

EXPLORING MATERNAL KNOWLEDGE AND PRACTICES RELATED TO VITAMIN A DEFICIENCY IN CHILDREN UNDER FIVE: A SYSTEMATIC REVIEW

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ABSTRACT

Vitamin A deficiency (VAD) remains a major public health concern, particularly in low- and middle-income countries, where it significantly contributes to morbidity and mortality among children under five years of age. According to the World Health Organization (WHO), Vitamin A deficiency affects an estimated 190 million preschool-age children globally, leading to increased vulnerability to infections, impaired vision (including night blindness), and in severe cases, irreversible blindness and death. Inadequate intake of Vitamin A-rich foods, poor dietary diversity, and limited access to healthcare services contribute to the high prevalence of this preventable nutritional disorder. The role of mothers in preventing VAD among children is crucial, as they are the primary caregivers responsible for child feeding practices, dietary choices, and access to healthcare. A mother's knowledge about the sources, benefits, and health implications of Vitamin A directly influences her practices related to nutrition and supplementation for her children. Despite the availability of Vitamin A supplementation programs and nutrition education initiatives, gaps in maternal awareness and inconsistent practices continue to pose significant barriers to the success of these strategies. As such, a systematic review of the literature is necessary to consolidate existing evidence, identify knowledge gaps, and highlight key factors associated with maternal behaviors concerning Vitamin A. This systematic review aims to explore the existing literature on maternal knowledge, practices, and associated factors related to Vitamin A deficiency among children under five. By synthesizing data from multiple studies, the review seeks to provide insights into the current status of maternal awareness and behaviors, evaluate the effectiveness of existing interventions, and offer recommendations for future research and policy implementation to improve child health outcomes.

Keywords: Maternal Knowledge, Vitamin A, Children Under Five

INTRODUCTION

Vitamin A deficiency (VAD) is a major nutritional disorder that significantly affects the health and survival of children, especially those under five years of age. Globally, VAD is recognized as one of the leading causes of preventable childhood blindness and contributes substantially to increased vulnerability to infections such as measles and diarrhea. VAD not only impairs vision but also weakens the immune system, increasing the risk of mortality from common childhood illnesses.

The role of mothers in preventing Vitamin A deficiency is of paramount importance. When mothers are well-informed, they are more likely to adopt appropriate feeding practices and participate in supplementation programs.

Given the significant impact of maternal knowledge and behavior on child health outcomes, it is essential to understand the current state of awareness and practices related to Vitamin A among mothers of under-five children. A systematic synthesis of existing literature is necessary to identify common trends, highlight critical gaps, and inform policy and program development. The objective of this review is to explore maternal knowledge, practices, and associated factors related to Vitamin A deficiency in children under five years of age. By consolidating evidence across multiple studies and geographical contexts, this review aims to support the design of more effective, targeted interventions that can improve maternal behaviors and ultimately reduce the burden of Vitamin A deficiency among vulnerable child populations.

VITAMIN A DEFICIENCY: A PUBLIC HEALTH CONCERN

Vitamin A deficiency (VAD) remains a significant public health issue, particularly in low- and middle-income countries where undernutrition is prevalent. Globally, it is estimated that approximately 190 million preschool-aged children suffer from VAD, with the highest burden found in sub-Saharan Africa, South Asia, and parts of Southeast Asia. In India alone, national surveys have reported that more than 50% of children under five are at risk of subclinical Vitamin A deficiency, contributing to serious health consequences

To address this issue, several public health strategies have been developed and implemented at both global and national levels. The World Health Organization (WHO) recommends periodic, high-dose Vitamin A supplementation for children aged 6 to 59 months in areas where VAD is a public health concern. Many countries, including India, have integrated this strategy into their national child health programs. Other approaches include food fortification, as well as promoting the cultivation and consumption of Vitamin A-rich foods. Nutrition education campaigns targeting caregivers, particularly mothers, have also been identified as critical components in improving dietary practices. Despite these efforts, gaps in coverage, cultural resistance, limited maternal awareness, and logistical barriers continue

to hinder the success of these interventions. Therefore, a deeper understanding of community-level knowledge and behavior is essential to inform and strengthen public health strategies.

