



Ultra-processed food consumption and risk of chronic respiratory diseases mortality

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Chronic respiratory diseases (CRDs) are diseases of the respiratory tract and are among the most prominent causes of disability and mortality globally⁽¹⁾. Chronic obstructive pulmonary disease (COPD) and lung cancer are among the leading cause of death among all CRDs⁽²⁾. Evidence showed that diet, particularly ultra-processed foods (UPFs) are strongly associated with cardiovascular disease, diabetes, cancer, and depression⁽³⁾. However, the link between UPFs intake and CRDs has rarely been investigated. We aimed to examine the association between UPF consumption and risk of mortality due to CRDs overall, COPD and lung cancer among adults in the USA. A total of 96,607 participants aged 55 years and over were obtained from Prostate, Lung, Colorectal and Ovarian (PLCO) cancer study, a randomised trial designed to investigate the effects of screening on cancer-related mortality. However, data collected also afforded the opportunity to examine the relationships between UPF intake and mortality caused by respiratory diseases. Dietary history of participants was collected at baseline using a validated food frequency questionnaire as was the presence of respiratory diseases. Food items were grouped into one of the four NOVA food classification system⁽⁴⁾. Cox regression was fitted to estimate the risk of all-cause mortality and cause-specific mortality due to increased consumption of UPFs over time. Competing risk regression was used to account for the competing risks events and effect of participant loss. During the follow-up period of 1,379,655.5 person-years (median 16.8 years), 28,700 all-cause, 4,901 all respiratory, 2,015 lung cancer and 1,536 COPD mortalities occurred. A dose-response association was found between higher UPF intake and mortality from all respiratory diseases and COPD, but not lung cancer. After considering competing events, higher intake of UPF increased the risk of mortality from all respiratory diseases by 10% (HR: 1.10; 95% CI: 1.01, 1.21) and COPD by 20% (HR: 1.20; 95% CI: 1.02, 1.42). After imputation for missing data, the risk of lung cancer increased by 25% among participants in the highest quintile of UPF intake. The PLCO trial data highlighted that consumption of UPF increased respiratory mortality, among those with COPD, however further mechanistic studies are recommended to further clarify the link between UPF and lung cancer. This study also indicated that a high intake of UPF generally increases the risk of mortality of those with respiratory diseases and contributes to a large body of evidence indicating that higher UPF consumption increases the overall risk of mortality.

Keywords: ultra-processed food; chronic respiratory disease; COPD; lung cancer

Ethics Declaration

Yes

Financial Support

This research received no external funding.

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