**Supplementary Methods**

**Study population**

The NIH-AARP Diet and Health cohort (referred to as the NIH-AARP cohort) was established in 1995-1996 with the mailing of questionnaires to 3.5 million AARP members, aged 50-71 years, living in one of six US states (California, Florida, Louisiana, New Jersey, North Carolina, and Pennsylvania) or one of two metropolitan areas (Atlanta, Georgia, and Detroit, Michigan) (1). Overall, 17.6% (n= 617,119) of potential participants returned the questionnaire. Of the 566,398 respondents who satisfactorily completed the baseline questionnaire, we further excluded: proxy respondents (n= 15,760), subjects with a history of cancer (except nonmelanoma skin cancer) at baseline (n=51,346), those with only information on cancer death (n=4,268), those with energy intake more than two interquartile ranges above or below the median, which we have used as a marker for questionnaire completeness and accuracy (n=4,387), and those who died or were diagnosed with cancer on the first day of follow-up (n =32). Our final analytic sample included 490,605 participants of whom 454,038 (92.6%) self-reported their race/ethnicity as non-Hispanic white (see **Supplementary Figure** for flowchart of patient enrollment). The study was approved by the Institutional Review Board of the US National Cancer Institute.

**Cohort follow-up and outcomes**

Vital status was obtained by linkage to the National Death Index and cancer diagnoses were updated via linkage to state cancer registries. Incident ESCC, EAC, GCA, and GNCA were identified by anatomic site and histologic codes of the International Classification of Diseases for Oncology, Third Edition (2). Both ESCC and EAC were defined with site code C15.0-C15.9. ESCC included histologic codes of 8070, 8071, 8072, 8074, and 8083, and EAC included 8140, 8142, 8144, 8260, 8261, 8263, 8310, 8480, 8481, 8490, 8570, 8145, 8211, and 8255. GCA was defined with site code C16.0, which presented the cardioesophageal junction, the esophagogastric junction, and the gastroesophageal junction (GEJ). GNCA was classified with site codes C16.1–C16.9. Both types of gastric adenocarcinomas excluded histologic codes of 8070, 8072, 8240, 8246, 8560, ≥8800, 8083, 8050, 8245, and 8512. GCA additionally excluded 8000 and 8071, and GNCA further excluded 8000, 8013, 8032, 8041, 8046, and 8572.

**Definition of risk factors**

We defined BMI(kg/m2) as a categorical variable according to WHO definitions(3): underweight (<18.5), normal weight (18.5–24.9), overweight (25.0–29.9), and obese (≥30.0); we defined smoking status as never, former, and current (participants who reported quitting within the past year were considered current smokers). We categorized total alcohol beverage consumption as: non-drinker, up to or including one drink/day, greater than one to three drinks/day, and greater than three drinks/day(4)). One drink corresponded to one serving size according to the US Department of Agriculture’s food guide pyramid: one 12-fluid ounce beer, one 5-fluid ounce glass of wine, or one 1.5-ounce shot of liquor (each approximately 13-14 g of ethanol)(5, 6)). GERD diagnoses were extracted from the linkage of the NIH-AARP cohort to the Medicare dataset (1994-2008) from 107,258 (21.9%) of eligible participants. We considered a subject had GERD if they had two or more Medicare claims which matched the GERD definition using all claims from the Medicare Provider Analysis and Review file (MEDPAR), Outpatient, and the National Claims History file (NCH) during or after their second eligible year using the NCI Comorbidity Index approach (7, 8)).

Because GERD information was missing for a large percentage of the NIH-AARP cohort, we multiply-imputed GERD five times using logistic regression imputation models that included age at baseline, sex, ethnicity, educational level, BMI, smoking, alcohol intake, diabetes, and the target subtype of cancer. Moreover, because GERD was missing for all subjects in the 2015 NHIS, we used the multiple-imputation logistic-regression model for GERD data from the NIH-AARP cohort that included age at baseline, sex, ethnicity, BMI, smoking, alcohol intake, and diabetes to multiply-impute missing GERD five times for all the NHIS subjects. The additional variance due to multiply-imputed GERD was incorporated into the computation of confidence intervals and p-values for the HR’s using the standard approach that accounts for within- and between-imputation variance (9, 10).

**Supplementary References**

1. Schatzkin A, Subar AF, Thompson FE, et al. Design and serendipity in establishing a large cohort with wide dietary intake distributions : the National Institutes of Health-American Association of Retired Persons Diet and Health Study. Am J Epidemiol 2001;154:1119-25.

2. A.G. F. International classification of diseases for oncology: ICD-O. 3rd edition. Geneva, Switzerland: World Health Organization 2000.

3. WHO. Physical status: the use and interpretation of anthropometry. Report of a WHO Expert Committee. WHO Technical Report Series 854. Geneva: World Health Organization. 1995.

4. Wang S, Freedman ND, Loftfield E, et al. Alcohol consumption and risk of gastric cardia adenocarcinoma and gastric noncardia adenocarcinoma: A 16-year prospective analysis from the NIH-AARP diet and health cohort. Int J Cancer 2018;143:2749-2757.

5. Subar AF, Midthune D, Kulldorff M, et al. Evaluation of alternative approaches to assign nutrient values to food groups in food frequency questionnaires. Am J Epidemiol 2000;152:279-86.

6. KS T, YS C, eds. Design and operation: Continuing Survey of Food Intakes by Individuals and the Diet and Health Knowledge Survey, 1994–96. Beltsville, MD: US Department of Agriculture 1998.

7. Charlson ME, Pompei P, Ales KL, et al. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chronic Dis 1987;40:373-83.

8. Klabunde CN, Potosky AL, Legler JM, et al. Development of a comorbidity index using physician claims data. J Clin Epidemiol 2000;53:1258-67.

9. Schafer JL. Multiple imputation: a primer. Stat Methods Med Res 1999;8:3-15.

10. Wang SM, Freedman ND, Katki HA, et al. Gastroesophageal reflux disease: A risk factor for laryngeal squamous cell carcinoma and esophageal squamous cell carcinoma in the NIH-AARP Diet and Health Study cohort. Cancer 2021. Publish Ahead of Print, DOI:10.1002/cncr.33427.