MATERNAL KNOWLEDGE REGARDING VITAMIN A

Maternal knowledge about Vitamin A plays a pivotal role in preventing Vitamin A deficiency (VAD) among children under five, as mothers are primarily responsible for deciding what their children eat and when they seek healthcare. However, studies across various low- and middle-income countries have shown that many mothers possess only a limited understanding of Vitamin A and its health benefits. Some women can name common sources, while others are unaware that foods like liver, eggs, and dairy products.

Moreover, maternal understanding of the symptoms and long-term consequences of VAD is often limited. This lack of knowledge often leads to delayed care-seeking and insufficient dietary planning, especially during critical stages of child growth. The sources from which mothers obtain health information also influence their knowledge levels. In some cases, community health volunteers and peer groups serve as key informants, especially in rural settings. To bridge the knowledge gap, it is crucial to develop culturally sensitive, community-based education initiatives that strengthen maternal understanding of the importance of Vitamin A for child health and survival.

MATERNAL PRACTICES IN PREVENTING VITAMIN A DEFICIENCY

Maternal practices are critical in the prevention of Vitamin A deficiency (VAD) in children under five, as they directly influence dietary intake, health behaviors, and utilization of available interventions. One of the most significant preventive behaviors is the practice of appropriate infant and child feeding, which includes timely initiation of complementary feeding and the inclusion of Vitamin A-rich foods in the daily diet. However, in many settings, mothers introduce complementary foods late or rely heavily on carbohydrate-dense, nutrient-poor staples such as rice or porridge, with limited inclusion of fruits, vegetables, or animal products rich in Vitamin A.

The utilization of Vitamin A supplementation programs also varies widely depending on maternal awareness, access to healthcare, and trust in health systems. While many governments and international organizations implement periodic high-dose Vitamin A supplementation campaigns for children aged 6–59 months, participation often depends on whether mothers are informed about the program through health workers. In some regions, cultural beliefs, fear of side effects, or logistical barriers like transportation and clinic accessibility hinder mothers from ensuring their children receive the recommended doses. Home food preparation and preservation practices also significantly impact the retention of Vitamin A in foods.

Breastfeeding and weaning practices are also essential in determining a child's Vitamin A status, especially in the first year of life. Exclusive breastfeeding for the first six months is recommended, as breast milk provides a vital source of Vitamin A.

SOCIODEMOGRAPHIC AND CULTURAL DETERMINANTS

One of the most influential determinants is the educational level of the mother. Educated mothers are also more responsive to health education campaigns and are better equipped to make informed decisions about child feeding and care.

Household income and maternal occupation also significantly affect dietary choices and health behaviors.

Family dynamics, community beliefs, and cultural traditions also influence maternal behavior. In many settings, extended family members—especially grandmothers and mothers-in-law—play a major role in child-rearing decisions. Traditional food taboos or beliefs may discourage mothers from feeding children certain Vitamin A-rich. Geographic isolation, transportation barriers, and healthcare worker shortages all contribute to gaps in awareness and service utilization in rural areas.

BARRIERS TO ADEQUATE KNOWLEDGE AND PRACTICES

One of the most prominent challenges is limited access to health services and nutrition education, especially in rural and underserved areas. Many mothers do not regularly attend antenatal or postnatal care visits where critical nutrition information is shared, and in some regions, trained healthcare professionals or community health workers are scarce.

Another significant barrier is the ineffective implementation of Vitamin A supplementation programs. While most countries have adopted high-dose Vitamin A capsule distribution strategies, issues. Additionally, logistical challenges, such as long travel distances to health facilities and the absence of outreach services, further reduce accessibility for mothers in remote communities.

Food insecurity and seasonal availability of Vitamin A-rich foods also pose serious limitations.

In many communities, myths and misconceptions about certain foods can discourage mothers from offering Vitamin A-rich options. Similarly, mistrust in modern medicine and supplementation, fear of side effects, or reliance on traditional remedies can prevent families from seeking appropriate nutritional interventions. Language barriers, low literacy levels, and the absence of culturally relevant educational materials further exacerbate the issue.

