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Original Investigation

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Association of Intake of Whole Grains and Dietary Fiber With Risk of Hepatocellular Carcinoma in US Adults

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Full Text

Key Points

Question Is high intake of whole grains and dietary fiber associated with lower risk of developing hepatocellular carcinoma (HCC)?

Findings In this cohort study of 125 455 participants in the United States, including 141 patients with HCC, with an average follow-up of 24.2 years, increased intake of whole grains was associated with a reduced risk of HCC. A nonsignificant inverse HCC association was observed for total bran but not for germ; increased intake of cereal fiber but not fruit or vegetable fiber was associated with a nonsignificant lower risk of HCC.

Meaning Increased intake of whole grains and possibly cereal fiber and bran could be associated with reduced risk of HCC among US adults.

Abstract

Importance Increased intake of whole grain and dietary fiber has been associated with lower risk of insulin resistance, hyperinsulinemia, and inflammation, which are known predisposing factors for hepatocellular carcinoma (HCC). Therefore, we hypothesized that long-term intake of whole grains and dietary fiber may be associated with lower risk of HCC.

Objective To assess the associations of whole grain and dietary fiber intake with the risk of HCC.

Design, Setting, and Participants Cohort study of the intake of whole grains, their subcomponents (bran and germ), and dietary fiber (cereal, fruit, and vegetable) in 125 455 participants from 2 cohorts from the Nurses' Health Study and the Health Professionals Follow-up Study.

Exposures Intake of whole grains, their subcomponents (bran and germ), and dietary fiber (cereal, fruit, and vegetable) were collected and updated almost every 4 years using validated food frequency questionnaires.

Main Outcomes and Measures Multivariable hazard ratios (HRs) and 95% CIs were estimated using Cox proportional hazards regression model after adjusting for most known HCC risk factors.

Results After an average follow-up of 24.2 years, we identified 141 patients with HCC among 125 455 participants (77 241 women and 48 214 men (mean [SD] age, 63.4 [10.7] years). Increased whole grain intake was significantly associated with lower risk of HCC (the highest vs lowest tertile intake: HR, 0.63; 95% CI, 0.41-0.96; $P=.04$ for trend). A nonsignificant inverse HCC association was observed for total bran (HR, 0.70; 95% CI, 0.46-1.07; $P=.11$ for trend), but not for germ. Increased intake of cereal fiber (HR, 0.68; 95% CI, 0.45-1.03; $P=.07$ for trend), but not fruit or vegetable fiber, was associated with a nonsignificant reduced risk of HCC.

Conclusions and Relevance Increased intake of whole grains and possibly cereal fiber and bran could be associated with reduced risk of HCC among adults in the United States. Future studies that carefully consider hepatitis B and C virus infections are needed to replicate our findings, to examine these associations in other racial/ethnic or high-risk populations, and to elucidate the underlying mechanisms.