



A low carbohydrate diet score is associated with a higher risk of developing type 2 diabetes in an Australian population: Melbourne Collaborative Cohort Study

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Evidence suggests that low carbohydrate eating patterns are effective for rapid weight loss¹, however, little is known about their long-term effects on the risk of chronic diseases. We assessed the association of a low carbohydrate diet score (LCD) with the incidence of type 2 diabetes using Melbourne Collaborative Cohort Study (MCCS) data. Between 1990 and 1994, the MCCS recruited 41,513 people aged 40 to 69 years. The first and second follow-ups were conducted in 1994-1998 and 2003-2007, respectively². We analysed data from 39,185 participants. LCD at baseline was calculated as the percentage of energy from carbohydrate, fat, and protein. The higher the score the less carbohydrate contributed to energy intake. The association of LCD quintiles with the incidence of diabetes was assessed using modified Poisson regression, adjusted for lifestyle, obesity, socioeconomic and other confounders. LCD was positively associated with diabetes risk. Higher LCD score (p for trend = 0.001) was associated with increased risk of type 2 diabetes. Quintile 5 (38% energy from carbohydrates) versus quintile 1 (55% energy from carbohydrates) showed a 20% increased diabetes risk (incidence risk ratio (IRR) = 1.20 (95% CI: 1.05-1.37)). A further adjustment for BMI and WHR eliminated the association. Mediation analysis demonstrated that BMI attributed 76% of the LCD & diabetes association. Consuming a low carbohydrate diet, reflected as a high LCD score, may increase the risk of type 2 diabetes which is largely explained by obesity. Results imply the need for further studies, including clinical trials investigating the effects of a low carbohydrate diet in type 2 diabetes.

Keywords: low carbohydrate diet; type 2 diabetes; cohort; carbohydrate restriction

Ethics Declaration

Yes

Financial Support

The Melbourne Collaborative Cohort Study (MCCS) cohort recruitment was funded by VicHealth and Cancer Council Victoria. The MCCS was further augmented by Australian National Health and Medical Research Council grants 209057, 396414 and 1074383 and by infrastructure provided by Cancer Council Victoria.

References

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