## Раздел I

# ГОМЕОСТАЗ ЧЕЛОВЕКА КАК ПРОЯВЛЕНИЕ БИОСОЦИАЛЬНОГО БАЛАНСА В ДВИГАТЕЛЬНОМ И ГАСТРОНОМИЧЕСКОМ ВЗАИМОДЕЙСТВИИ С ОКРУЖАЮЩИМ МИРОМ

## SOCIAL ASPECT OF HEALTH SUPPORT IN CHILDREN WITH DIABETES MELLITUS TYPE 1

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**Abstract.** Diabetes Mellitus type 1 is a chronic disease that needs significant awareness. If left untreated, it may lead to decompensation requiring hospitalisation resulting in considerable social and economic losses. To establish the social value of comorbidities in children and adolescents with Diabetes Mellitus type 1, and to assess the reasons and the urgency of treatment in these patients. This is a retrospective study of 147 patients aged 1-18 years with type 1 Diabetes Mellitus, who were treated at the Grodno Regional Children's Clinical Hospital in 2023. The study findings emphasise the need for intensive observation, medical care, and awareness in the adolescent age group (12-18) given that the highest number of hospital admissions was seen in this group, in the stage of decompensation.

**Key words:** Diabetes Mellitus Type 1, Children Social life

***Introduction.*** Type 1 diabetic mellitus, also known as juvenile diabetes or insulin-dependent diabetes, is one of the most common endocrine metabolic disorders of childhood and adolescence, requiring lifelong exogenous insulin therapy [1]. The exact aetiology remains yet to be understood, but the underlying pathology involves autoimmune destruction of beta cells of the pancreas. Currently, genetic susceptibility and exposure to viral infections are postulated to be factors triggering the destruction of islet cells, resulting in insulin deficiency and subsequent hyperglycaemia [1]. The prevalence of Type 1 DM is more commonly seen in children but can affect any age group. Epidemiological studies indicate that the peak incidence rates are seen in the (4-6 years) group and pubertal group (10-14 years) [2]. Furthermore, an increased incidence rate of TD1M is seen in Europe (Finland and Northern Europe) when compared to Asia [3]. In the Republic of Belarus, there is a steady increase in the prevalence of type 1 diabetes

from 185.30 to 847.6 per 100,000 population as seen from an assessment of T1DM dynamics from 1993 to 2023, as per official statistics from the Ministry of Health [4].

***Methods.*** This study was conducted as a retrospective hospital record-based study at the Grodno Regional Children's Clinical Hospital during the year 2023. The data of 147 children and adolescents aged 1-18 years with Diabetes Mellitus Type 1 were obtained from the hospital database. Percentages were calculated using Microsoft Excel.

***Results.*** The highest number of admissions of children already diagnosed with Diabetes Mellitus 1 belong to the age group 12-18 years (52.38 %), followed by 7-11 years (31.97 %), 4-6 years (10.20%), and 1-3 years (5.44 %). The median age admitted was 12 years.

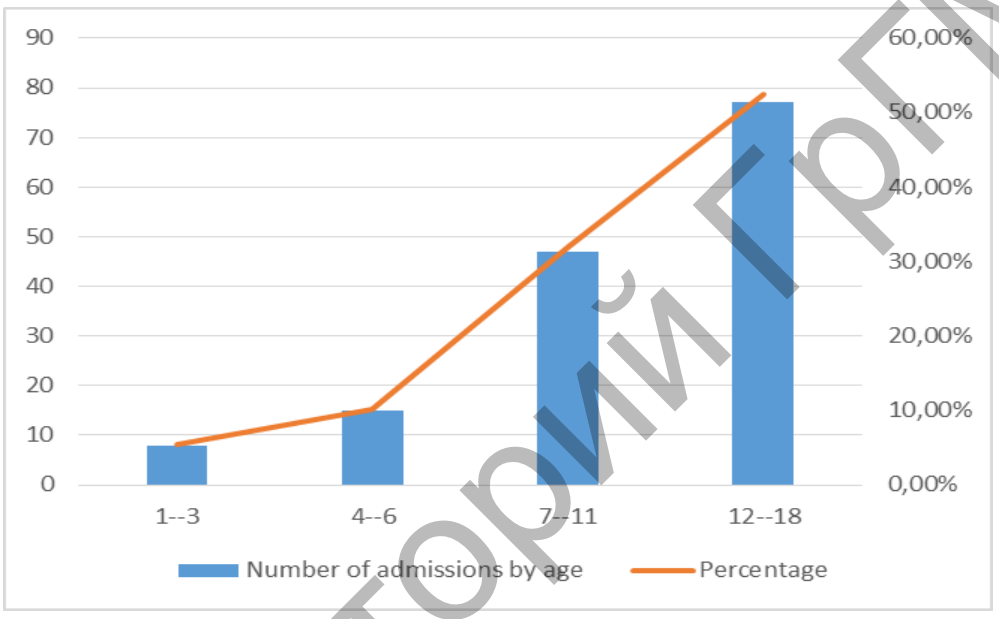


**Figure 1 – Age of hospitalized patients (Number & Percentage)**

From the total patient population considered, 71.23 % were admitted in the decompensated stage, 19.86 % in the sub compensated stage, and 8.90 % in the compensated stage.

