PHYSIOLOGICAL REQUIREMENTS OF THE RURAL POPULATION FOR CERTAIN MICRONUTRIENTS AND THEIR ADEQUACY

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Аннотация: *В данной статье на научной основе проанализированы физиологические потребности сельского населения в отдельных микронутриентах, а также уровень их обеспеченности за счёт рациона питания. В ходе исследования была оценена структура питания населения, проживающего в сельской местности, разнообразие рациона и его сезонные особенности, а также проведено сравнение обеспеченности важными микронутриентами с рекомендуемыми нормами. Полученные результаты показали наличие дефицита отдельных микронутриентов в рационе сельского населения. Эти дефициты могут оказывать негативное влияние на обмен веществ, костно-минеральную систему и функции иммунитета организма. На основе результатов исследования разработаны научно-практические рекомендации, направленные на оптимизацию питания сельского населения и улучшение обеспеченности микронутриентами.*

Ключевые слова: *сельское население, микронутриенты, рацион питания, физиологическая потребность, минеральные вещества, кальций, фосфор, здоровое питание*

Annotation: *This article scientifically analyzes the physiological requirements of the rural population for certain micronutrients and the level of their adequacy through dietary intake. The study evaluated the dietary structure of rural residents, the diversity of their diet, and its seasonal characteristics, and compared the intake of key micronutrients with recommended standards. The results revealed deficiencies of certain micronutrients in the diets of the rural population. These deficiencies may negatively affect metabolism, the bone–mineral system, and immune function. Based on the research findings, scientific and practical recommendations were developed to optimize the nutrition of the rural population and improve micronutrient adequacy*

Keywords: *rural population, micronutrients, dietary intake, physiological requirement, mineral substances, calcium, phosphorus, healthy nutrition*

INTRODUCTION

Today, ensuring rational nutrition is considered one of the priority directions in strengthening public health, preventing diseases, and increasing mental and physical

work capacity. In particular, the importance of micronutrients-vitamins and minerals-in the functioning of the body is determined by their essential roles in metabolism, the immune system, bone–mineral metabolism, and physiological processes.

Micronutrient deficiencies can negatively affect public health, leading to the development of chronic diseases and a decline in work capacity [6,7].

The issue of physiological requirements for micronutrients among the rural population is of particular importance.

This is explained by the monotonous and seasonal nature of the diets of people living in rural areas, as well as limited access to certain food products. As a result, deficiencies of calcium, iron, phosphorus, zinc, and some other minerals may be observed [3,4].

In this regard, scientifically assessing the physiological requirements of the rural population for micronutrients, determining the compliance of dietary composition with current regulatory standards, and addressing identified deficiencies are of significant scientific and practical importance.

The aim of this article is to analyze the physiological needs of the rural population for certain micronutrients and to assess the level of their adequacy through dietary intake [7,9].

RESEARCH METHODOLOGY.

Our study involved individuals engaged in mental work who reside in several rural settlements of Guzor district in the Kashkadarya region. The current dietary status of 62 respondents was assessed using questionnaire and survey methods. The study was conducted during the autumn season of 2025.

The participants were aged 30–39 years, including 41 women and 21 men. According to the questionnaire method, respondents recorded all food products consumed over the course of one week (including Sunday) in a specially designed questionnaire.

The content of certain micronutrients in the foods listed in the questionnaires was determined.

For this purpose, the chemical composition of food products was calculated using specialized food composition tables [1,2].

Mathematical calculations [5] and statistical processing of the questionnaire data were performed using Microsoft Excel 2010 and Origin 6.1 software for Windows.

RESULTS AND DISCUSSIONS.

The conducted studies indicate that the actual diet of the rural population, particularly the amount of certain micronutrients in their daily food intake, does not comply with the established normative requirements.

The obtained results are presented in Figure below.

RESULTS OF COMPARING MINERAL INTAKE WITH PHYSIOLOGICAL NORMS (n=62).

