



## DETERMINING THE PROBLEMS OF DEFICIENCY OF MACRO-MICROELEMENTS IN THE DIET OF CHILDREN OF INFANT AGE

Rasulova Nilufar  
Aminova Amaliya  
Azamatova Fazilat

Tashkent Pediatric medical institute (Uzbekistan)

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### ABSTRACT

*Optimal nutrition is crucial for the healthy growth and development of infants, and deficiencies in essential macro- and microelements can have detrimental effects on their health. This article aims to determine the problems associated with deficiency of macro- and microelements in the diet of infants. Through a comprehensive review of existing literature, the study explores the factors contributing to nutrient deficiencies in this vulnerable population, including suboptimal breastfeeding and complementary feeding practices, socio-economic disparities, and limited access to nutrient-rich foods. By identifying key challenges and determinants of nutrient deficiencies, this article provides valuable insights for healthcare professionals, policymakers, and caregivers to develop targeted strategies for addressing these issues and promoting optimal infant nutrition.*

### INTRODUCTION

Optimal nutrition is fundamental for the healthy growth and development of infants, laying the foundation for their future health outcomes [1]. During the infant stage, rapid growth and development require adequate intake of macro- and microelements, including calcium, iron, zinc, and vitamins, to support various physiological functions [2]. However, deficiencies in these essential nutrients can have profound implications for infant health, leading to growth stunting, impaired cognitive development, and increased susceptibility to infections [3]. Despite efforts to promote infant nutrition, deficiencies of macro- and microelements persist as significant public health concerns worldwide [1]. Several factors contribute to these deficiencies, including suboptimal breastfeeding practices, inadequate complementary feeding, socio-economic disparities, and limited access to nutrient-rich foods [4,5]. Additionally, cultural beliefs, food taboos, and lack of awareness about nutritional requirements further exacerbate the problem [6]. Understanding the determinants and challenges associated with deficiency of macro- and microelements in the diet of infants is crucial for developing effective interventions and policies to address these issues. By



identifying the root causes of nutrient deficiencies, healthcare professionals, policymakers, and caregivers can implement targeted strategies to improve infant nutrition and reduce the burden of malnutrition-related morbidity and mortality. This article aims to explore the problems of deficiency of macro- and microelements in the diet of infants, examining the underlying factors contributing to these deficiencies. Through a comprehensive review of existing literature, we seek to provide insights into the complexities of infant nutrition and highlight the importance of addressing nutrient deficiencies in this vulnerable population.

## **MATERIALS AND METHODS**

### **Suboptimal Breastfeeding Practices:**

Breastfeeding is the optimal source of nutrition for infants, providing essential macro- and microelements necessary for growth and development [3]. However, suboptimal breastfeeding practices, such as early cessation of breastfeeding and lack of exclusive breastfeeding for the first six months of life, contribute to nutrient deficiencies in infants [7]. Infants who are not breastfed or receive inadequate breast milk may experience deficiencies in key nutrients, including vitamin D, iron, and zinc [8].

### **Inadequate Complementary Feeding:**

Introduction of complementary foods is essential to meet the increasing nutrient requirements of infants as they transition to solid foods [2]. However, inappropriate timing and quality of complementary feeding can lead to deficiencies in macro- and microelements. Delayed introduction of complementary foods or inadequate diversity and quantity of foods can result in insufficient intake of essential nutrients, such as iron, calcium, and vitamin A [9].

### **Socio-Economic Disparities:**

Socio-economic factors significantly influence access to nutrient-rich foods and dietary practices among infants [10]. Families with limited financial resources may struggle to afford nutritious foods, leading to reliance on inexpensive, energy-dense, but nutrient-poor alternatives. As a result, infants from low-income households are at higher risk of nutrient deficiencies, particularly in communities where food insecurity is prevalent [1].

### **Cultural Beliefs and Practices:**

Cultural beliefs and practices surrounding infant feeding and dietary choices can also impact nutrient intake and contribute to deficiencies in macro- and microelements [11]. Certain cultural practices, such as food taboos and restrictive diets, may limit the variety of foods available to infants, resulting in inadequate nutrient intake. Moreover, misconceptions about infant feeding and nutrition may perpetuate suboptimal dietary practices, further exacerbating the problem of nutrient deficiencies [12].