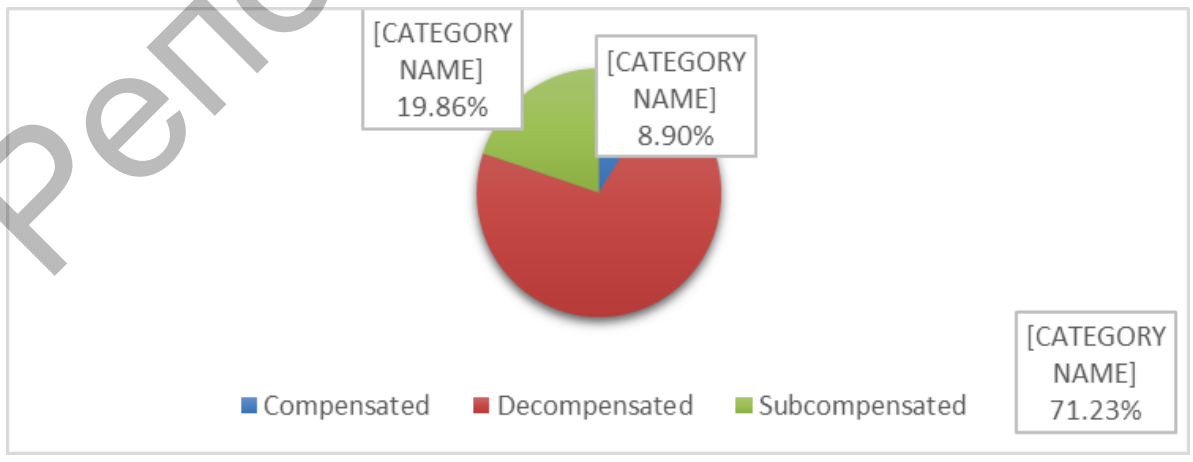


**Figure 2 – Conditions of compensation**

Further investigation of this data revealed that from the age groups toddlers (1-3 years), young children (4-6 years), old children (7-11 years) and adolescents (12-18 years), each category had the greatest number of patients in the decompensated stage from the three stages of compensation.

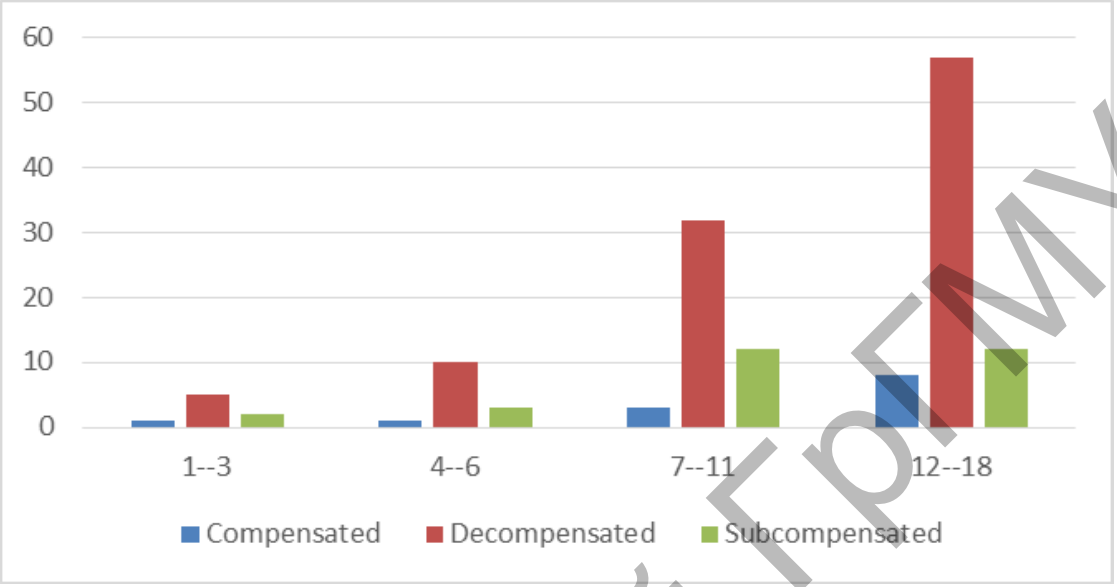


**Figure 3 – Age features of conditions**

The most and least frequently reported comorbidities were diseases affecting the respiratory system (41.98 %) and allergies (3.70 %) respectively. Other documented pathologies were gastrointestinal tract diseases (27.16%), diseases of the thyroid gland (17.28 %) and diseases of the upper and lower urinary tracts (9.88 %).

