

Assessing the causal effects of relative carbohydrate intake on depression

Shan-Shan Dong

Xi'an Jiaotong University, China

Growing evidence suggests that relative carbohydrate intake affects depression; however, the association between carbohydrates and depression remains controversial. To test this, we performed a two-sample bidirectional Mendelian randomization (MR) analysis using genetic variants associated with relative carbohydrate intake (N = 268,922) and major depressive disorder (N = 143,265) from the largest available genome-wide association studies. MR evidence suggested a causal relationship between higher relative carbohydrate intake and lower depression risk (odds ratio, 0.42 for depression per one-standard-deviation increment in relative carbohydrate intake; 95% confidence interval, 0.28 to 0.62; $P = 1.49 \times 10^{-5}$). Multivariable MR indicated that the protective effect of relative carbohydrate intake on depression persisted after conditioning on other diet compositions. The mediation analysis via two-step MR showed that this effect was partly mediated by body mass index, with a mediated proportion of 15.4% (95% confidence interval, 6.7% to 24.1%). These findings may inform prevention strategies and interventions directed towards relative carbohydrate intake and depression.

Biography

Dr. Shan-Shan Dong is now working as an associate professor in School of Life Science and Technology, Xi'an Jiaotong University. Her primary research focuses on elucidating the genetic basis of polygenic diseases (e.g., obesity and depression) and exploring potential interventions through the integration of multi-omics data analysis and functional experiment validation. She has published over 50 relevant papers in journals including Nature Genetics, Nature Neuroscience, Nature Human Behaviour, and American Journal of Human Genetics.

dongss@xjtu.edu.cn

Abstract received : April 8, 2025 | Abstract accepted : April 10, 2025 | Abstract published : May 5, 2025