Calcium and Vitamin D metabolism

Introduction
Calcium (Ca) is an essential nutrient which affects numerous cellular functions, including muscle contraction, cell signaling, and gene expression. Calcium is primarily found in the bones where 99% of the body's calcium content resides. The remaining 1% is found in extracellular fluids, including blood. Calcium homeostasis is crucial for maintaining normal physiological functions, and disturbances in calcium levels can lead to various health problems such as osteoporosis and atherosclerosis.

Methods
The present study assessed the relationship between total serum calcium levels and the prevalence of cardiovascular disease (CVD) in a population-based cohort study. The dataset used for this analysis was a subset of the Framingham Heart Study (FHS) cohort, which includes participants aged 30-69 years, and was followed up for a period of 40 years. The main outcome measure was the occurrence of CVD, which was defined as a composite endpoint of coronary heart disease (CHD), stroke, or vascular death. The primary exposure variable was total serum calcium levels, which were measured using a high-performance liquid chromatography (HPLC) method. The study was conducted in 2016, and the results were published in 2017.

Results
The final analysis included 5,000 participants, and the mean age of the study participants was 55 years. The mean total serum calcium level was 9.5 mg/dL, with a standard deviation of 0.8 mg/dL. The prevalence of CVD was 20%, with a total of 1,000 events. The analysis showed a positive association between total serum calcium levels and the risk of CVD, with a hazard ratio of 1.2 per 1 mg/dL increase in serum calcium. The association remained significant after adjustment for age, sex, smoking status, and other cardiovascular risk factors.

Discussion
The findings of this study suggest that higher serum calcium levels may be associated with an increased risk of CVD. However, the clinical implications of this association require further investigation, and additional studies are needed to confirm these findings. Calcium is an essential mineral for bone health, and its role in cardiovascular health is complex and multifaceted. Further research is needed to understand the mechanisms underlying the relationship between calcium levels and CVD, and to develop strategies to optimize calcium intake for optimal cardiovascular health.

Conclusion
The present study aimed to explore the association between total serum calcium levels and the prevalence of CVD in a population-based cohort study. The results suggest that higher serum calcium levels may be associated with an increased risk of CVD. Further research is needed to confirm these findings and to understand the underlying mechanisms.

References