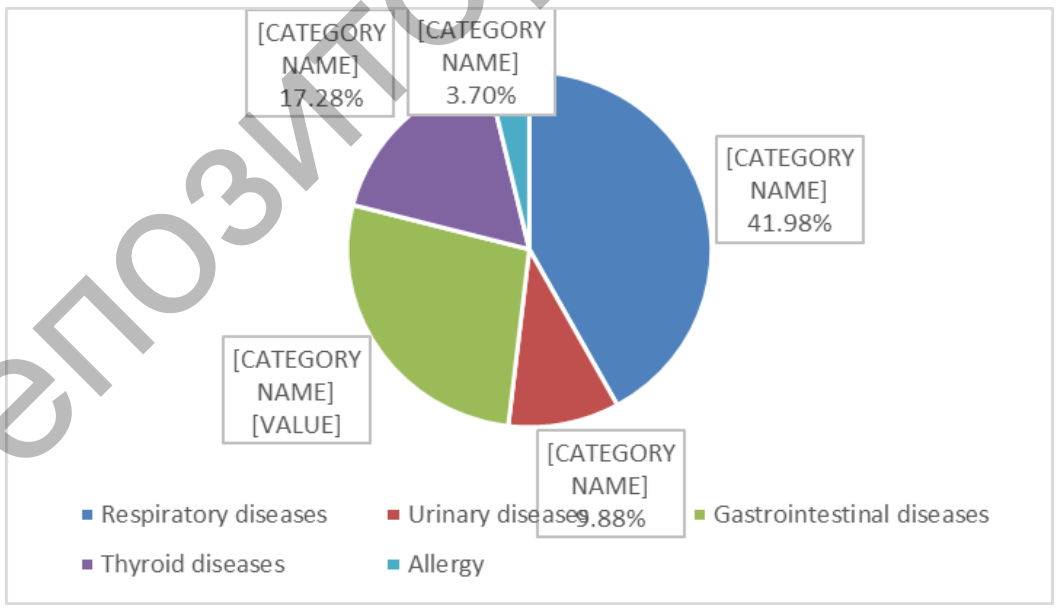


**Figure 4 – Comorbidities of DM**

Further review of the data indicated that the greatest number of admissions for the respiratory diseases was seen from the 12-18 years age group at 12 admissions, whereas the least number of admissions was from 1-3 years age group at 3.

In addition, 9 patients from the 4-6 years age category and 10 patients from the 7-11 years age category were also admitted with respiratory diseases.

The highest number of patients with urinary diseases was admitted from the 12-18 years age group, while the other categories each had one patient.

The majority of patients admitted with gastrointestinal diseases belonged to the 7-11 years age group while the least number of admissions was from the 4-6 years age group. 8 patients were admitted with thyroid pathologies from the 7-11 years age group and 6 were admitted from the 12-18 years age group. Only 3 adolescent patients were admitted with allergies.

