

Eurasian  
Research Bulletin

# Analysis Of Distribution Of Vitamins, Macro And Micro Elements Deficiency Among Children And Adolescents In Samarkand Region, According To Clinical Symptoms.

**Rakhimova Durdona  
Jurakulovna**

Assistant of the Department of General Hygiene and Ecology of  
Samarkand State Medical University

## ABSTRACT

Today, vitamin deficiency is one of the most common conditions among children. According to the results of the research, not only cases of monohypovitaminosis, but also cases of polyhypovitaminosis deficiency are increasing among children. [13,14,15,12,17,18]. At the same time, the increase in the number of diseases caused by vitamin deficiency shows the urgency of this problem and the need for urgent work to solve the problem. The organization of reasonable nutrition means that it is the main and important factor of improving the health status of children, ensuring harmony of mental and physical development [16,8,9,17,18,19,20]. We studied the nutritional status of 831 (414 boys and 417 girls) schoolchildren aged 7 to 17 years in cities and districts of Samarkand region. The results showed that 28.6% of schoolchildren had signs of vitamin deficiency, 9.8% had symptoms of monohypovitaminosis, and 18.8% had symptoms of polyhypovitaminosis.

### Keywords:

children and teenagers, vitamins, macro and micro elements.

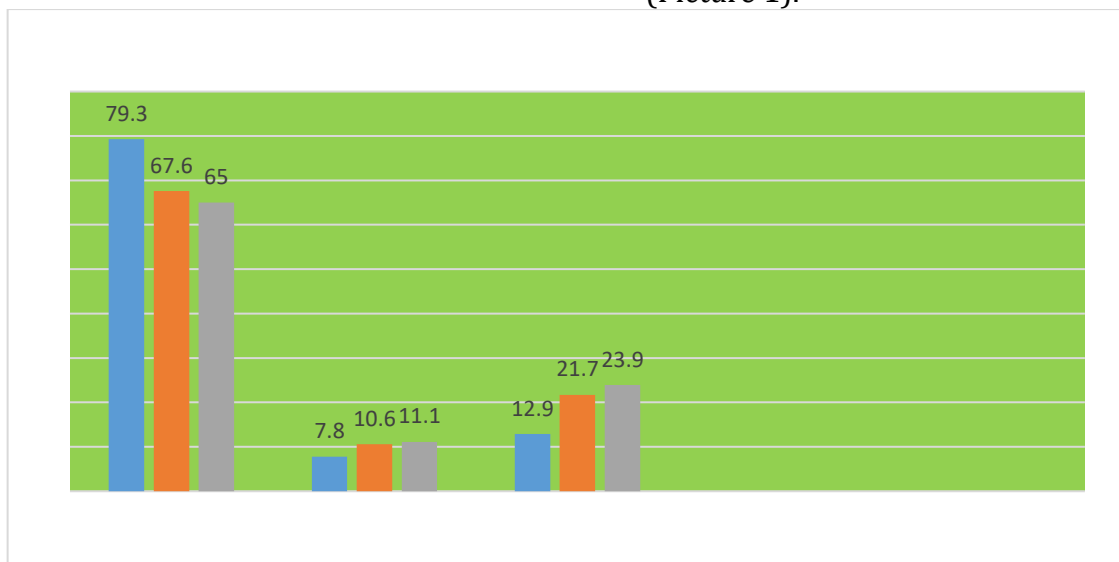
**Relevance of the topic:** Nutrition is an important factor that ensures normal growth and development of children and adolescents, contributes to an active and long life, and increases the body's resistance to adverse environmental factors. As a result of the deficiency or excess of macro and microelements, the appearance of direct diseases (anemia, cardiovascular disease, endemic goiter, diseases of the endocrine system, diseases of the gastrointestinal tract, etc.) leads to a decrease in the body's resistance to infectious diseases [17,18,19,20]. According to WHO (2020),  $\frac{3}{4}$  of the population of most countries of the world suffers from diseases related to poor nutrition. In this regard, the nutritional factor plays a leading role not only in the development of the above-mentioned diseases, but also in prevention, treatment, maintenance of remission and prevention of bad consequences [13].

