

PERSPECTIVE IN THE JOURNALS PLUS

Certain diets increase risk for colorectal cancer

SHOW CITATION

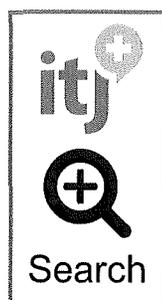
January 18, 2018

Inflammation-causing diets, or those high in meats, refined grains and high-calorie beverages, appeared associated with a higher risk for developing colorectal cancer, according to results published in *JAMA Oncology*.

The association appeared higher among overweight or obese men, lean women, and men and women who did not consume alcohol.

Inflammation is associated with cancer development, including colorectal cancer.

“Intervention studies have shown that diet modulates inflammation; therefore, dietary patterns with higher inflammatory potential may influence colorectal cancer risk,” **Fred K. Tabung, MSPH, PhD**, research associate in the department of nutrition at Harvard T.H. Chan School of Public Health, and colleagues wrote. “There are likely complex added effects and interactions of multiple foods and nutrients in diet.”



Tabung and colleagues used an empirical dietary inflammatory pattern score — based on a weighted sum of 18 food groups that determined dietary inflammatory potential — to assess whether diets were associated with increased risk for colorectal cancer.

The food groups included processed meat, red meat, organ meat, fish, dark yellow vegetables, green leafy vegetables, other vegetables, refined grains, high-energy beverages, low-energy beverages, tomatoes, beer, wine, tea, coffee, snacks, fruit juice and pizza.

Researchers calculated scores from a food frequency questionnaire administered every 4 years.

In addition to self-reported food intake, the researchers also examined alcohol intake and body weight.

The study included 46,804 men and 74,246 women who were followed for 26 years.

Researchers observed 2,699 incidents of colorectal cancer over 2,571,831 person-years of follow-up.

Those in the highest quintile of empirical dietary inflammatory pattern scores had a higher incidence rate of colorectal cancer per 100,000 person-years compared with those in the lowest quintile (men, 151 vs. 113; women, 92 vs. 80).

Overall, higher scores appeared associated with a 32% (HR = 1.32; 95% CI, 1.12-1.55) increased risk for developing colorectal cancer compared with the lowest scores. Men with the highest scores had a 44% (HR = 1.44; 95% CI, 1.19-1.74) increased risk for developing colorectal cancer and women had a 22% (HR = 1.22; 95% CI, 1.02-1.45) increased risk.

Those the highest dietary pattern scores who did not consume alcohol had greater risks (men, HR = 1.62; 95% CI, 1.05-2.49; women, HR = 1.33; 95% CI, 0.97-1.81).

Researchers also observed stronger associations among overweight and obese men (HR = 1.48; 95% CI, 1.12-1.94) and lean women (HR = 1.31; 95% CI, 0.99-1.74).

When comparing the highest quintile of dietary scores to the lowest among men and women, researchers observed associations in all anatomic locations, including:

- A 38% (HR = 1.38; 95% CI, 1.13-1.68) increased risk for proximal colon cancer among men and women;
- A 46% (HR = 1.46; 95% CI, 1.14-1.86) increased risk for distal colon cancer among men and women; and
- A 70% (HR = 1.7; 95% CI, 1.14-2.54) increased risk for rectal cancer among men.

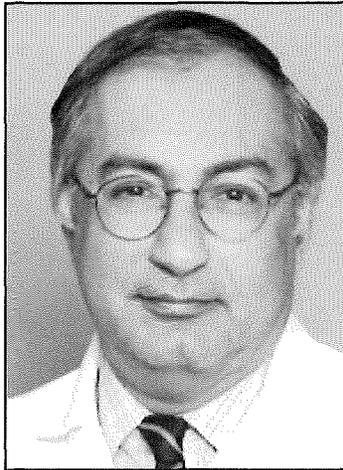
The main limitation of the study included self-reported dietary and lifestyle data.

“Findings from this large prospective study support a role for the inflammatory potential of diet in colorectal cancer development, suggesting inflammation as a potential mechanism linking dietary patterns and colorectal cancer development,” the researchers wrote. “Strategies to reduce the adverse role of a proinflammatory dietary pattern in colorectal cancer development may have higher benefits among overweight or obese men and among lean women or among men and women not consuming alcohol.” – *by Cassie Homer*

Disclosures: Tabung reports research funding from the NCI. Please see the study for all other authors' relevant financial disclosures.

itj⁺ PERSPECTIVE

PERSPECTIVE



Wafik S. El-Deiry

A connection between the western diet — with high fat and lots of red meat — and colorectal cancer is known. A link between inflammation and colorectal cancer also is known, based on experiences with patients who have inflammatory bowel disease, such as ulcerative colitis. Also, some mouse models of colorectal cancer showed inflammation is a contributing factor to cancer development.

Obesity and high insulin levels or insulin resistance can contribute to colorectal cancer risk. An interesting and very important question is whether the diet's inflammatory potential might also contribute to colorectal cancer risk. The manuscript by Tabung and colleagues suggests that the answer is yes. The authors of this prospective Harvard study investigated two large cohorts over a 26-year period and evaluated an "empirical dietary inflammatory pattern (EDIP)" score as it relates to the incidence of colorectal cancer. They had previously shown that EDIP scores correlate with circulating inflammatory cytokines (IL6, TNF-R2, CRP) that may mediate precancer effects. The EDIP score is the weighted sum of 18 food groups — nine anti-inflammatory and nine proinflammatory. Older studies showed proinflammatory foods include processed meat, red meat, organ meat, refined

grains, some high-energy beverages and tomatoes, whereas anti-inflammatory foods include beer, wine, coffee, leafy green vegetables, fruit juice, dark yellow vegetables — carrots, sweet potatoes, yellow squash — and pizza, among others.

Interestingly, and for unclear reasons, obesity plus a proinflammatory diet had a greater interaction among men than women; ie, obesity in women didn't add colorectal cancer risk to a proinflammatory diet. The reason for stronger associations for proinflammatory diets toward rectal cancer among men than women also was unclear, although it is known that a high ratio of estrogen:testosterone is protective against colorectal cancer.

A bigger effect of inflammatory diets occurred in those not consuming alcohol. Researchers did not evaluate the role of anti-inflammatory spices in the diet or cancer-suppressive dietary components, such as walnuts; although other known cancer suppressive dietary components, such as carotenoids, would be expected in the green and yellow vegetables. The analysis did not include whether a proinflammatory diet might increase colorectal cancer risk in subgroups of patients with inflammatory bowel disease, or others at increased risk — including individuals with family history, familial adenomatous polyposis or Lynch syndrome. Although researchers collected data on their use, whether anti-inflammatory agents (NSAIDs) or aspirin might counteract the proinflammatory diet's effect on colorectal cancer risk was not specifically determined.

Overall, this important study provides a path forward to consider dietary modifications or other interventions based on the mechanistic understanding that might impact colorectal cancer risk, especially among obese men, lean women, or women and men not consuming alcohol.

Wafik S. El-Deiry, MD

Fox Chase Cancer Center

Disclosures: El-Deiry reports no relevant financial disclosures.