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Original article

Prospective cohort studies of dietary vitamin B6 intake and risk of cause-specific mortality

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SUMMARY

Background & aims: Vitamin B6 has been postulated to play an important role in determining chronic diseases. However, few studies have evaluated associations between dietary vitamin B6 and cause-specific mortality comprehensively.

Methods: We investigated the associations between vitamin B6 from diet and risk of all-cause, and cause-specific mortality in 134,480 participants from the Shanghai Men's Health Study (2002–2014) and Shanghai Women's Health Study (1997–2014). The median follow-up periods for men and women were 10.3 and 16.2 years, respectively. We estimated hazard ratio (HR) and 95% confidence interval (CI) using Cox proportional hazards models.

Results: After adjustment for suspected confounders, the multivariable-adjusted HRs for the highest versus lowest quintiles for total, CVD, stroke and CHD mortality among men were 0.83 (95%CI = 0.76, 0.90), 0.73 (95%CI = 0.63, 0.85), 0.71 (95%CI = 0.58, 0.88), 0.66 (95%CI = 0.47, 0.91), accordingly. Women with the highest intake had significantly 17% (HR = 0.83; 95% CI = 0.77, 0.90), 20% (HR = 0.80; 95% CI = 0.70, 0.92), and 28% (HR = 0.72; 95% CI = 0.59, 0.86) lower risks of total, CVD and stroke mortality compared with those of women with lowest vitamin B6 intake. No significant association was observed between dietary vitamin B6 and cancer mortality both among men and women.

Conclusions: In the current study with two prospective Chinese cohorts, high dietary vitamin B6 consumption was inversely associated with risk of all-cause and CVD mortality.

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Inverse relationship, increased B6 causes decreased all-cause death rate. Decreased B6 causes increased all-cause death rate.

1. Introduction

Vitamin B6, also known as pyridoxine, is an indispensable co-enzyme in human catabolism and anabolism processes [1]. Multiple effects of vitamin B6 make it possible to influence the pathology

of chronic disease incidence and mortality [2,3]. This water soluble vitamin can be found in a wide variety of foods presented as pyridoxine from plant sources and as pyridoxal or pyridoxamine from animal foods. Foods high in Vitamin B6 included red meat, white meat, eggs, spinach, potatoes, bananas, beans, and nuts [2].

Epidemiological studies have been accumulated to investigate the associations between dietary vitamin B6 and risk of chronic diseases. In the general population, lower intake of vitamin B6 is related with an increased risk of aging-associated diseases, such as cardiovascular diseases [3–5] and specific cancers [6]. However, the associations between vitamin B6 intake from diet and risk of cause-specific mortality were rarely investigated. Cui et al. found that high dietary intake of vitamin B6 was associated with lower risk of mortality from stroke and coronary heart disease among Japanese during a 14-year follow-up [7]. Another study conducted in Taiwan

Abbreviations used: SMHS, Shanghai Men's Health Study; SWHS, Shanghai Women's Health Study; BMI, body mass index; FFQ, food frequency questionnaire; CVD, cardiovascular disease; CHD, coronary artery heart disease; AMI, acute myocardial infarction; HR, hazard ratios; CIs, confidence intervals.

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