**Materials and methods:** We conducted an examination and questionnaire among 831 (414 boys and 417 girls) schoolchildren aged 7 to 17 years in cities and districts of Samarkand region. In the study, the actual nutritional status of schoolchildren aged 7-17 years and the composition of food in the daily menu were analyzed. The nutritional balance was evaluated according to the values of basic nutrients, energy consumption and compared with the recommended energy norms of "Physiological need norms for energy and nutrients for different groups of the population of the Republic of Uzbekistan" (Needs for different age and gender groups of children SanPiN No. 0347-17). We studied the clinical signs of nutritional status disorders and their prevalence in schoolchildren aged 7-17 years.

**Results:** Clinical examination of signs of vitamin deficiency showed that 28.6% of children in the total examination had one or another sign of vitamin deficiency. Clinical signs of monohypovitaminosis were found in 9.8% of children, and polyhypovitaminosis characterized by the simultaneous detection of

symptoms of two or more vitamin deficiencies in one child was found in 18.8% of children.

Symptoms of monohypovitaminosis deficiency are rare in children, but the number of children with both symptoms of monohypovitaminosis and polyhypovitaminosis increased with age (Picture 1).



Picture 1 Prevalence of various vitamin deficiencies among children and adolescents

Symptoms of monohypovitaminosis in 7-10-year-old children - in every 8 out of 100 schoolchildren who participated in the survey, in 11-13-year-old and 14-17-year-old - in every 10 and 11 schoolchildren, respectively. Symptoms of polyhypovitaminosis were detected in every 22 11-13 year olds and every 24 teenagers aged 14-17 years compared to elementary school students (every 13 children).

All this is the result of insufficient intake of vitamins in the daily diet, which we previously found during the study.

Symptoms of vitamin B1 deficiency, including functional disorders of the gastrointestinal tract, were more common in girls, and the prevalence of symptoms  $p = 0.02$ ) was observed (Picture 33; Application 7, Table No. 1)

**Table No. 1**  
**Clinical symptoms and prevalence of nutritional status disorders among children and adolescents aged 7-10, 11-13, 14-17 years, (% in each age group)**

Symptoms	7-10 age%	11-13 age %	14-17 age %
Shortness of breath and tachycardia	0,56	0,8	0,57
Cracked lips	4,5	7,8	9
Tooth marks on the tongue	1,5	2,4	3,2
Redness of the tip of the tongue	3	6,8	6,9
Tired	5,1	8,7	8,5
Low appetite	4,5	9,5	8,2
Fragility and bleeding of gums	5,2	3,3	6,1

Seborrheic dermatitis	3.0	5,2	6,4
Heiloz	2.4	2,5	2,4
Angular stomatitis	3.9	5,2	6,6
Glossitis	1.5	2.4	3,2
Paleness of the skin	6,6	6.3	11,7
Dry skin	6,6	6.3	5,6
Hyperkeratosis	3,3	3,4	5,4
Hair dryness and brittleness	3,6	3.7	5,6
Follicular hyperkeratosis	1,2	0,82	1,06
Whiteness and cracking of the tongue Тилнинг оқариши ва ёрилиши	1,2	4,3	6,9

Among 11-13-year-old schoolchildren, prevalence of clinical symptoms in the form of shortness of breath, tachycardia was observed more than 7-10 and 14-17-year-old schoolchildren (0.56%) compared to (0.8%).

Among all examined, 4.5% of 7-10-year-old schoolchildren, 7.8% of 11-13-year-old schoolchildren and 9.0% of 14-17-year-old schoolchildren ( $p=0.001$ ) had signs of deficiency of vitamins V1, V2, including chapped lips.

1.5% of 7-10-year-old schoolchildren, 2.4% of 11-13-year-old schoolchildren, and 3.2% of 14-17-year-old schoolchildren had tooth marks on the tongue and swollen gums. 3.0% of elementary school students, 6.8% of middle school students, and 6.9% of high school students were found to have red tip of the tongue during examination. It was found that symptoms of deficiency of vitamins V1 and V2 are more frequent in girls than in boys ( $p=0.048$ ,  $p=0.02$ ).

5.1% of schoolchildren aged 7-10, 8.7% of schoolchildren aged 11-13, 8.5% of schoolchildren aged 14-17 ( $p = 0.01$ ) reported fatigue. At the same time, it was found that girls complained of fatigue 2.7 times more often ( $p=0.001$ ).

