many societies due to an increasingly "obesogenic" environment in which physical activity is declining, yet children continue to be exposed to unhealthy, high-calorie diets [3]. Additional risks for the development of obesity also include psychological problems and genetic factors [4]. Obesity has many adverse health consequences, including the development of insulin resistance, type 2 diabetes, and metabolic syndrome. There are also important genetic factors that influence the likelihood of developing insulin resistance [5, 6]. Given the limited success of therapeutic interventions for the treatment of obesity and metabolic syndrome, there is increased interest in preventive strategies [7, 8]. They are likely to be most successful when targeting young people and will require a combination of approaches that will require interdisciplinary collaboration between health and local authorities to work with families, schools and the local environment to promote behavior change that influences young people's eating behavior and habitual levels of physical activity [9].

Metabolic syndrome is a collection of cardio metabolic abnormalities that together constitute additional risk factors for cardiovascular disease and type 2 diabetes. The syndrome is more common in overweight individuals, affecting a relatively small number (3-4%) of normal-weight young adults, but, depending on the definition used, 26-50% of obese children and adolescents. Therefore, it is important to recognize that not all obese young adults develop metabolic syndrome, although up to 90% of obese children and adolescents will have at least one component [10-12].

The prevalence of obesity among young people is rapidly increasing, contributing to an increased incidence of metabolic syndrome, type 2 diabetes, and cardiovascular disease. Students are at high risk due to poor diet, physical inactivity, stress, and irregular sleep [13]. Early identification of risk factors and the implementation of preventive measures play a key role in preventing metabolic disorders and promoting a healthy lifestyle.

Purpose of the study. To assess anthropometric indicators and the prevalence of risk factors for obesity and metabolic syndrome among student youth, as well as the improvement and implementation of preventive measures.

Material and methods of research. The study included 382 students aged 18–25 years studying at the Central Asian Medical University (Fergana, Uzbekistan).
We used the following research methods:
- anthropometry (height, body weight, waist circumference),
- calculation of body mass index (BMI),

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- distribution of students by BMI categories in accordance with WHO recommendations.
- Statistical research methods.

Research results. During the study, anthropometric data of students were revealed:
- the average height of boys is 1.75 ± 0.32 m, girls - 1.64 ± 0.26 m;
- the average waist circumference for boys is 86 ± 2.7 cm, for girls - 74 ± 2.3 cm;
- average BMI - 23.8 ± 2.1 kg/m².

The distribution of students by BMI is determined as follows:
- Underweight (BMI < 18.5)– 14.7% (56 students)
- Norm (18.5–24.9)– 59.9% (229 students)
- Overweight (25.0–29.9)– 23.8% (91 students)
- Obesity I degree (BMI ≥ 30)– 1.6% (6 students)

Thus, 21.8% of students (83 people) are overweight or obese and are at risk for metabolic disorders.

It has been established that the average waist circumference values for young men and women are within the limits of international standards, however, some students with elevated BMI demonstrate values approaching the threshold:
- the risk of MS in men begins at WC≥94 cm;
- for women - with WC≥80 cm.

Some overweight students are already approaching these levels, which requires early preventative work.

Discussion of results. The data obtained demonstrate the relevance of the problem of body weight disorders and early manifestations of metabolic syndrome among university students. Although the average height and waist circumference values for both young men and women are within international norms, an analysis of the BMI distribution revealed a significant number of cases of overweight.

Average height (1.75 m for boys and 1.64 m for girls) is consistent with age norms for this population. However, waist circumference values demonstrate an important trend: although the average values for both groups are below the diagnostic thresholds for MS risk (WC≥94 cm for men and ≥80 cm for women), some students, especially those with elevated BMI, approach these critical values.

This indicates the development of abdominal obesity, a key component of metabolic syndrome. Abdominal fat is metabolically active and is associated with insulin resistance, hyperlipidemia, and increased cardio metabolic risk.

Half of the sample (59.9%) had normal body weight, which is a favorable factor. However, the high proportion of underweight students (14.7%) also deserves attention, as it may indicate poor nutrition, high academic workloads, and stressful conditions.

Of particular importance is the fact that 23.8% of students are overweight and 1.6% are class I obese, which means that a total of 21.8% are already at risk for MS.

These figures are consistent with the global trend of rising obesity among young people, driven by low physical activity, poor eating habits, reduced sleep time, and academic stress.

Despite average normal WC values, students with a BMI >25 tend to exceed preclinical values. This demonstrates a gradual transition from general obesity to abdominal obesity, which is most closely associated with metabolic disorders.

Thus, the identified changes can be considered as early markers of metabolic syndrome, which confirms the need for:
- regular monitoring of BMI and WC,
- systematic screening of risk factors,
- lifestyle and dietary adjustments,
- increasing the level of physical activity.

Preventive measures should become a fundamental element of the university's student health promotion policy. These include:
- educational trainings on healthy nutrition,
- organization of sports and health events,
- introduction of psycho-emotional relief,
- regular medical examinations and consultations,

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- formation of a healthy lifestyle culture.