### **Limited Access to Nutrient-Rich Foods:**

Limited access to nutrient-rich foods, including fruits, vegetables, and animal-source foods, can hinder infants' ability to obtain essential macro- and microelements from their diet [13]. Inadequate availability and affordability of nutritious foods in certain regions or communities may restrict infants' access to diverse and balanced diets, increasing their susceptibility to nutrient deficiencies [14].

Addressing the problems of deficiency of macro- and microelements in the diet of infants requires multifaceted interventions targeting breastfeeding promotion, improved



complementary feeding practices, socio-economic support for vulnerable families, culturally sensitive nutrition education, and initiatives to enhance access to nutrient-rich foods.

## RESULT AND DISCUSSIONS

The examination of deficiencies in macro- and microelements in the diet of infants reveals several significant findings and discussions:

### Prevalence of Deficiencies:

Studies consistently highlight the widespread prevalence of deficiencies in macro- and microelements among infants worldwide. Research indicates that a substantial proportion of infants suffer from inadequate intake of essential nutrients, including iron, calcium, vitamin D, and zinc [5, 6]. This prevalence underscores the urgent need to address nutritional inadequacies in this vulnerable population.

### Impact on Growth and Development:

Deficiencies in macro- and microelements during infancy have profound implications for growth and development. Insufficient intake of key nutrients can impair physical growth, cognitive development, and immune function, leading to long-term health consequences [3]. The detrimental effects of nutrient deficiencies underscore the importance of early intervention to mitigate their impact on infant health.

### Contributing Factors:

Various factors contribute to deficiencies in macro- and microelements in the diet of infants. Suboptimal breastfeeding practices, such as early cessation of breastfeeding and lack of exclusive breastfeeding, contribute to deficiencies in key nutrients, including iron and vitamin D [12]. Additionally, inadequate complementary feeding practices, socio-economic disparities, and limited access to nutrient-rich foods exacerbate the problem [7].

### Challenges in Intervention:

Addressing deficiencies in macro- and microelements among infants presents numerous challenges. Strategies to promote optimal breastfeeding and complementary feeding practices require multifaceted approaches that consider socio-cultural factors, economic constraints, and healthcare system barriers. Furthermore, initiatives to improve access to nutrient-rich foods must address structural inequalities and food insecurity to ensure equitable outcomes for all infants [9].

### Need for Comprehensive Solutions:

Given the multifactorial nature of nutrient deficiencies in infants, addressing these issues requires comprehensive, integrated solutions. Efforts to improve infant nutrition must encompass policy-level interventions, community-based programs, and individual-level education and support [10]. Collaborative efforts among healthcare professionals, policymakers, and caregivers are essential to develop and implement effective strategies to promote optimal infant nutrition and address deficiencies in macro- and microelements.

In conclusion, the examination of deficiencies in macro- and microelements in the diet of infants reveals significant challenges and complexities. Addressing these issues requires a multi-faceted approach that considers the various determinants of nutrient deficiencies and employs comprehensive strategies to promote optimal infant nutrition and mitigate the long-term health consequences of inadequate nutrient intake.

## CONCLUSION



In conclusion, the examination of deficiencies in macro- and microelements in the diet of infants underscores the critical importance of addressing nutritional inadequacies to ensure optimal growth and development. The prevalence of deficiencies in essential nutrients, such as iron, calcium, vitamin D, and zinc, highlights the urgent need for intervention to mitigate their impact on infant health outcomes.

Efforts to promote optimal infant nutrition must prioritize breastfeeding promotion, improve complementary feeding practices, address socio-economic disparities, and enhance access to nutrient-rich foods. Collaborative efforts among healthcare professionals, policymakers, and caregivers are essential to develop and implement effective strategies to address deficiencies in macro- and microelements and mitigate the long-term health consequences of inadequate nutrient intake in infants.

By addressing the root causes of nutrient deficiencies and implementing targeted interventions, we can strive towards ensuring that all infants have access to the nutrients they need for healthy growth and development, setting the stage for a lifetime of well-being.

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