OBJECTIVE: We tested the hypothesis that reduced plasma 25-hydroxyvitamin D associates with increased risk of ischemic heart disease, myocardial infarction, and early death.

METHODS AND RESULTS: We measured baseline plasma 25-hydroxyvitamin D in 10,170 women and men from the Danish general population without vitamin D-fortified food. During 29 years of follow-up, 3,100 persons developed ischemic heart disease, 1,625 myocardial infarction, and 6,747 died. Decreasing plasma 25-hydroxyvitamin D levels were associated with increasing risk of ischemic heart disease, myocardial infarction, and early death as a function of seasonally adjusted percentile categories (P for trend, 2×10^(-4)-3×10^(-53)). Comparing individuals with plasma 25-hydroxyvitamin D levels at the 1st to 4th percentile with individuals with levels at the 50th to 100th percentile, the multivariable adjusted risk was increased by 40% (95% CI, 14%-72%) for ischemic heart disease, by 64% (25%-114%) for myocardial infarction, by 57% (38%-78%) for early death, and by 81% (40%-135%) for fatal ischemic heart disease/myocardial infarction. In the meta-analyses of 18 and 17 studies, risk of ischemic heart disease and early death were increased by 39% (25%-54%) and 46% (31%-64%) for lowest versus highest quartile of 25-hydroxyvitamin D level.

CONCLUSIONS: We observed increasing risk of ischemic heart disease, myocardial infarction, and early death with decreasing plasma 25-hydroxyvitamin D levels. These findings were substantiated in meta-analyses.