Maternal dietary patterns are associated with risk of neural tube and congenital heart defects

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Abstrak

Studying empirically derived dietary patterns is useful in understanding dietary practice. We classified women by their dietary patterns using latent class analysis of 66 foods and studied the association of these patterns with neural tube defects (NTDs) and congenital heart defects (CHDs) in the U.S. National Birth Defects Prevention Study (1997-2005). Logistic regression models used data from 1,047 with an NTD, 6,641 with a CHD, and 6,123 controls that were adjusted for maternal characteristics and tested the effect modification of multivitamin supplement use. Four latent dietary patterns were identified: prudent, Western, low-calorie Western, and Mexican. Among participants who did not use supplements, those in the Mexican, Western, and low-calorie Western classes were significantly more likely (odds ratios of 1.6, 1.5, and 1.4, respectively) to have offspring born with NTDs than were those in the prudent class after adjustment of for dietary folic acid intake. In contrast, among supplement users, there was no difference in the incidence of NTDs between classes. Associations between dietary class and CHD subgroups were not modified by supplement use except for tetralogy of Fallot; among supplement users, those in the Western class were twice as likely (95% confidence interval: 1.4, 2.8) as the prudent class to have offspring with tetralogy of Fallot. Women who adhered to a Western diet were 1.2 (95% confidence interval: 1.03, 1.35) times more likely to have an infant with septal heart defect than were women who adhered to a prudent diet. A prudent dietary pattern, even with folate fortification, may decrease the risk of NTDs and some heart defects.