Decreased appetite was observed more often in schoolchildren aged 11-13 years (9.5%) and 14-17 years (8.2%) compared to schoolchildren aged 7-10 years (4.5%)  $p=0.001$ . It was observed that girls complained of decreased appetite more (2.8 times) than boys ( $p=0.001$ ).

Symptoms of vitamin C deficiency: fragility and bleeding gums were found in 7-10-

year-old schoolchildren (5.2%), 11-13-year-old (3.3%) and 14-17-year-old schoolchildren (6.1%) among those examined ( $p=0.02$ ).

During the medical examination of children, the combination of several vitamin deficiency symptoms was found. Thus, symptoms of deficiency of vitamins V2, RR: seborrheic dermatitis, cheilosis, angular stomatitis, glossitis in 3.0%, 2.4%, 3.9%, 1.5% in primary school students and 5.2%, 2.5%, 5.2 in secondary school students %, was determined at 2.4%. In higher classes, these symptoms were found to be 6.4%, 2.4%, 6.6% and 3.2% more in 3.2% of all examinees. Significant differences in the incidence rate of seborrhoeic dermatitis were found in the age groups of children ( $p=0.002$ ).

Prevalence of symptoms of vitamin A deficiency: paleness of the skin, dryness, hyperkeratosis, dryness and brittleness of hair in 7-10-year-old schoolchildren 6.6%, 6.6%, 3.3% , 3.6%, among 11-13-year-old schoolchildren It was found to be 6.3%, 6.3%, 3.7% and 11.7%, 5.6%, 5.6% among schoolchildren aged 14-17 ( $p = 0.001$ ). In the group of girls, gender differences were found in the prevalence of clinical symptoms of vitamin deficiency manifested by dry and brittle hair, their manifestation was 4.9 times more common in girls than in boys ( $p=0.001$ ).

An excess of keratin, which leads to the development of follicular hyperkeratosis, is associated with a lack of vitamins A, B, C and E.

Clinical signs of vitamin deficiency were noted in 11-13-year-old schoolchildren (0.82%), 7-10-year-old schoolchildren in 1.2% of cases, and 14-17-year-old schoolchildren in

1.06% of cases. Whiteness of the tongue is a sign of low intake of iron in the body with food products. Whiteness and cracking of the tongue was detected in 6.9% of the students of the lower class and 4.3% of the students of the middle class. It was found that these symptoms were less common in primary school children (1.2%) ( $p=0.001$ ) and this was related to the biological age of the children. This condition was observed to have a significantly higher prevalence among middle and high school age girls ( $p = 0.001$ ).

**Conclusion:** This study shows the urgency of the problem and emphasizes the need for continuous monitoring of children's nutrition. In addition, an important component of organizing the nutrition of children and adolescents is to increase the literacy of parents in matters of nutrition.

