**Supplementary Table S1.** Causes of death among patients with CRC by follow-up period after diagnosis.

|  |  |  |  |
| --- | --- | --- | --- |
| **Follow-up period** | **Women** | **Men** | **Combined** |
| **≤5 years** |  |  |  |
| CRC, no. (%) | 829 (85.7) | 415 (80.1) | 1244 (83.8) |
| Other malignancies, no. (%) | 52 (5.4) | 29 (5.6) | 81 (5.5) |
| Cardiovascular disease, no. (%) | 17 (1.8) | 34 (6.6) | 51 (3.4) |
| Neurological disorders, no. (%) | 9 (0.9) | 7 (1.4) | 16 (1.1) |
| Respiratory disease, no. (%) | 6 (0.6) | 6 (1.2) | 12 (0.8) |
| Cerebrovascular disease, no. (%) | 16 (1.7) | 6 (1.2) | 22 (1.5) |
| Other or unknown, no. (%) | 38 (3.9) | 21 (4.1) | 59 (4.0) |
|  |  |  |  |
| **>5 to 10 years** |  |  |  |
| CRC, no. (%) | 98 (37.7) | 51 (27.9) | 149 (33.6) |
| Other malignancies, no. (%) | 56 (21.5) | 24 (13.1) | 80 (18.1) |
| Cardiovascular disease, no. (%) | 21 (8.1) | 45 (24.6) | 66 (14.9) |
| Neurological disorders, no. (%) | 11 (4.2) | 13 (7.1) | 24 (5.4) |
| Respiratory disease, no. (%) | 20 (7.7) | 13 (7.1) | 33 (7.4) |
| Cerebrovascular disease, no. (%) | 15 (5.8) | 12 (6.6) | 27 (6.1) |
| Other or unknown, no. (%) | 39 (15.0) | 25 (13.7) | 64 (14.4) |
|  |  |  |  |
| **>10 years** |  |  |  |
| CRC, no. (%) | 45 (14.0) | 12 (6.3) | 57 (11.1) |
| Other malignancies, no. (%) | 57 (17.8) | 26 (13.6) | 83 (16.2) |
| Cardiovascular disease, no. (%) | 37 (11.5) | 65 (34.0) | 102 (19.9) |
| Neurological disorders, no. (%) | 50 (15.6) | 23 (12.0) | 73 (14.3) |
| Respiratory disease, no. (%) | 30 (9.3) | 15 (7.9) | 45 (8.8) |
| Cerebrovascular disease, no. (%) | 19 (5.9) | 10 (5.2) | 29 (5.7) |
| Other or unknown, no. (%) | 83 (25.9) | 40 (20.9) | 123 (24.0) |

