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Exploring the Longitudinal Associations Between Diet and Heart Failure with Preserved Ejection Fraction Among Middle-Aged Adults in the CARDIA Study

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Exploring the Longitudinal Associations Between Diet and Heart Failure with Preserved Ejection Fraction Among Middle-Aged Adults in the CARDIA Study

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There is currently limited evidence for the use of pharmacotherapies for heart failure with preserved ejection fraction (HFpEF). Given that diet is a key health behavior, the purpose of this study was to explore dietary predictors of HFpEF among middle-aged adults. All data were obtained from the Coronary Artery Risk Development in Young Adults study, a longitudinal cohort study. We analyzed the data from males and females (n= 2505) who had (1) completed the diet questionnaire at year(Y) 20 of follow-up and (2) undergone Doppler scan at Y30. We then classified participants as having HFpEF or not using three separate operationalizations. Hierarchical binomial logistic regression models were conducted to assess predictors of HFpEF, namely, fructose, sucrose, sodium, and magnesium intake at Y20 and LDL and HDL levels at Y30. Covariates were sex, age, race, BP>130/80 mmHg (irrespective of hypertension diagnosis) at baseline, BMI at baseline, BP>130/80 mmHg at Y20, years of regular cigarette use at Y30, and physical activity level at Y30. When HFpEF was defined as a left ventricular ejection fraction (LVEF) $\geq 50\%$ and an E/A <0.8 or >2, age and BMI were significant positive predictors. When HFpEF was defined as a LVEF $\geq 50\%$ and a lateral e' velocity <7, fructose, BMI, sodium, and HDL were significant predictors. When HFpEF was defined as a LVEF $\geq 50\%$ and a septal e' velocity <10, age, BMI, sodium, and physical activity were significant predictors. Decreasing fructose and sodium intake, and lowering LDL levels while raising HDL levels, may decrease one's risk of HFpEF by mid-life.

Keywords: cardiovascular disease, heart failure, preserved ejection fraction, diet, fructose, sodium, LDL, HDL, obesity, Doppler (allowed 10 keywords)