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Obesity-Related Morbidity Indicators in Children and Adolescents in the City of Tashkent, Uzbekistan

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Introduction: The issue of obesity has garnered significant attention due to several compelling factors [1-3]. Firstly, it is associated with the yearly increase in the number of individuals with excess body weight [4-5]. Secondly, obesity inevitably leads to the development of pathologies affecting various organs and systems, including cardiovascular (atherosclerosis, arterial hypertension, ischemic heart disease - IHD, metabolic syndrome), musculoskeletal (osteochondrosis, degenerative osteoarthritis), endocrine (insulin-dependent diabetes mellitus, type 2 diabetes mellitus), immune (colorectal cancer, breast cancer, prostate cancer), reproductive, and others [6-8]. There is undeniable genetic predisposition to obesity, as substantiated by epidemiological research.

According to epidemiological studies, the European Union's 25 member states are witnessing the highest prevalence rates of obesity. In this context, 25% of adolescents have excess body weight, and 15% suffer from obesity [1,9]. Thus, the obesity epidemic represents one of the most pressing global public health challenges. Every year, obesity-related illnesses contribute to over one million deaths in the region [10-11].

The aim of this study is to analyze the morbidity and the structure of obesity among children and adolescents residing in the Republic of Uzbekistan.

Materials and Methods: The medical-sociological research involved the extraction of data from medical records (Form No. 025/u) and development histories (Form No. 030/u), followed by in-depth medical examinations of children and adolescents. The analysis incorporated data from preventive examinations conducted in educational institutions, as well as data from dispensary groups registered with endocrinologists for obesity. The study period spanned three years (2021-2023).

When examining the anamnestic data through questionnaires, attention was directed toward previous illnesses, the presence of chronic diseases, and foci of infection. The analysis of morbidity was conducted in accordance with the international statistical classification of diseases and health-related problems.

To study the health of children and adolescents with obesity, it is essential to consider the pathogenesis of this syndrome, the characteristics of its course, and the organism's functional capabilities, primarily determined by living conditions, dietary habits, daily routines, rest, and various emotional states.

By commonly accepted methods of sanitary statistics, intensive indicators were calculated. The mean values of morbidity indicators (M) and the standard error (m) were determined. The dynamics of obesity morbidity indicators were examined over a three-year period.

Results: During 2021-2023, 55,824 cases of obesity were registered among the adult population of the Republic for the first time. High intensive obesity indicators were observed in the city of Tashkent, the Khorezm Region, and the Tashkent Region. The emergence of obesity in the population is characterized by an imbalance between food intake and expended energy, disturbances in the pancreas, liver, small and large intestines. In other regions, such high obesity rates were not identified.

When examining the prevalence of obesity among children and adolescents in the Republic of Uzbekistan, it was noted that obesity is on the rise in children aged 11-15. During 2021-2023, 54,228 cases of obesity were registered in the Republic for the first time. The leading regions in terms of these indicators differ from those in the adult population. High intensive obesity indicators were identified in the city of Tashkent, the Tashkent Region, and the Khorezm Region. In other regions, such high obesity rates among children were not observed. There is a slow but steady increase, with a peak in 2023, which is attributed not only to factors such as diet and physical activity but also to the active work of pediatric endocrinologists, hygienists, and dietitians (see Table 1).

In this section, intensive obesity indicators are presented for various regions of Uzbekistan over a three-year period – 2021, 2021, and 2023. The indicators are measured per 100,000 population.

Table 1. Intensive obesity indicators by region over 3 years.

Region	2021 (per 100,000 population)	2021 (per 100,000 population)	2023 (per 100,000 population)
City of Tashkent	304.1	314.1	327.1
Andijan	10.3	12.0	14.6
Bukhara	25.1	15.5	23.0
Jizzakh	1.2	3.7	6.1
Kashkadarya	0.5	0.5	3.9
Navoiy	44.2	41.6	46.6
Namangan	25.4	36.5	42.3
Samarkand	18.8	38.1	37.8
Surkhandarya	10.7	14.1	18.6
Syrdarya	26.2	17.4	21.4
Tashkent Region	122.4	155.7	167.0
Fergana Region	28.0	40.3	46.5
Khorezm Region	63.1	122.1	132.6
Republic of Karakalpakstan	31.8	23.2	35.8
Republic of Uzbekistan	45.9	56.4	62.0

From the table, it is evident that obesity indicators in different regions of Uzbekistan have been on the rise over the course of three years. The most significant increase is observed in the city of Tashkent and the Tashkent Region, while some other regions also show an increase in the obesity rate, albeit to a lesser extent. The Republic of Uzbekistan as a whole also exhibits a trend of increasing intensive obesity indicators over time.

