

SUPPLEMENTARY TABLES

Supplementary Table 1. Anatomical codes of the organ or system of tumors.

| Organs or systems | ICD-O-3 codes |
|--|----------------------|
| Lip, oral cavity and pharynx | C00.0 to C14.8 |
| Digestive organs | C15.0 to C26.9 |
| Respiratory and intrathoracic organs | C30.0 to C39.9 |
| Hematopoietic and reticuloendothelial system | C42.0 to C42.4 |
| Skin system | C44.0 to C44.9 |
| Connective subcutaneous and other soft tissues | C49.0 to C49.9 |
| Breast organ | C50.0 to C50.9 |
| Female genital organs | C51.0 to C58.9 |
| Male genital organs | C60.0 to C63.9 |
| Urinary tract | C64.9 to C68.9 |
| Eye, brain and other parts of central nervous system | C69.0 to C72.9 |
| Thyroid and other endocrine glands | C73.9 to C75.9 |
| Lymph nodes | C77.0 to C77.9 |

Supplementary Table 2. Anatomical codes of the specific sites of the tumors.

| Specific-sites | ICD-O-3 codes |
|-----------------------|----------------------|
| Esophagus | C15.0 to C15.9 |
| Stomach | C16.0 to C16.9 |
| Small intestine | C17.0 to C17.9 |
| Colon | C18.0 to C18.9 |
| Rectosigmoid junction | C19.9 |
| Rectum | C20.9 |
| Liver | C22.0 |
| Pancreas | C25.0 to C25.9 |
| Larynx | C32.0 to C32.9 |
| Bronchus | C34.0 |
| Lung | C34.1 to C34.9 |
| Bone marrow | C42.1 |
| Corpus uteri | C54.0 to C54.9 |
| Ovary | C56.9 |
| Prostate | C61.9 |
| Kidney | C64.9 |
| Bladder | C67.0 to C67.9 |
| Brain | C71.0 to C71.9 |
| Thyroid | C73.9 |

Supplementary Table 3. Covariates for models of all systems or organs.

| System or organs | Covariates |
|--|--|
| Any cancers | Maternal age, age, sex, race, BMI, randomization arm, cigarette smoking status, alcohol drinking intensity, family history of cancer, total vegetable and fruit intake, processed red meat intake, nonalcohol total energy, grain intake, physical activity 1+time per month |
| Lip, oral cavity and pharynx | Maternal age, age, sex, race, BMI, randomization arm, cigarette smoking status, alcohol drinking intensity, family history of cancer, total vegetable and fruit intake, processed red meat intake, nonalcohol total energy, grain intake, using aspirin, physical activity 1+time per month, weight lifting and aerobics. |
| Digestive organs | Same as Lip, oral cavity and pharynx model. |
| Respiratory and intrathoracic organs | Maternal age, age, sex, race, BMI, randomization arm, cigarette smoking status, alcohol drinking intensity, family history of cancer, total vegetable and fruit intake, nonalcohol total energy, beta-carotene intake, physical activity 1+time per month, cigarettes smoked per day, pack-year cigarette smoking, age started smoking, age stopped smoking. |
| Hematopoietic and reticuloendothelial systems | Maternal age, age, sex, race, BMI, randomization arm, cigarette smoking status, alcohol drinking intensity, family history of cancer total vegetable and fruit intake, nonalcohol total energy |
| Skin | Maternal age, age, sex, race, BMI, randomization arm, cigarette smoking status, alcohol drinking intensity, family history of cancer total vegetable and fruit intake, education |
| Connective subcutaneous and other soft tissues | age, sex, race, BMI, randomization arm, cigarette smoking status, alcohol drinking intensity, family history of cancer total vegetable and fruit intake |
| Breast | Maternal age, age, race, BMI, randomization arm, cigarette smoking status, alcohol drinking intensity, family history of breast cancer, total vegetable and fruit intake, total fiber intake, history of diabetes, taking birth control pills, age at birth of first child, number of children born, removed ovaries. |
| Female genital organs | Maternal age, age, race, BMI, randomization arm, cigarette smoking status, alcohol drinking intensity, family history of cancer, total vegetable and fruit intake, history of diabetes, removed ovaries, having a hysterectomy, age at menopause, pregnancies, taking female hormones, family history of endometrial cancer, using aspirin. |
| Male genital organs | Maternal age, age, race, BMI, randomization arm, cigarette smoking status, education, family history of prostate cancer, history of diabetes, frequency of strenuous activity, beta-carotene intake, processed red meat intake, lactose intake, vitamin D intake, total fat intake, poly-unsaturated fatty acids from plant sources intake, having any prostate surgeries, age at vasectomy, having enlarged prostate or benign prostatic hypertrophy. |
| Urinary tract | Same as connective subcutaneous and other soft tissues model |
| Eye, brain and other parts of central nervous system | Same as connective subcutaneous and other soft tissues model |
| Thyroid and other endocrine glands | Same as connective subcutaneous and other soft tissues model |
| Lymph nodes | Same as connective subcutaneous and other soft tissues model plus family history of lymphoma |

Supplementary Table 4. Distribution of the number of lung cancers by paternal age.

| Paternal age (years) | Cases | Participants |
|-----------------------------|--------------|---------------------|
| <20 | 1 | 1,001 |
| 20-29 | 285 | 33,603 |
| 30-39 | 243 | 30,416 |
| 40-49 | 83 | 10,022 |
| 50-59 | 11 | 1,506 |
| 60-69 | 3 | 219 |
| 70+ | 3 | 180 |