## References

1. Аминов З. З. и др. Влияние выбросов аммофосного производства на состояние здоровья детей и подростков //Academy. – 2019. – №. 10 (49). – С. 57-60.
2. Аскарва Н. К., Рахимова Д. Ж. ЭФФЕКТИВНОСТЬ СПЕЦИФИЧЕСКОГО ЛЕЧЕНИЯ МЕТАБОЛИЧЕСКИХ НАРУШЕНИЙ ОБУСЛОВЛИВАЮЩИХ СУДОРОГИ В ПЕРИОД НОВОРОЖДЕННОСТИ //НАУЧНЫЕ ИССЛЕДОВАНИЯ. – С. 68.
3. Боймуродов Х. Т. и др. ВЛИЯНИЕ АБИОТИЧЕСКИХ ФАКТОРОВ НА ЛЁТ ПЧЕЛ И СБОР МЁДА В САМАРКАНДСКОЙ ОБЛАСТИ //INTERNATIONAL RESEARCH FORUM-2022. – 2022. – С. 174-178.
4. Гаппарова Г. Н., Ахмеджанова Н. И. COVID-19 PANDEMIYASI DAVRIDA BOLALARDA PIELONEFRITNING KLINIK-LABORATOR XUSUSIYATI, DIAGNOSTIKASI VA DAVOLASH //ЖУРНАЛ РЕПРОДУКТИВНОГО ЗДОРОВЬЯ И УРОНЕФРОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ. – 2022. – Т. 3. – №. 4.
5. Karimov A. A. INSON ORGANIZMINING OG'IR METALLAR BILAN ZARARLANISH YO'LLARI //Academic research in educational sciences. – 2022. – Т. 3. – №. 4. – С. 56-61.
6. Каримов А. А., Абдумуминова Р. Н. САНИТАРНО-ГЕЛЬМИНТОЛОГИЧЕСКОЕ СОСТОЯНИЕ ОТКРЫТЫХ ВОДНЫХ БАССЕЙНОВ НА ТЕРРИТОРИЯХ НАСЕЛЕНИЯ ВОСТОЧНОГО ЗИРАБУЛАКА //FUNDAMENTAL SCIENCE AND TECHNOLOGY. – 2021. – С. 263-268.
7. Мусурманов Ф. И. и др. Входные ворота COVID-19: челюстно-лицевая область. Значение использования средств защиты при оказании неотложной помощи у больных с флегмонами челюстно-лицевой области //Интернаука. – 2020. – №. 44. – С. 57-59.
8. Мусурманов Ф. И., Шодиев С. С. Микробиологическая оценка эффективности фитотерапии при флегмонах челюстно-лицевой области //Проблемы биологии и медицины. – 2020. – Т. 2. – №. 94. – С. 143.
9. Мусурманов Ф. И., Шодиев С. С. Случай перфорации дна гайморовой пазухи с двух сторон в области 26 и 15 зубов //Вестник науки и образования. – 2020. – №. 20-1 (98). – С. 66-69.
10. Наимова З. С. и др. Влияние Выбросов Химического Производства На Состояние Здоровья Детей И Подростков //AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI. – 2022. – С. 288-292.
11. Рахимова Д. Д., Шайхова Г. И. 7-17 YOSHLI MAKTAB OQUVCHILARINING JISMONIY RIVOJLANISHINI VANOLASH //ЖУРНАЛ РЕПРОДУКТИВНОГО ЗДОРОВЬЯ И УРОНЕФРОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ. – 2022. – Т. 3. – №. 4.
12. Рахимова Д. Ж. и др. ОБОСНОВАНИЕ ЛЕЧЕНИЯ ПНЕВМОНИИ КОРОНАВИРУСНОЙ ЭТИОЛОГИИ