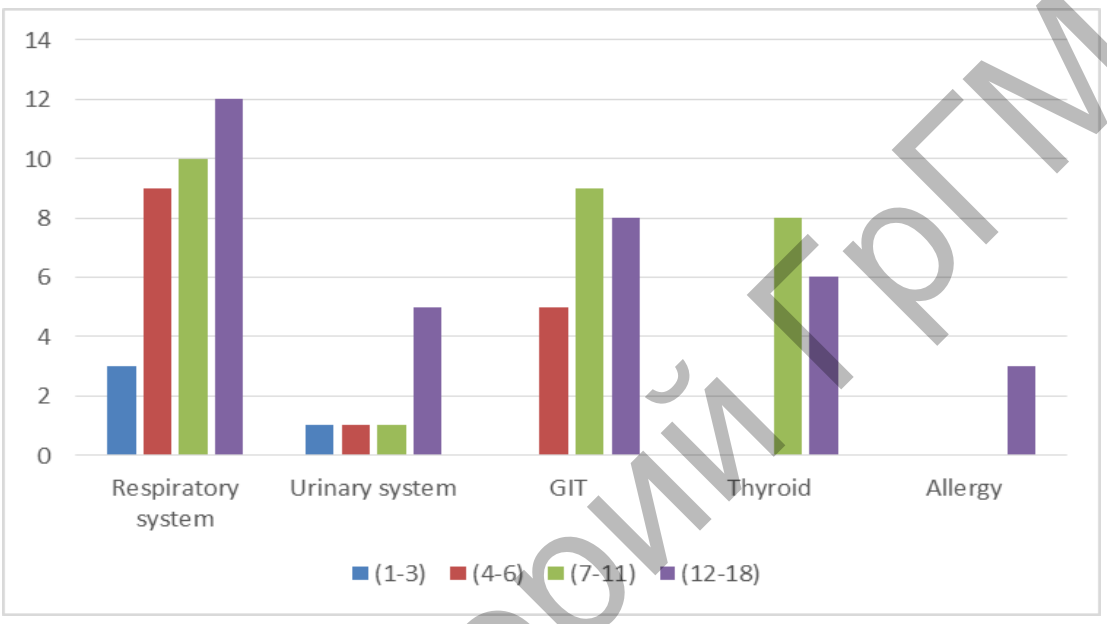


**Figure 6 – Age features of Diabetes Mellitus Comorbidities**

The majority of the patients were admitted as transfer patients from peripheral hospitals (63.95 %), and the least number of admissions were by self-referral (5.44 %). 18.37 % patients were brought in by ambulance, and 12.24 % were referred from the polyclinics.

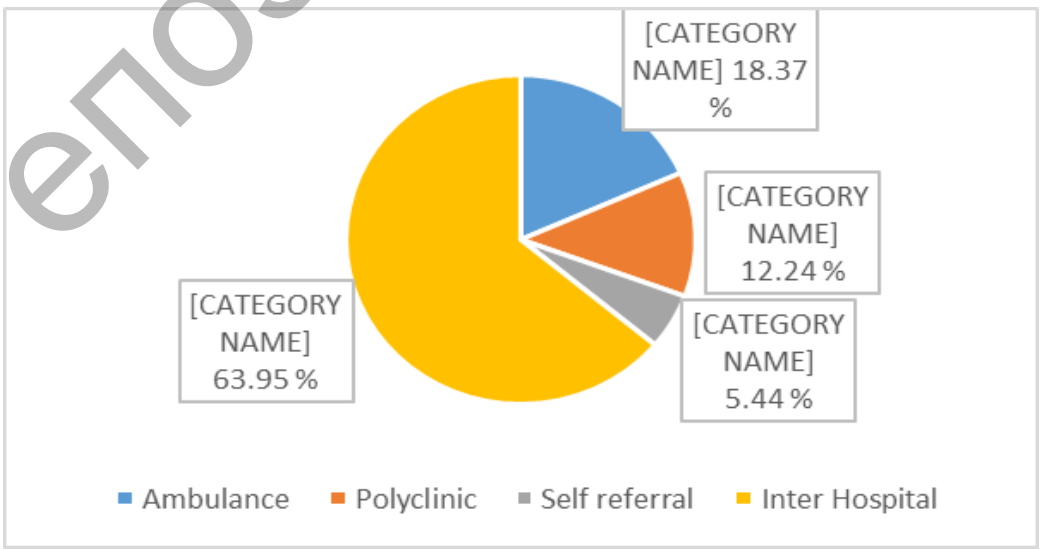


**Figure 7 – Way of admission**

***Conclusion.*** As per our study conducted, the greatest number of hospitalisations was seen in the adolescent age group 12-18 years, from which the majority were in the decompensated stage at the time of admission. This indicates that this age group requires more intensive monitoring and medical care.

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## ПИТАНИЕ И ФИЗИЧЕСКАЯ АКТИВНОСТЬ В РЕГУЛЯЦИИ МЕТАБОЛИЧЕСКОГО ГОМЕОСТАЗА

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## NUTRITION AND PHYSICAL ACTIVITY IN THE REGULATION OF METABOLIC HOMEOSTASIS

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**Аннотация**. Метаболический гомеостаз важен для поддержания здоровья, его нарушение приводит к ожирению и инсулинорезистентности.

Целью работы является анализ влияния питания и физической активности на обмен веществ. Использованы научные данные о регуляции метаболизма. Установлено, что сбалансированное питание и регулярные нагрузки улучшают липидный профиль и чувствительность к инсулину. Выявлена необходимость комплексного подхода для профилактики метаболических заболеваний.

**Ключевые слова**: метаболизм, гомеостаз, питание, физическая активность, инсулинорезистентность, обмен веществ, профилактика

**Abstract**. Metabolic homeostasis is important for maintaining health, its violation leads to obesity and insulin resistance. The aim of the work is to analyze the effect of nutrition and physical activity on metabolism. Scientific data