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Evaluating the Impact of Vitamin D Supplementation in Cardiovascular Outcomes in Patients with Chronic Kidney Disease Not Requiring Dialysis

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Chronic kidney disease (CKD) is a condition of progressive and irreversible dysfunction of the kidneys. Compared to the general population, CKD patients have higher prevalence of cardiovascular disease (CVD). A common CKD imbalance which has recently been linked to CVD is vitamin D deficiency (VDD). VDD has been found associated with an increased risk of inflammation and dysfunction of the vascular endothelium. Primary care providers (PCP) awareness of VDD implications in CKD patients could prevent adverse CVD outcomes. This is a review of current evidence on the impact of vitamin D supplementation (VDS) in adults with CKD not on dialysis. PubMed, CINAHL, and EMBASE were searched using terms, “‘chronic kidney disease’ AND vitamin D AND cardiovascular disease.” We included population-based studies published between 2015-2020 that used flow mediated dilation (FMD) and/or pulse wave velocity (PWV) as proxies for CV function in non-dialysis adults with CKD. Additionally, we included eligible studies from reference lists of these articles. We excluded non-human and pediatric studies, and studies with dialysis patients. 9 articles met criteria. The evidence on this topic is conflicting; most of the studies found that VDS was associated with improved FMD/PWV measurements, thus showing improved vascular elasticity and CV health. Nonetheless, this may be partially due to some studies including patients diagnosed with CVD that are already taking medications to ameliorate effects of the disease such as antihypertensives. Therefore, more well-designed studies, with longer follow-ups are required to better determine the effects of VDS on CV health in non-dialysis CKD patients to best determine the true added benefit with VDS, as well as its cost-effectiveness.

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