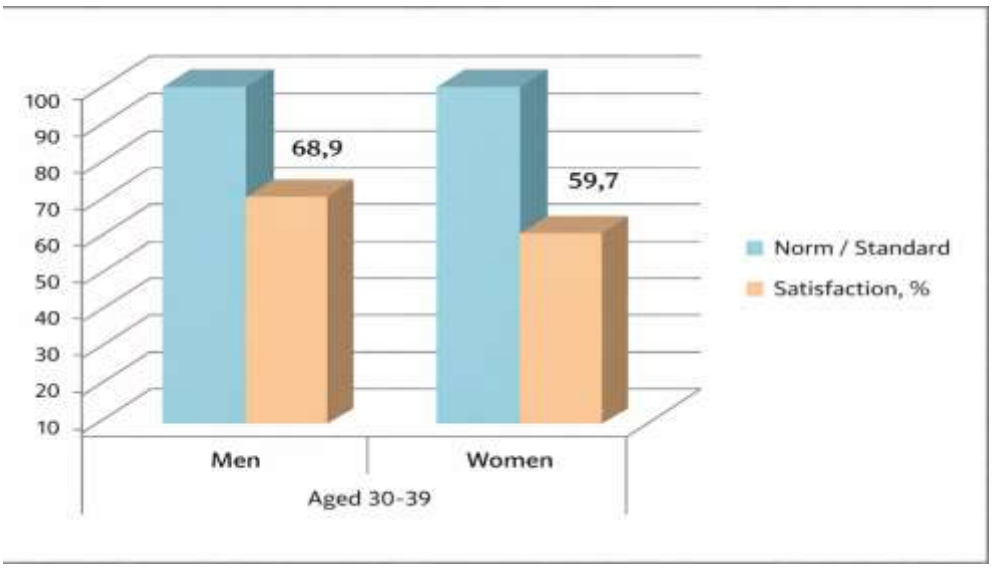

Figure. Percentage of calcium content in the diets of individuals engaged in mental work in certain villages of Guzor district

According to the study findings, the intake of calcium and phosphorus in the diets of men and women aged 30–39 was found to be insufficient when compared with the current physiological standards. Specifically, the average calcium intake in men's diets was 689.2 mg, which covers 68.9% of the recommended norm of 1000 mg. In women, this indicator was even lower, amounting to 597.4 mg (59.7%). This situation indicates an insufficient intake of calcium in the diet, which may lead to reduced mineralization of bone tissue, osteopenia, and an increased risk of developing osteoporosis in the future.

Although the results for phosphorus were relatively satisfactory, they did not fully meet the recommended levels. In men, the average phosphorus intake was 493 mg, which accounted for 82.1% of the recommended 600 mg.

In women, phosphorus intake was 476 mg (79.3%). Insufficient phosphorus consumption can negatively affect energy metabolism, cell membrane integrity, and the normal functional state of bone tissue.

The differences observed between men and women are explained by dietary composition, eating habits, and physiological needs. The lower levels of calcium and phosphorus intake in women are particularly important for those of reproductive age, as this may create conditions for impaired bone–mineral metabolism in the future.

Overall, the results indicate the need to enrich the diets of people aged 30–39 with foods high in calcium and phosphorus (dairy products, fish, legumes, and nuts). This is important for preventing mineral deficiencies and for strengthening health.

CONCLUSION/RECOMMENDATIONS.

The results of the study showed that the intake of important minerals such as calcium and phosphorus in the diets of men and women aged 30–39 does not fully meet the recommended physiological standards. Specifically, calcium intake in men covered 68.9% of the recommended norm, while in women it was 59.7%, clearly indicating a calcium deficiency. Although phosphorus intake was relatively higher, it

still amounted to only 82.1% of the norm in men and 79.3% in women, remaining below the recommended level. These deficiencies may negatively affect bone strength, mineral metabolism, and overall metabolic processes. In particular, the lower levels of calcium and phosphorus in women increase the risk of future impairments in bone–mineral metabolism. The observed differences between men and women can be explained by variations in dietary structure, food choices, and specific physiological needs.

Overall, the study results indicate the necessity of enriching the diets of people aged 30–39 with foods high in calcium and phosphorus, as well as widely promoting the principles of rational nutrition. These measures are crucial for preventing mineral deficiencies, reducing the risk of musculoskeletal diseases, and strengthening public health.

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