- (COVID-19) КОМБИНАЦИЕЙ ПУЛЬС ТЕРАПИИ С ИММУНОДЕПРЕССАНТАМИ //Re-health journal. – 2020. – №. 4 (8). – С. 59-64.
13. Ризаев Ж. А., Нурмаматова К. Ч., Тухтаров Б. Э. ОРГАНИЗАЦИЯ ЛЕЧЕБНО-ПРОФИЛАКТИЧЕСКОЙ ПОМОЩИ ПРИ АЛЛЕРГИЧЕСКИХ ЗАБОЛЕВАНИЯХ У ДЕТЕЙ //ББК: 51.1 лоя43 С-56 А-95. – С. 113.
14. Турсунова Д., Раджабов З. ОЦЕНКА РЕПРОДУКТИВНОГО СОСТОЯНИЯ ЖЕНЩИН-РАБОТНИЦ ПРОМЫШЛЕННЫХ ПРЕДПРИЯТИЙ //O'rta Osiyo ta'lim va innovatsiyalar jurnali. – 2022. – Т. 1. – №. 2. – С. 9-11.
15. Тухтаров Б. Э., Халилов Ш. С., Тангиров А. Л. Оценка статуса фактического питания профессиональных спортсменов //Вестник науки. – 2020. – Т. 1. – №. 1. – С. 32-37.
16. Тухтаров Б. Э. Сравнительная оценка биологической ценности среднесуточных рационов питания профессиональных спортсменов Узбекистана //Гигиена и санитария. – 2010. – №. 2. – С. 67-69.
17. Тухтаров Б. Э. Белковая обеспеченность профессиональных спортсменов, занимающихся борьбой кураш //Вопросы питания. – 2008. – Т. 77. – №. 1. – С. 46-47.
18. Тураев Б. Т., Очиллов У. У., Икромов П. Х. Частота и структура неврологических нарушений у больных подросткового возраста с психическими расстройствами //VOLGAMEDSCIENCE. – 2021. – С. 462-463.
19. Тураев Б. Т., Икромов П. Х., Жабборов Х. Х. Тревожно-депрессивные расстройства в период беременности //VOLGAMEDSCIENCE. – 2021. – С. 460-461.
20. Уралов У. Б. БИОЛОГИЧЕСКИЕ РАЗНООБРАЗИЕ И ПУТИ ЕГО СОХРАНЕНИЯ //O'ZBEKISTONDA FANLARARO INNOVATSIYALAR VA ILMIY TADQIQOTLAR JURNALI. – 2022. – Т. 1. – №. 11. – С. 232-236.
21. Уралов У., Баратова Р., Раджабов З. УЛУЧШЕНИЕ САНИТАРИИ ПИТЬЕВОЙ ВОДЫ //Eurasian Journal of Academic Research. – 2023. – Т. 3. – №. 2 Part 2. – С. 176-179.
22. Халманов Н. Т., Элмуродова М. А. Влияние сидерации на плодородие сероземов, рост, развитие и урожайность хлопчатника Зерафшанской долины //Плодородие. – 2019. – №. 2 (107). – С. 33-37.
23. Халманов Н., Элмуродова М. EFFECT OF GREEN MANURE APPLICATION ON SOIL FERTILITY, GROWTH, DEVELOPMENT AND YIELD OF COTTON IN TYPICAL SANDY LOAM SIEROZEM SOIL CONDITIONS OF ZARAFSHAN VALLEY //Наука и мир. – 2019. – Т. 1. – №. 2. – С. 75-77.
24. Шайхова Г.И., Эрматов Н.Ж. Рахимов Б.Б. «Санитарно-эпидемиологические требования к организации питания обучающихся в общеобразовательных школах, учреждениях средне специального профессионального образования» СанПиН №0288-10 от 01.11.2010г.
25. Шайхова Г.И., Рахимов Б.Б. «Гигиеническое обоснование рационов питания при ожирении» Методические рекомендации Ташкент. 2010. С.36.
26. Boysin K. et al. Influence of Xenobiotics on Organisms and Methods of their Detoxification //Web of Scholars: Multidimensional Research Journal. – 2022. – Т. 1. – №. 7. – С. 81-84.
27. Corshanbiyevich X. N., Narmuratovich R. Z., Ergashovich K. I. TOGRI OVATLANISH MEYORLARI //Galaxy International Interdisciplinary Research Journal. – 2022. – Т. 10. – №. 11. – С. 160-163.
28. Gapparova G. N. Clinical and laboratory diagnosis of uricosuric nephropathy in children //Web of Scientist: International Scientific Research Journal. – 2022. – Т. 3. – №. 5. – С. 2064-2070.

