

The Interface Between Maternal Vitamin D Status and Early Childhood Caries: A Comprehensive Review from Saudi Arabia

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ABSTRACT

This comprehensive review examines the complex link between maternal vitamin D deficiency (VDD) and the development of Early Childhood Caries (ECC) in Saudi Arabia. Both conditions present significant public health challenges in the region. The evidence reveals concerning statistics: up to 93.8% of pregnant Saudi women exhibit suboptimal vitamin D levels. Meanwhile, ECC affects 60-95% of preschool children across various regions of Saudi Arabia. Through analysis of current literature, this review establishes that maternal VDD during pregnancy disrupts proper tooth mineralization and enamel formation in developing fetuses. This disruption potentially increases their susceptibility to ECC. The review highlights how cultural practices limiting sun exposure, inadequate dietary intake, and socioeconomic factors contribute to both conditions. Based on these findings, we recommend a multi-faceted intervention approach. This includes implementing systematic vitamin D screening and supplementation programs for pregnant women; establishing comprehensive early childhood oral health initiatives; introducing water fluoridation systems where feasible; and developing culturally sensitive public health education campaigns. Future research should focus on longitudinal studies examining the direct causal relationship between maternal VDD and ECC in the Saudi population. At the same time, policy efforts should prioritize integrating maternal vitamin D status monitoring into prenatal care protocols and expanding access to preventive dental services for young children.

Keywords: Vitamin D deficiency; Early Childhood Caries; preschool children; water fluoridation

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