EFFECTIVENESS OF HEALTH EDUCATION AND INTERVENTIONS

Health education and targeted interventions have proven to be effective strategies in enhancing maternal knowledge and improving practices related to the prevention of Vitamin A deficiency (VAD) in children under five. Programs that involve interactive methods—such as group discussions, cooking demonstrations, storytelling, and peer-led sessions—are especially effective.

Healthcare professionals often serve as the most trusted sources of information for mothers and can provide personalized counseling during antenatal, postnatal, and immunization visits. Moreover, home visits by frontline workers have been shown to improve dietary diversity and enhance adherence to Vitamin A supplementation schedules.

Outcomes from intervention studies targeting maternal education on Vitamin A have consistently shown positive effects.

To maximize impact, health education must be embedded within broader maternal and child health services. Tailoring interventions to local languages, customs, and socio-economic conditions further enhances effectiveness, making health education not only a tool for information dissemination but a transformative driver for long-term behavior change.

GAPS IDENTIFIED IN THE LITERATURE

In many cases, sample sizes are small or limited to specific localities, thereby reducing the external validity of the results. Additionally, a lack of standardized tools for assessing knowledge, attitudes, and practices (KAP) makes it difficult to compare findings across different studies and geographic contexts.

Another recurring limitation is the inconsistent measurement of maternal knowledge and practices. Some assessments focus narrowly on knowledge of dietary sources, while others include understanding of supplementation, signs of deficiency, and cooking practices—resulting in an uneven and sometimes fragmented representation of the issue.

There is also a notable underrepresentation of certain regions and populations in the existing literature. Marginalized groups—such as indigenous populations, conflict-affected communities, and migrant mothers—are often excluded from national surveys and intervention studies. Furthermore, the perspectives of fathers and other caregivers, who may influence dietary decisions, are rarely included in assessments.

IMPLICATIONS FOR PUBLIC HEALTH AND NURSING PRACTICE

First and foremost, there is a clear and urgent need for targeted maternal nutrition education. Educational programs must go beyond general nutrition advice and focus on behavior-specific content that is culturally appropriate, linguistically accessible, and tailored to mothers' levels of literacy and socioeconomic background.

Equally important is the **integration of VAD awareness into routine maternal and child health services**. Rather than addressing micronutrient deficiencies in isolation, VAD prevention should be embedded into broader maternal and child health initiatives, including Integrated Child Development Services (ICDS), immunization days, growth monitoring sessions, and family planning consultations. In addition, community-level strategies for behavior change are crucial to ensuring sustainable improvements in maternal practices. Behavior change communication (BCC) interventions that leverage local leaders, peer educators, and community health volunteers can effectively challenge harmful food taboos, address misconceptions, and encourage positive feeding practices. Group education sessions, cooking demonstrations, home visits, and participatory learning tools can foster social support and empower mothers. Public health nurses can play a leadership role in coordinating these efforts, mobilizing community resources, and linking families to services.

RECOMMENDATIONS FOR FUTURE RESEARCH

First, there is a critical need for longitudinal and interventional studies that go beyond cross-sectional assessments. Long-term studies can help track changes in maternal knowledge and behavior over time and establish causal relationships between educational interventions and child health outcomes.

Second, future research should prioritize the development and validation of standardized assessment tools to measure maternal knowledge, attitudes, and practices related to Vitamin A.

Additionally, research must place greater emphasis on culturally sensitive and context-specific strategies. Studies should explore how local beliefs, traditional food practices, gender roles, and socioeconomic realities shape maternal decision-making around child nutrition.

CONCLUSION

This review concludes that maternal knowledge and practices are central to the prevention of Vitamin A deficiency in early childhood. Despite the availability of effective interventions and supplementation strategies, knowledge gaps, cultural beliefs, food insecurity, and systemic barriers continue to hinder progress. Improving maternal education through community-based, culturally sensitive interventions—combined with improved health service access and consistent public health messaging—can significantly reduce the burden of VAD among children under five. Future research should focus on longitudinal studies, standardized measurement tools, and the inclusion of underrepresented populations to design more effective and scalable solutions.

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