The Role of Vitamin A in Preventing Night Blindness and Other Severe Ocular Disorders

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Vitamin A is an important micronutrient involved in light perception. Deficiencies in vitamin A can impact rod photoreceptors located within the retina, as they rely on components derived from vitamin A to provide visibility in dim lighting, leading to nyctalopia. Nyctalopia, or night blindness, is a condition where low-light vision deteriorates. While the causes of nyctalopia remain debated within the literature, certain factors have been proposed as early indicators of the condition's negative progression. This review article details how insufficient rhodopsin regeneration, macular degeneration, and corneal damage may serve as early indicators of other severe ocular disorders that may arise if the condition is left untreated. We conducted an investigation of existing primary literature on vitamin A deficiency-related nyctalopia and the varied ocular disease-related consequences. Although multiple studies have reported severe ocular consequences being observed in nyctalopia patients, there is insufficient evidence to confidently claim that these specific factors contribute to further ocular damage when patients have a preexisting vitamin A deficiency. Future research should focus on quantifying the effect that these identified factors have on the condition, in terms of thresholds of visual acuity in cases of vitamin A deficiency, and exploring different treatment options aside from supplementation with vitamin A. Presently, vitamin A deficiency is not as common in developed countries as it is in developing countries, however, it is the leading cause of blindness worldwide. These findings are valuable in identifying possible indicators for other ocular disorders that may stem from nyctalopia if it is left untreated.