29. Gapparova G., Akhmedjanova N. CLINICAL AND LABORATORY FEATURES, DIAGNOSIS AND TREATMENT OF PYELONEPHRITIS IN CHILDREN DURING THE COVID-19 PANDEMIC //Академические исследования в современной науке. – 2022. – Т. 1. – №. 17. – С. 186-187.
30. Gapparova G. N. Covid-19 Pandemiyasi Davrida Bollard Pielonefritning Klinikolaborator Xususiyatlari, Diagnostikasi //Texas Journal of Multidisciplinary Studies. – 2022. – Т. 4. – С. 127-129.
31. Gapparova G., Akhmedjanova N. CLINICAL AND LABORATORY CHARACTERISTICS, DIAGNOSIS OF PYELONEPHRITIS IN CHILDREN UNDER COVID-19 PANDEMIC CONDITIONS //Theoretical aspects in the formation of pedagogical sciences. – 2022. – Т. 1. – №. 6. – С. 114-114.
32. Islamovna S. G., Jurakulovna R. D., Gulistan K. Current state of the problem of rationalization of schoolchildren's nutrition. – 2022.
33. Jurakulovna R. D. et al. EFFECTIVENESS OF STREPTOKINASE AND PROPOFOL DRUGS IN PATIENTS WITH CORONAVIRUS DELTA STRAW (EXAMPLES FROM PRACTICE). – 2021.
34. Khitaev B. A. et al. Hematological Indicators under the Influence of Zinc Sulfate in the Experiment //Web of Scholars: Multidimensional Research Journal. – 2022. – Т. 1. – №. 7. – С. 77-80.
35. 36.Kholmonov N., Matluba E. Siderations Improve the Chemical Properties of Gray-Earth Soils in Uzbekistan //Eurasian Journal of Research, Development and Innovation. – 2022. – Т. 7. – С. 70-73.
36. 37.MATLUBA E. Improvement Of Ecological Status Of Soil In Organic Agriculture //JournalNX. – Т. 6. – №. 08. – С. 66-69.
37. Naimova Z. S., Kurbanova X. A., Mallaeva M. M. INFLUENCE OF XENOBIOTICS ON THE FUNCTIONAL STATUS OF THE CARDIORESPIRATORY SYSTEM IN CHILDREN AND ADOLESCENTS //Eurasian Journal of Medical and Natural Sciences. – 2022. – Т. 2. – №. 5. – С. 138-140.
38. 39.Naimova Z. et al. Hygienic Assessment Of Emission Influence From A Chemical Plant On Population's Household Conditions, Well-Being And Health //The American Journal of Medical Sciences and Pharmaceutical Research. – 2021. – Т. 3. – №. 01. – С. 76-80.
39. Norbuvaevna A. R. The importance of nitrates in food safety //Conference Zone. – 2022. – С. 148-150.
40. Narbuvaevna A. R., Murodulloyevna Q. L., Abduraxmanovna U. N. Environmentally friendly product is a Pledge of our health! //Web of Scientist: International Scientific Research Journal. – 2022. – Т. 3. – №. 02. – С. 254-258.
41. Narbuvaevna A. R., Karimovich B. Z., Mahramovna M. M. Improving Food Safety and Improving the Fundamentals of Reducing the Negative Effects on The Environment //Eurasian Research Bulletin. – 2022. – Т. 5. – С. 41-46.
42. Narbuvaevna A. R. et al. Explore Ecological and Hygiene Assignment of Soil Contamination With Heavy Metals //Central Asian Journal of Medical and Natural Science. – 2022. – Т. 3. – №. 3. – С. 107-111.
43. Norbuvaevna A. R., Maxramovna M. M., Karimovich B. Z. Studying the influence of agricultural factors on the quality of the fruit of Peach plants //Web of Scientist: International Scientific Research Journal. – 2022. – Т. 3. – №. 4. – С. 1353-1357.
44. Nurmamatovich F. P., Jurakulovna R. D. The importance of the international hassp system in the production of quality and safe confectionery products //ACADEMICIA: An International Multidisciplinary Research Journal. – 2021. – Т. 11. – №. 10. – С. 1184-1186.
45. Nurmuminovna G. G. In the post period of covid-19 diseasespecific clinical-laboratory properties and diagnosis of pyelonephritis in children //ACADEMICIA: An International

- Multidisciplinary Research Journal. – 2022. – T. 12. – №. 4. – C. 55-58.
46. Ra A. et al. INVESTIGATE SOIL CONTAMINATION WITH HEAVY METALS WHILE COMMUNITY HEALTH //Web of Scientist: International Scientific Research Journal. – 2022. – T. 3. – №. 4. – C. 1358-1363.
47. 48. Tuxtarov B. E., Elmurodova L. X. Q. O'ZBEKISTONDA TERI LEYSHMANIOZINING TARQALISHI VA UNING OLDINI OLISH CHORATADBIRLARI //Scientific progress. – 2023. – T. 4. – №. 2. – C. 42-48.
48. Zhurakulovna R. D., Shomuratovna B. R., Narmuminovna G. G. HYGIENIC RECOMMENDATIONS FOR THE PREVENTION OF SCHOOL MYOPIA AND OTHER VISUAL IMPAIRMENTS IN CHILDREN OF PRIMARY SCHOOL AGE //American Journal of Interdisciplinary Research and Development. – 2022. – T. 6. – C. 29-38.
49. Sh B. R. et al. Environmentally Friendly Product is a Pledge of Our Health //Texas Journal of Multidisciplinary Studies. – 2022. – T. 9. – C. 48-50.