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Dietary intake, serum biomarkers of obesity and risk of cardiovascular mortality in a large prospective study of the U.S. general population

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Abstract

Obesity is a major risk factor for cardiovascular diseases (CVD), but the mechanisms for increased CVD risk are still unclear. The present study aimed to examine associations of dietary intake and serum biomarkers of obesity with CVD mortality in a prospective study of 12,548 US adults aged ≥30 at baseline survey (1998-1994), and subsequent outcomes of coronary heart disease, stroke and total cardiovascular disease mortality over an average 12-year follow-up (2006). Reduced rank regression (RRR) modeling, an novel statistics method, was applied to create RRR scores that describe the associations of dietary intake (vitamins C and D, magnesium, calcium, sodium, vegetable protein, dietary fiber, animal protein and total fat intake) and serum biomarkers (total cholesterol, LDL-C, HDL-C, triglycerides, HbA1c, CRP and fibrinogen). Causes of death were classified using ICD-10. The results show that (1) of the total participants, 1,638 (M: 868, F: 770) died from CVD (8.8%) during the follow-up period. Subjects with BMI≥30 kg/m^2 (defined as obesity) had a significant higher risk of CVD mortality, and those with a higher RRR1 score (the primary score, a higher score indicating an increased profile of dietary disorder and serum biomarkers of obesity). The hazard ratios of obesity for CVD mortality was 1.31 (1.09-1.56) ($p<0.01$). As compared to the first quintile, the second to fifth quintiles of the RRR1 score for CVD mortality risk were 0.93 (0.68-1.28), 1.00 (0.74-1.34), 1.32 (1.03-1.68), and 1.76 (1.33-2.32), respectively (trend test, $p<0.001$). In conclusion, obesity-associated dietary disorder and serum biomarkers significantly predicate risk of CVD mortality.

Biography

Longjian Liu was trained in medicine and PhD in epidemiology. He has had teaching and research experience in nutrition, obesity, biomarkers and cardiovascular and diabetes mellitus epidemiology in the United States and abroad (China, UK and Japan) for more than 20 years. Dr. Liu is an associate professor of epidemiology, biostatistics and preventive medicine at Drexel University School of Public Health. He was named as fellow of the American Heart Association in 2008. Dr. Liu has more than 50 research articles published in peer-reviewed journals, and served on NIH review panels, and as an editorial board member for several reputed journals.