



Adherence to WCRF/AICR Cancer Prevention Recommendations and Colorectal Cancer Incidence in the VITAL Cohort

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BACKGROUND

In 2007 the World Cancer Research Fund (WCRF) and the American Institute for Cancer Research (AICR) released 8 recommendations regarding body weight, physical activity and dietary behaviors aimed at reducing cancer incidence worldwide after a comprehensive review of the literature related to common cancers. Although body weight, diet and physical activity have been associated with colorectal cancer, the effect of adhering to the WCRF/AICR guidelines on risk of colorectal cancer is unknown.

OBJECTIVE

To estimate the reduction in colorectal cancer risk associated with adherence to the WCRF/AICR cancer prevention recommendations.

METHODS

Data Source: Vitamins And Lifestyle (VITAL) is a prospective cohort study designed to investigate supplement use and cancer risk. Gender-specific baseline questionnaires were completed by 77,700 men and women ages 55-76 between 2000 and 2002. All respondents lived in the 13 counties of the Western Washington Surveillance, Epidemiology and End Results (SEER) catchment area. Annual follow-up includes cancer diagnoses, deaths, and moves out of the SEER catchment area.

Baseline data included self-reported height and weight, physical activity, demographic factors, individual and family history of cancer, cancer screening and smoking history as well as a food frequency questionnaire (FFQ).

Statistical Analysis: Cox regression was used to estimate hazard ratios associated with adherence to the WCRF/AICR cancer prevention recommendations. All analyses were limited to respondents with no history of colorectal cancer and with complete data on the recommendations considered.

Adjustment Variables: The models presented in Figures 2 and 3 controlled for each of the following: age, sex, education, race/ethnicity, employment status, family history of colorectal cancer, receipt of sigmoidoscopy in previous 10 years, pack-years of smoking and non-steroidal anti-inflammatory use. Additionally, the models presented in Figure 3 controlled for whether respondents met each of the other recommendations.

RESULTS

•Compared with the VITAL cohort as a whole, cases were older, a higher proportion were male, and fewer graduated from college (**Table 2**)

•The median number of recommendations met was 2

•All 5 recommendations were met by 2% of the VITAL cohort and 1% of CRC cases, respectively while 4% of the VITAL cohort and 8% of CRC cases met none of the recommendations

•Adherence to each recommendation considered was better in the VITAL cohort as a whole than among CRC cases. (**Figure 1**)

•The highest proportion of respondents met the recommendation to limit alcohol intake, followed by limiting red meat, maintaining normal weight, eating mostly plant foods and getting sufficient physical activity (**Figure 1**)

•In adjusted analyses, limiting alcohol consumption was the only recommendation independently associated with a reduced risk of CRC (**Figure 2**)

•Meeting even 1 recommendation was associated with a 52% reduction in CRC risk compared with meeting no recommendations (**Figure 3**)

•Meeting 2-4 recommendations was associated with a 51-59% reduction in CRC risk, and meeting all 5 recommendations was associated with an 80% reduction in risk (**Figure 3**)

Table 1. WCRF/AICR Recommendations in VITAL

Recommendation:	Operationalization:
1. Maintain normal body weight	18.5 kg/m ² ≤ BMI < 25 kg/m ²
2. Be moderately physically active every day	30+ minutes of moderate activity 5-7 days/week in 8 of past 10 years
3. Avoid foods that promote weight gain	Not operationalized (vague and possibly on the pathway to normal body weight)
4. Eat mostly plant foods	5+ servings fruits/vegetables per day (including legumes)
5. Limit red meat intake	Less than 18 oz. per week
6. Limit alcohol	≤ 1 drink/day for women, ≤ 2 for men
7. Avoid salt-preserved foods; limit salt intake; avoid moldy cereals and pulses	Not operationalized (not common in the US food supply)
8. Dietary supplements not recommended for cancer prevention	Not operationalized (recommendations agnostic on supplement use)

Figure 1. Proportion of VITAL respondents and colorectal cancer cases meeting each recommendation

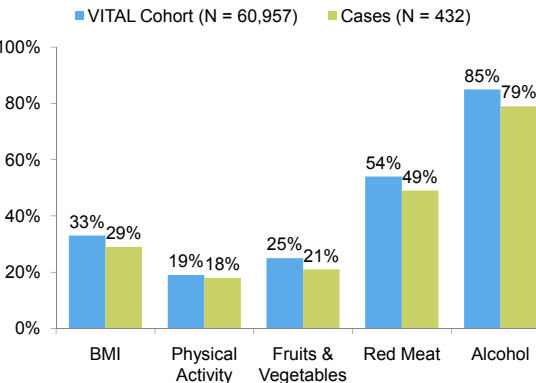


Figure 2. Adjusted Hazard Ratios of Colorectal Cancer Associated with Meeting Each Recommendation Individually

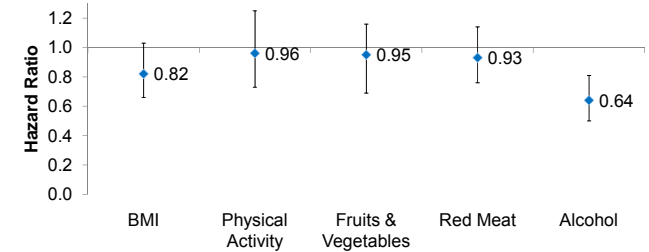
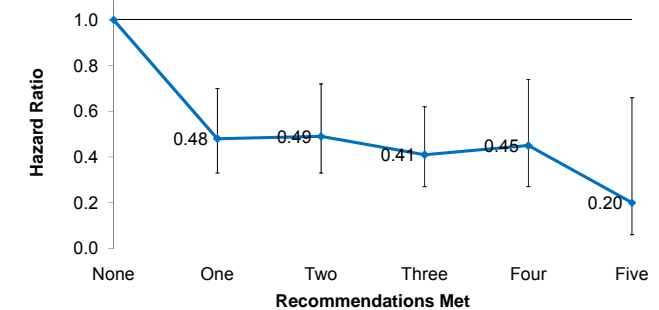


Figure 3. Adjusted Hazard Ratios of Colorectal Cancer Incidence by Number of Recommendations Met



SUMMARY & CONCLUSIONS

Meeting between 1 and 4 of the WCRF/AICR cancer prevention recommendations considered here reduced colorectal cancer risk by more than 50%, while meeting all 5 reduced risk by 80%. These results suggest that adherence to the WCRF/AICR recommendations could substantially reduce colorectal cancer risk.

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