

Dietary fatty acids and cardiovascular disease: An epidemiological approach. Arja Erkkilä *et al.* Prog Lip Res 2008;47(3):172-187.

Abstract The quality of dietary fat in relation to cardiovascular disease forms the basis of the diet-heart hypothesis. Current recommendations on dietary fat now emphasise quality rather than quantity. The focus of this review is to summarise the results from prospective cohort studies on dietary fat and cardiovascular disease outcomes. Relatively few prospective cohort studies have found an association between dietary fat quality and cardiovascular disease, partly because of limitations in estimating dietary intake. Saturated and trans fatty acids have increased cardiovascular risk in several studies. Both n-6 and n-3 polyunsaturated fatty acids have been associated with lower cardiovascular risk. Within the n-6 series, linoleic acid seems to decrease cardiovascular risk. Within the n-3 series the long-chain fatty acids (eicosapentaenoic and docosahexaenoic acids) are associated with decreased risk for especially fatal coronary outcomes, whereas the role of α -linolenic acid is less clear. Dietary fat quality also influences the activity of enzymes involved in the desaturation of fatty acids in the body. Serum desaturase indices have been consistently associated with adverse cardiovascular outcomes. Data from metabolic and clinical studies reinforce findings from observational studies supporting recommendations to replace saturated and trans fat with unsaturated fat in the prevention of cardiovascular disease. **Keywords:** Fatty acids; Coronary heart disease; Cardiovascular disease; Dietary fat; Desaturase.

Vitamin D Deficiency and Risk of Cardiovascular Disease

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Background: Vitamin D receptors have a broad tissue distribution that includes vascular smooth muscle, endothelium, and cardiomyocytes. A growing body of evidence suggests that vitamin D deficiency may adversely affect the cardiovascular system, but data from longitudinal studies are lacking. **Methods and Results:** We studied 1739 Framingham Offspring Study participants (mean age 59 years; 55% women; all white) without prior cardiovascular disease. Vitamin D status was assessed by measuring 25-dihydroxyvitamin D (25-OH D) levels. Prespecified thresholds were used to characterize varying degrees of 25-OH D deficiency (<15 ng/mL, <10 ng/mL). Multivariable Cox regression models were adjusted for conventional risk factors. Overall, 28% of individuals had levels <15 ng/mL, and 9% had levels <10 ng/mL. During a mean follow-up of 5.4 years, 120 individuals developed a first cardiovascular event. Individuals with 25-OH D <15 ng/mL had a multivariable-adjusted hazard ratio of 1.62 (95% confidence interval 1.11 to 2.36, $P=0.01$) for incident cardiovascular events compared with those with 25-OH D ≥ 15 ng/mL. This effect was evident in participants with hypertension (hazard ratio 2.13, 95% confidence interval 1.30 to 3.48) but not in those without hypertension (hazard ratio 1.04, 95% confidence interval 0.55 to 1.96). There was a graded increase in cardiovascular risk across categories of 25-OH D, with multivariable-adjusted hazard ratios of 1.53 (95% confidence interval 1.00 to 2.36) for levels 10 to <15 ng/mL and 1.80 (95% confidence interval 1.05 to 3.08) for levels <10 ng/mL (P for linear trend=0.01). Further adjustment for C-reactive protein, physical activity, or vitamin use did not affect the findings. **Conclusions:** Vitamin D deficiency is associated with incident cardiovascular disease. Further clinical and experimental studies may be warranted to determine whether correction of vitamin D deficiency could contribute to the prevention of cardiovascular disease.