Analysis of the morbidity among children and adolescents with obesity, based on comprehensive medical examinations, revealed a higher incidence of various conditions in this age group (11-15 years). These conditions included endocrine disorders, metabolic disturbances, blood and hematopoietic system pathologies, gastrointestinal disorders, conditions requiring surgical evaluation (such as scoliosis and flatfoot), chronic infectious foci (chronic tonsillitis, adenoids), as well as neurological disorders: autonomic nervous system disorders, asthenoneurotic syndrome, vegetative-vascular dystonia, various neuroses, and cardiovascular system disorders.

In the morbidity structure of children and adolescents with obesity aged 11 to 14 in the city of Tashkent, the following main conditions took the lead: Blood and hematopoietic system diseases, along with certain disorders involving the immune mechanism (Class III), represent 15.00% of the total diseases, Endocrine disorders and metabolic disturbances (Class IV) are observed in 18.60% of cases, Diseases of the respiratory system (Class X) are observed in 13.80% of cases and Diseases of the digestive system (Class XI) make up 11.80% of the total diseases.

Thus, the elevated prevalence of certain nosological forms can be attributed to their functional state, the organism's resistance, living conditions, work and rest patterns, healthy dietary practices, and lifestyle.

Table-2. Disease Structure in Children and Adolescents with Obesity in the City of Tashkent (as a Percentage of Total Diseases)

ICD-10 Class of Diseases	% in Tashkent
I Infectious and parasitic diseases	2,00
III Blood and hematopoietic system diseases and certain disorders involving the immune mechanism	15,00
IV Endocrine disorders, metabolic disturbances	18,60
V Psychiatric disorders and behavioral disturbances	5,30
VI Diseases of the nervous system	9,40
VII Diseases of the eye and its adnexa	2,80
VIII Diseases of the ear and mastoid process	1,40
IX Diseases of the circulatory system	6,10
X Diseases of the respiratory system	13,80
XI Diseases of the digestive system	11,80
XII Diseases of the skin and subcutaneous tissue	4,10
XIII Diseases of the musculoskeletal system and connective tissue	2,50
XIV Diseases of the genitourinary system	3,00
XV Pregnancy, childbirth, and the puerperium	
XVII Congenital malformations, deformations, and chromosomal abnormalities	1,80
XIX Injuries, poisonings, and other consequences of external causes	2,40
Total Disease Incidence	100,00

The increase in the aforementioned diseases may be attributed to a decrease in the protective properties of the children and adolescents' bodies due to excessive nutrition, non-compliance with a rational diet, daily routines, and other factors. When assessing the incidence rate of obesity among children and adolescents, despite its high prevalence, no severe forms of chronic pathology were registered among them.

Endocrinologists examined individuals who had the diagnosis of "obesity" in their outpatient medical records, and 50% of them were referred by primary care pediatricians specifically due to excess body weight concerns. Additionally, 5% of children's parents sought consultation with an endocrinologist independently, as they were concerned about their child's excess body weight.

We found that among the surveyed individuals, 56% of children with obesity did not have the diagnosis of "obesity" in their outpatient documentation, had not been consulted by an endocrinologist, and consequently had not received any preventive or therapeutic recommendations. In 25% of the examined children, there were no regular anthropometric data available. Children who had been diagnosed with "obesity" in the form of 112/u by an endocrinologist during an outpatient examination or by a hospital physician were also not subjected to further monitoring and the dynamics of their body weight were not controlled.

It is noteworthy that outpatient pediatricians do not consider obesity in children as a significant problem negatively impacting a child's health, which requires constant monitoring and attention. They may also experience a lack of understanding from the parents of children with obesity.

Conclusion: The regional peculiarities of obesity incidence among children and adolescents identified in this study will aid in conducting targeted measures to further reduce this pathology in Tashkent city and in Uzbekistan.

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