**Supplementary Table S2.** HRs for 5-year overall mortality by diabetes status at CRC diagnosis, stratified by covariates.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Covariate** | **No. of patients/deaths** | | **HR (95% CI)a** | ***P* interaction** |
| **No diabetes** | **Diabetes** |
| **All patients** |  |  |  |  |
| Age at cancer diagnosis |  |  |  | 0.85 |
| <70 years | 1939/635 | 161/53 | 1.12 (0.84-1.49) |  |
| ≥70 years | 1670/677 | 268/120 | 1.16 (0.95-1.41) |  |
| Cancer stage |  |  |  | 0.36 |
| I-III | 2445/540 | 275/69 | 1.15 (0.89-1.49) |  |
| IV | 599/535 | 61/52 | 0.96 (0.72-1.29) |  |
| Grade of tumor differentiation |  |  |  | 0.15 |
| Well/moderately differentiated | 2352/715 | 268/97 | 1.16 (0.93-1.44) |  |
| Poorly differentiated | 597/316 | 81/36 | 0.86 (0.61-1.23) |  |
| Location of primary tumor |  |  |  | 0.18 |
| Proximal colon | 1524/562 | 203/77 | 1.08 (0.85-1.38) |  |
| Distal colon | 1059/349 | 109/36 | 0.95 (0.67-1.35) |  |
| Rectum | 769/278 | 74/37 | 1.49 (1.05-2.12) |  |
| Diagnosis period |  |  |  | 0.81 |
| 1976-1989 | 683/258 | 32/13 | 1.05 (0.78-1.42) |  |
| 1990-1999 | 1341/474 | 116/48 | 1.07 (0.61-1.87) |  |
| 2000-2014 | 1585/580 | 281/112 | 1.18 (0.96-1.45) |  |
| Body mass index |  |  |  | 0.88 |
| <25.0 kg/m2 | 1613/635 | 97/41 | 1.13 (0.82-1.56) |  |
| ≥25.0 kg/m2 | 1990/672 | 331/131 | 1.17 (0.96-1.41) |  |
|  |  |  |  |  |
| **Female patients** |  |  |  |  |
| Age at cancer diagnosis |  |  |  | 0.98 |
| <70 years | 1379/467 | 118/43 | 1.29 (0.94-1.78) |  |
| ≥70 years | 970/378 | 166/79 | 1.30 (1.01-1.67) |  |
| Cancer stage |  |  |  | 0.40 |
| I-III | 1654/357 | 189/50 | 1.25 (0.92-1.69) |  |
| IV | 406/361 | 47/40 | 1.03 (0.74-1.45) |  |
| Grade of tumor differentiation |  |  |  | 0.33 |
| Well/moderately differentiated | 1625/470 | 191/72 | 1.30 (1.01-1.69) |  |
| Poorly differentiated | 447/243 | 59/28 | 1.04 (0.69-1.55) |  |
| Location of primary tumor |  |  |  | 0.43 |
| Proximal colon | 1093/392 | 147/59 | 1.17 (0.88-1.56) |  |
| Distal colon | 693/223 | 83/32 | 1.31 (0.89-1.91) |  |
| Rectum | 504/182 | 47/25 | 1.64 (1.07-2.53) |  |
| Diagnosis period |  |  |  | 0.71 |
| 1976-1989 | 524/202 | 30/12 | 1.35 (0.93-1.95) |  |
| 1990-1999 | 784/253 | 76/34 | 1.04 (0.57-1.87) |  |
| 2000-2014 | 1041/390 | 178/76 | 1.33 (1.03-1.71) |  |
| Body mass index |  |  |  | 0.41 |
| <25.0 kg/m2 | 1130/431 | 57/27 | 1.52 (1.02-2.26) |  |
| ≥25.0 kg/m2 | 1218/413 | 226/94 | 1.25 (0.99-1.57) |  |

aComparing patients with diabetes to those without diabetes, stratified by sex and cancer stage (I to IV or unknown) and adjusted for age at cancer diagnosis (continuous), race (White, nonwhite, or unknown), grade of tumor differentiation (well differentiated, moderately differentiated, poorly differentiated, or unknown), location of primary tumor (proximal colon, distal colon, rectum, or unknown), year of diagnosis (continuous), body mass index (continuous), physical activity (continuous), smoking status (never, past, or current), alcohol intake (continuous), AHEI-2010 (continuous), and regular aspirin use (yes or no), excluding the stratification variable.

