HEMATOLOGICAL DISORDERS AMONG SCHOOLCHILDREN IN THE FERGANA VALLEY - PREVALENCE, AGE-DEPENDENT DYNAMICS, AND PREVENTIVE IMPLICATIONS

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Annotation: This thesis investigates the prevalence and age-specific dynamics of diseases of the blood and blood-forming organs - predominantly iron deficiency anemia - among schoolchildren in the Fergana Valley. Data from three regional cohorts spanning 2013-2023 were analyzed using comparative epidemiological methods. The findings reveal that hematological pathologies constitute the leading nosological category across all age groups, with peak rates in adolescence. Early molecular-genetic screening and nutritional correction are substantiated as cost-effective preventive measures with significant public health implications.

Keywords: iron deficiency anemia, hematological morbidity, schoolchildren, micronutrient deficiency, nutritional status, hemoglobin level, ferritin

Today, micronutrient deficiency-related hematological disorders represent one of the most widespread yet systematically underaddressed public health challenges in pediatric populations across Central Asia. In the Fergana Valley, diseases of the blood and blood-forming organs - chiefly iron deficiency anemia - hold the leading position within the morbidity structure of children aged 0-14 years in all three studied regions. Nationally, micronutrient deficiency affects a substantial proportion of the school-age population, generating considerable economic losses: treatment costs per affected student reach 8,400,000 UZS annually in rural settings and 10,800,000 UZS in urban settings, underscoring the imperative for early detection through evidence-based diagnostic algorithms.

Morbidity data from Fergana, Andijan, and Namangan regions consistently demonstrate that diseases of the blood and blood-forming organs rank first in the 0-14 year cohort: Fergana - $297.7\pm0.5‰$, Andijan - $335.9\pm0.5‰$, Namangan - $348.9\pm0.6‰$. These rates not only persist but intensify in the 15-17 year cohort, reaching $317.6\pm1.4‰$ in Fergana, $362.5\pm1.6‰$ in Andijan, and $378.5\pm1.7‰$ in Namangan, indicating that pathological processes remain unresolved through the transitional developmental period. From a pathophysiological standpoint, iron deficiency anemia in this population is primarily attributable to insufficient dietary intake of heme iron, macro- and micronutrients, and vitamins, exacerbated by the absence of fortified nutritional programs in school settings. The methodological approach employed in the uslubiy tavsiyanoma

integrates biochemical, biometric, and molecular-genetic diagnostic tools - including ferritin quantification and DNA-level iron metabolism assessment - enabling precise differentiation of iron deficiency anemia from other hematological conditions such as hemolytic or aplastic anemia. Primary morbidity proportions for blood disorders are 36.5% in Fergana, 45.0% in Andijan, and 44.3% in Namangan, confirming that a large proportion of cases represent chronic or late-diagnosed conditions requiring longitudinal clinical monitoring. The application of daily dietary ration analysis using nutritional hygiene protocols allows identification of specific micronutrient gaps - particularly iron, folic acid, vitamin B12, and zinc - enabling targeted supplementation and correction of school nutrition programs. Urban-rural disparities further reveal that rural schoolchildren in Andijan's 0-14 cohort demonstrate higher hematological morbidity (1,230.6±0.5‰) than their urban counterparts (1,199.7±0.8‰), reflecting inequities in healthcare access and dietary diversity.

The study confirms that hematological disorders, particularly iron deficiency anemia, constitute the dominant pediatric pathology across the Fergana Valley. Systematic molecular-genetic screening and school-based nutritional intervention programs represent the most scientifically grounded and economically viable strategy for reducing disease burden.

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