These studies demonstrate the need for systematic work to reduce the risk of metabolic disorders and prevent obesity among young people.

Most students with elevated BMIs have significantly increased waist circumference, a key component of metabolic syndrome. These findings are consistent with global research confirming the rise in obesity among young people due to a sedentary lifestyle, poor diet, and stress.

In a student environment, the risk is exacerbated by irregular meal times, a high-calorie diet, and low levels of physical activity. These studies highlight the need to develop and implement obesity prevention programs.

Conclusions:

1. A significant proportion of students were found to have weight problems: 21.8% were overweight or obese.

2. The average BMI was 23.8±2.1 kg/m², which corresponds to the upper limit of the norm, but almost a quarter of the sample exceeded the normal ranges.

3. Waist circumference values in some students approach the threshold values for metabolic syndrome risk, indicating early signs of abdominal obesity.

4. The study results confirm the need to develop and implement university-based preventive programs aimed at promoting a healthy lifestyle and reducing risk factors for metabolic disorders.

5. Early preventative work among students can significantly reduce the prevalence of obesity and metabolic syndrome in the future.

References:

1. Бокиева Г.Х. Биохимические изменения в организме при утомлении. Оздоровительная физическая культура молодежи: актуальные проблемы и перспективы. 2020:14-17. https://www.bsmu.by/upload/medialibrary/063/265dsrvi076vbt3op285wmrkuz5hq8dg/sbornik_konferencii_28052020.pdf

2. Купчинов Р.И. Двигательная нагрузка как основа эффективности физического воспитания студентов. Оздоровительная физическая культура молодежи: актуальные проблемы и перспективы. 2020:55-60. https://www.bsmu.by/upload/medialibrary/063/265dsrvi076vbt3op285wmrkuz5hq8dg/sbornik_konferencii_28052020.pdf

3. Матмуродов Р.Ж., Эгамова М.Т. Физическая реабилитация детей с последствиями ДЦП. Оздоровительная физическая культура молодежи: актуальные проблемы и перспективы. 2020:308-309. https://www.bsmu.by/upload/medialibrary/063/265dsrvi076vbt3op285wmrkuz5hq8dg/sbornik_konferencii_28052020.pdf

4. Г.А.Эрматова, О.Р.Парпиева, А.Якубов, Д.А.Камалова. Привычки здорового питания в контексте повседневной жизни населения// International Journal of Education, Social Science & Humanities. Finland Academic Research Science Publishers. Volume-12| Issue-5| Published: |22-05 2024| https://doi.org/10.5281/zenodo.11402418

5. Норматова Ш.А., Эрматова Г.А. (2024) Совершенствование профилактических мероприятий и прогнозирование метаболического синдрома. ACTACAMU, 7(7), 130–135. https://doi.org/10.5281/zenodo.14137690

6. Ш.А. Норматова, Г.А. Эрматова. (2025). Оценка распространенности метаболического синдрома у студентов-медиков и его влияние на качество жизни. In ActaCAMU (Vol. 9, Number 9, pp. 14–20). Zenodo. https://doi.org/10.5281/zenodo.15151916

7. Ахмедов Б.А. Гигиеническая оценка здоровья молодежи Узбекистана//Журнал профилактической медицины, 2022. https://ttaa.tma.uz/vestnik-pdf/2022/ttaa-2022-2.pdf

8. Ортиковна С. З. (2023). Гигиеническая оценка здоровья студентов. Scientific Journal of applied and medical Sciences, 2(3), 52–58. Retrieved from https://sciencebox.uz/index.php/amaltibbiyot/article/view/6388

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9.   Раджабов Ш.М. Физическое развитие студентов в условиях современного образования. Ташкент: УзМедИздат, 2021. https://inscience.uz/index.php/socinov/article/view/1466

10.   Ermatova G.A., Hozhimatov Kh.O. «Influense factors of the environment on the state of health of the population at the regional level». European science review, № 3-4. 2016. P.87-90. https://cyberleninka.ru/article/n/influence-factors-of-the-environment-on-the-state-of-health-of-the-population-at-the-regional-level.

11.   Tao S., Wu X., Yang Y. and Tao F. (2020). The moderating effect of physical activity in the relation between problematic mobile phone use and depression among University students. J. Affect. Disord. 273, 167–172. doi: 10.1016/j.jad.2020.04.012

12.   Haskell W.L., Lee I., Pate R.R., Powell K.E., Blair S.N. Physical Activity and Public Health: Updated Recommendation for Adults from the American College of Sports Medicine and the American Heart Association. Circulation. 2007;116:1081–1093. doi: 10.1249/mss.0b013e3180616b27.

13.   Норматова Ш.А., Эрматова Г.А. Оценка риска метаболического синдрома среди молодежи на основе атропометрических и физиометрических данных. Actacamu, 11(1), 7–13. https://doi.org/10.5281/zenodo.17177184

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