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Prevalence of Anemia and Associated Factors in Children Under Five Years in Saudi Arabia: A Comprehensive Review

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ABSTRACT

Anemia in children under five years of age is a significant public health concern in Saudi Arabia, with potential impacts on growth, cognitive development, and overall health. This review aims to analyze the prevalence of anemia among young children in Saudi Arabia, identify associated risk factors, and evaluate current interventions to address this issue. The findings suggest that anemia prevalence remains high in certain regions and among specific populations, often associated with factors such as nutritional deficiencies, socioeconomic conditions, and maternal health. Addressing anemia in early childhood requires comprehensive strategies, including nutrition programs, public health education, and health policy interventions/

Keywords: Prevalence of Anemia, Associated Factors in Children Under Five Years, Associated Factors.

Introduction

Anemia is a condition characterized by a deficiency in the number or quality of red blood cells or hemoglobin, which impairs oxygen delivery to tissues. In children, anemia can lead to developmental delays, reduced immunity, and increased susceptibility to infections. According to the World Health Organization (WHO), anemia is considered a major health concern among children under five, particularly in developing countries and regions facing nutritional challenges (1). In Saudi Arabia, while health infrastructure and access to medical care have improved, anemia among children remains prevalent, with iron deficiency being one of the primary causes (2).

1. Prevalence of Anemia in Children Under Five in Saudi Arabia

Recent studies indicate that the prevalence of anemia among children under five in Saudi Arabia varies by region and demographic factors(2). A study reported an anemia prevalence of 30-40% in some rural areas, with urban regions showing slightly lower rates. Other studies have reported prevalence rates of around 20-30% nationally . The wide range of prevalence highlights regional disparities and suggests that socioeconomic and environmental factors may play significant roles in the risk of anemia among young children(3,4).

2. Associated Factors

2.1. Nutritional Deficiencies Iron deficiency is the most common cause of anemia among young children worldwide and in Saudi Arabia. This deficiency is often linked to inadequate dietary intake of iron-rich foods, such as red meat, poultry, and fortified cereals, as well as a lack of foods that enhance iron absorption, like vitamin C-rich fruits and vegetables. Additionally, studies have shown that deficiencies in other nutrients, such as vitamin B12 and folate, can contribute to anemia risk in children .Efforts to improve children's diets through nutritional education and access to diverse foods are essential in combating anemia.(5)

2.2. Socioeconomic Status Lower socioeconomic status is associated with higher anemia rates due to limited access to nutritious food and health care services. Families in lower-income brackets may be unable to afford iron-rich foods or supplements, leading to higher rates of iron-deficiency anemia among their children. Additionally, children from low-income families may face higher rates of infections and illnesses, which can exacerbate or contribute to anemia. A study) highlights that children from

lower-income families in rural areas of Saudi Arabia have higher anemia rates than those from higher-income, urban families(6)

2.3. Maternal Health and Education Maternal anemia and poor maternal health are significant predictors of anemia in children. Mothers with low hemoglobin levels during pregnancy are more likely to have children with anemia, partly due to inadequate iron stores passed on during pregnancy. Additionally, maternal education plays a crucial role in childhood anemia, as mothers with limited education may lack awareness about proper nutrition and health practices . Programs that focus on maternal health and education could improve anemia outcomes in children by promoting healthier prenatal and postnatal practices.

2.4. Infections and Parasitic Diseases Infections such as malaria, parasitic infections (e.g., helminths), and chronic illnesses are known to contribute to anemia in children. Although malaria is not endemic in Saudi Arabia, parasitic infections in some rural regions can impact children's health and increase anemia risk. In a study conducted in rural areas, children with frequent infections were more likely to have lower hemoglobin levels than their healthy counterparts.

2.5. Breastfeeding and Weaning Practices Breastfeeding has been shown to provide some protection against anemia in early infancy; however, exclusive breastfeeding beyond six months without appropriate complementary foods may increase the risk of iron deficiency. Introducing iron-rich complementary foods at the appropriate age is essential for preventing anemia. A study indicated that children who were not introduced to iron-fortified foods at the recommended age were at a higher risk of developing anemia compared to those who received timely iron supplementation(7).

3. Interventions and Strategies

3.1. Iron Supplementation and Fortification Iron supplementation for children, particularly in at-risk populations, has been shown to be effective in reducing anemia prevalence. The Saudi Ministry of Health has initiated programs aimed at providing iron supplements and iron-fortified foods to young children and mothers. In regions where access to iron-rich foods is limited, iron fortification of staple foods has been recommended as an effective intervention.

3.2. Maternal Health Programs Programs that focus on improving maternal health and nutrition can indirectly reduce anemia prevalence in children. Prenatal iron supplementation, nutritional education, and regular health check-ups for pregnant women are essential components of maternal health programs aimed at reducing anemia in both mothers and their children (7)

3.3. Community-Based Nutritional Education Community health workers and nutritionists play a crucial role in educating families about proper nutrition, dietary sources of iron, and effective breastfeeding and weaning practices. Public health campaigns can promote awareness of anemia's impact on child health and encourage preventive practices, especially in high-risk areas. Some studies highlighted the effectiveness of educational campaigns in increasing iron-rich food consumption in rural communities.

3.4. Screening and Monitoring Regular screening for anemia in young children allows for early intervention, especially in high-prevalence areas. Implementing anemia

screening programs in pediatric healthcare settings and schools can facilitate early diagnosis and timely management. Additionally, tracking anemia prevalence across regions can help identify high-risk areas and populations that may benefit from targeted interventions (8).

Conclusion

Anemia among children under five remains a significant public health issue in Saudi Arabia, with a prevalence rate that varies by region and demographic factors. Addressing this issue requires a multifaceted approach that includes improving dietary intake of iron, enhancing maternal health and education, providing iron supplements, and strengthening healthcare access. Further research is needed to assess the effectiveness of current interventions and to develop strategies that address specific needs within various communities. By adopting comprehensive and evidence-based approaches, Saudi Arabia can make strides toward reducing anemia prevalence and improving child health outcomes.

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