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THE IMPORTANCE OF MACRO- AND MICRONUTRIENTS IN DIETARY INTAKE FOR THE GROWTH AND DEVELOPMENT OF CHILDREN (BASED ON 5 PRESCHOOL EDUCATION ORGANIZATIONS IN TASHKENT CITY)

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Abstract

Relevance. The healthy growth and development of children are directly dependent on balanced nutrition. Deficiencies in macronutrients (proteins, fats, and carbohydrates) and micronutrients (iron, calcium, iodine, zinc, and vitamins) have been extensively studied and confirmed by international researchers as primary causes of delays in physical and mental development. However, the prevalence of these deficiencies and their specific impact on the health of children attending preschool education organizations (PEO) in Tashkent remain insufficiently studied.

Research Aim. To evaluate the levels of macro- and micronutrients in the daily dietary intake of children attending preschool education organizations in Tashkent and to determine their impact on physical development.

Materials and Methods. The study involved 210 children aged 3–6 years from five districts of Tashkent (2024–2025). Dietary patterns were analyzed using a 7-day food diary method. Blood levels of hemoglobin, iron, calcium, iodine, zinc,



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and vitamin D were assessed based on data from family polyclinics, individual medical records, and periodic medical examination results. Indicators of physical development, including height, weight, and Body Mass Index (BMI), were also evaluated.

Research Results. Analysis of the 210 participants revealed that 68% of the children had calcium deficiency (at 58% of the daily requirement), 52% had iron deficiency (48%), 47% had iodine deficiency (55%), and 41% had zinc deficiency (52%). The dietary profile showed protein and complex carbohydrate intake below the norm, while simple carbohydrates and fats exceeded recommended levels. Among children with calcium and vitamin D deficiencies, 63% exhibited delayed bone age. Furthermore, 71% of children with iron deficiency showed decreased concentration, and 58% of those with iodine deficiency demonstrated poor learning performance.

Conclusions

Macro- and micronutrient deficiencies are widespread among children in Tashkent, negatively affecting their physical development. Dietary correction is essential through the inclusion of dairy products (calcium), meat and liver (iron, zinc), seafood (iodine), and sources of vitamin D. It is recommended to fortify nutritional programs for preschool-aged children with essential micronutrients. To normalize the nutritional status, the following recommendations were developed:

Include low-fat milk and yogurt (at least 300-400 ml daily), natural meat and poultry (50-70 g), eggs (3-4 per week), and sea fish (twice weekly) in the daily diet.

Maximize the restriction of simple carbohydrates (sugar, sweets, carbonated drinks), replacing them with fruits, vegetables, and whole-grain products.



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Ensure mandatory use of iodized salt. Administer prophylactic doses of vitamin D during the autumn-winter period (under medical supervision). Revise food programs in preschool education organizations to include fortified products (bread, milk, and juices enriched with iron, calcium, iodine, and vitamins).

The implementation of these measures will significantly improve the health status and ensure the full growth and development of children attending preschool institutions in Tashkent.

References.

1. Abdukadirova, L. K., Jalolov, N. N., & Akbaralieva, G. S. (2023). FOOD PRODUCTS THAT HELP FROM RADIATION.
2. Axmadaliyeva, N., Imamova, A., Nigmatullayeva, D., Jalolov, N., & Niyazova, O. (2022). Maktabgacha yoshdagi bolalarda sog 'lom turmush tarzini shakllantirishning dasturiy platformasi.
3. Jalolov, N. N., Mukhammadzokirov, S. S., Mirsagatova, M. R., Sultonov, E. Y., & Qobiljonova Sh, R. (2023). Yumshoq toqimalar va suyaklarning xavfli osmalarida MR-tomografiya yordamida radiologic diagnostikaning multimodal nur tekshirish usullari samaradorligini baholashni dasturlash.
4. Jalolov, N. N., Niyazova, O. A., & Khairullaeva, L. G. (2023). Studying the actual nutrition of students of technical institutions (uzbekistan, germany).
5. Kobiljonova, S. R., Jalolov, N. N., Sharipova, S. A., & Mirsagatova, M. R. (2022). SPECTRUM OF CAUSE-SIGNIFICANT ALLERGENS CAUSING POLYNOSIS IN CHILDREN.
6. Жалолов, Н. Н., Ахмадалиева, Н. О., Нигматуллаева, Д. Ж., & Хайдарова, М. З. (2022, April). Умумтаълим мактаблари бошланғич синф ўқитувчиларнинг саломатлиги бўлажак авлодни тарбиялашнинг асосий



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- мезони. Республиканской научно-практической конференция “ДНИ МОЛОДЫХ УЧЕННЫХ”.
7. Жалолов, Н. Н., Нуриддинова, З. И., Кобилжонова, Ш. Р., & Имамова, А. О. (2022). Главные факторы развития избыточного веса и ожирения у детей (Doctoral dissertation, O ‘zbekiston Respublikasi Sog ‘liqni Saqlash vazirligi, Toshkent tibbiyot akademiyasi, Koryo universiteti “Atrof muhit muhofazasining dolzarb muammolari va inson salomatligi” xalqaro ishtirok bilan Respublika 9-ilmiy-amaliy anjumani materiallari to ‘plami 153 bet).
 8. Ниязова, О. А., Мирсагатова, М. Р., & Абдусатторова, С. Ш. (2023). Изучение фактического питания студентов медицинских, технических институтов. International Multidisciplinary Conference.
 9. Садуллаева, Х. А., Садирова, М. Қ., Ахмадалиева, Н. О., & Мирсагатова, М. Р. (2024). Бошланғич синф ўқувчилари саломатлигида соғлом овқатланишнинг аҳамияти.
 10. Саломова, Ф. И., Ниязова, О. А., & Мирсагатова, М. Р. (2022). Гигиеническая оценка расписания средних классов Общеобразовательных школ наманганской области.