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Are associations between adherence to the 2018 WCRF/AICR cancer prevention recommendations and risk of cancers modulated by multimorbidity? Findings from the UK Biobank prospective cohort study

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Approximately 40% of cancers in the UK are attributable to modifiable, lifestyle risk factors such as overweight and obesity and low dietary fibre intake⁽¹⁾. The WCRF and AICR published ten lifestyle-based Cancer Prevention Recommendations with the aim of reducing the risk of cancer and other non-communicable diseases⁽²⁾. In the UK Biobank cohort, we have found reduced risk of cancer overall and of breast and colorectal cancers with greater adherence to these Cancer Prevention Recommendations (i.e., healthier lifestyles). The present study aimed to investigate whether the magnitude of these associations is modified by the presence of co-morbidities, such as diabetes and cardiovascular disease, at baseline.

We used data from 94,778 participants (53% female, mean age 56 years) from the UK Biobank prospective cohort study, recruited between 2006 and 2010 and free from cancer at baseline. Adherence to the 2018 WCRF/AICR Cancer Prevention Recommendations was calculated from dietary, physical activity, and body composition data using a standardised score⁽³⁾. Multimorbidity (list of 43 chronic diseases) was self-reported at baseline and categorised into: 0, 1, 2, or 3+ chronic illnesses. Incident cancer cases were identified using population-based cancer registries available until July 2019 for England and Wales and October 2015 for Scotland. Participants were categorised into approximate score tertiles, and the lowest tertile (lowest adherence, 0-3.5 points) was used as the reference category. Cox proportional hazard models were used to investigate associations between total score and incidence of cancer, adjusting for confounders, and to test for an interaction between total score and multimorbidity.

55,191 (58%) participants had one chronic illness at baseline and 8,430 (9%) had ≥ 3 . Mean total 2018 WCRF/AICR score was 3.8 (SD 1.0) points, and participants with the presence of chronic illnesses had a significantly lower total score (mean for ≥ 3 illnesses = 3.58 points vs 3.96 points for participants without chronic illness, $p < 0.001$). During a median follow-up of 8 years, 3,303 individuals developed cancer. When investigating associations between score tertiles and the risk of cancer overall, there was a significant interaction between the total score and multimorbidity (HR for interaction: 1.59, $p = 0.002$). There was also evidence for an interaction between total score and multimorbidity with breast cancer risk (HR for interaction: 1.23, $p = 0.030$), but no evidence of an interaction between total score and multimorbidity for risk of colorectal cancer.

We found stronger associations between total adherence score and the risk of cancer in participants with ≥ 3 chronic illnesses. This suggests that the chemoprotective effects of greater adherence to the 2018 WCRF/AICR Cancer Prevention Recommendations may be particularly beneficial for individuals with multimorbidity.

References

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