**Supplementary Table S3.** HRs for CRC-specific mortality by diabetes status at cancer diagnosis, stratified by covariates.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Covariate** | **No. of patients/deaths** | | **HR (95% CI)a** | ***P* interaction** |
| **No diabetes** | **Diabetes** |
| **All patients** |  |  |  |  |
| Age at cancer diagnosis |  |  |  | 0.37 |
| <70 years | 1939/705 | 161/61 | 1.21 (0.92-1.58) |  |
| ≥70 years | 1670/593 | 268/91 | 1.03 (0.82-1.29) |  |
| Cancer stage |  |  |  | 0.71 |
| I-III | 2445/540 | 275/53 | 0.96 (0.72-1.29) |  |
| IV | 599/540 | 61/54 | 1.04 (0.78-1.38) |  |
| Grade of tumor differentiation |  |  |  | 0.16 |
| Well/moderately differentiated | 2352/708 | 268/84 | 1.10 (0.87-1.39) |  |
| Poorly differentiated | 597/316 | 81/32 | 0.81 (0.56-1.18) |  |
| Location of primary tumor |  |  |  | 0.47 |
| Proximal colon | 1524/514 | 203/66 | 1.07 (0.82-1.39) |  |
| Distal colon | 1059/374 | 109/35 | 0.93 (0.65-1.32) |  |
| Rectum | 769/290 | 74/31 | 1.28 (0.88-1.87) |  |
| Diagnosis period |  |  |  | 0.97 |
| 1976-1989 | 683/306 | 32/15 | 1.05 (0.78-1.42) |  |
| 1990-1999 | 1341/488 | 116/48 | 1.06 (0.63-1.79) |  |
| 2000-2014 | 1585/504 | 281/89 | 1.10 (0.87-1.39) |  |
| Body mass index |  |  |  | 0.85 |
| <25.0 kg/m2 | 1613/630 | 97/36 | 1.15 (0.82-1.62) |  |
| ≥25.0 kg/m2 | 1990/664 | 331/115 | 1.11 (0.90-1.35) |  |
|  |  |  |  |  |
| **Female patients** |  |  |  |  |
| Age at cancer diagnosis |  |  |  | 0.38 |
| <70 years | 1379/535 | 118/49 | 1.33 (0.99-1.80) |  |
| ≥70 years | 970/330 | 166/58 | 1.11 (0.83-1.48) |  |
| Cancer stage |  |  |  | 0.39 |
| I-III | 1654/382 | 189/37 | 0.94 (0.66-1.32) |  |
| IV | 406/365 | 47/42 | 1.15 (0.82-1.60) |  |
| Grade of tumor differentiation |  |  |  | 0.41 |
| Well/moderately differentiated | 1625/489 | 191/62 | 1.17 (0.89-1.54) |  |
| Poorly differentiated | 447/245 | 59/24 | 0.95 (0.62-1.46) |  |
| Location of primary tumor |  |  |  | 0.94 |
| Proximal colon | 1093/363 | 147/54 | 1.22 (0.91-1.65) |  |
| Distal colon | 693/261 | 83/29 | 1.12 (0.76-1.66) |  |
| Rectum | 504/195 | 47/18 | 1.20 (0.73-1.96) |  |
| Diagnosis period |  |  |  | 0.94 |
| 1976-1989 | 524/244 | 30/15 | 1.25 (0.87-1.79) |  |
| 1990-1999 | 784/291 | 76/35 | 1.12 (0.66-1.90) |  |
| 2000-2014 | 1041/330 | 178/57 | 1.20 (0.90-1.60) |  |
| Body mass index |  |  |  | 0.45 |
| <25.0 kg/m2 | 1130/442 | 57/23 | 1.43 (0.94-2.20) |  |
| ≥25.0 kg/m2 | 1218/422 | 226/83 | 1.18 (0.93-1.51) |  |

aComparing patients with diabetes to those without diabetes, stratified by sex and cancer stage (I to IV or unknown) and adjusted for age at cancer diagnosis (continuous), race (White, nonwhite, or unknown), grade of tumor differentiation (well differentiated, moderately differentiated, poorly differentiated, or unknown), location of primary tumor (proximal colon, distal colon, rectum, or unknown), year of diagnosis (continuous), body mass index (continuous), physical activity (continuous), smoking status (never, past, or current), alcohol intake (continuous), AHEI-2010 (continuous), and regular aspirin use (yes or no), excluding the stratification variable.

**Supplementary Table S4.** HRs for CRC-specific mortality by diabetes duration at cancer diagnosis.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Cause of death** | **Women** | | | **Men** | | |
| **No diabetes** | **≤10-year diabetes** | ***>*10-year diabetes** | **No diabetes** | **≤10-year diabetes** | ***>*10-year diabetes** |
| No. of patients | 2349 | 148 | 136 | 1260 | 82 | 63 |
| CRC |  |  |  |  |  |  |
| No. of deaths | 865 | 50 | 57 | 433 | 21 | 24 |
| Age-adjusted HR (95% CI) | 1 | 1.00 (0.75-1.33) | 1.42 (1.08-1.87) | 1 | 0.67 (0.43-1.04) | 1.12 (0.74-1.70) |
| Multivariate HR (95% CI)a | 1 | 1.13 (0.85-1.51) | 1.36 (1.04-1.78) | 1 | 0.76 (0.48-1.18) | 1.07 (0.70-1.64) |
| Multivariate HR (95% CI)b | 1 | 1.09 (0.81-1.47) | 1.33 (1.01-1.76) | 1 | 0.75 (0.48-1.16) | 1.04 (0.68-1.60) |
| Other malignancies |  |  |  |  |  |  |
| No. of deaths | 142 | 12 | 11 | 72 | 6 | 1 |
| Age-adjusted HR (95% CI) | 1 | 1.69 (0.93-3.05) | 2.60 (1.39-4.86) | 1 | 1.36 (0.59-3.13) | 0.46 (0.06-3.32) |
| Multivariate HR (95% CI)a | 1 | 1.71 (0.94-3.09) | 2.47 (1.32-4.65) | 1 | 1.45 (0.61-3.41) | 0.54 (0.07-4.04) |
| Multivariate HR (95% CI)b | 1 | 1.83 (0.99-3.39) | 2.66 (1.39-5.09) | 1 | 1.63 (0.68-3.91) | 0.55 (0.07-4.10) |
| Cardiovascular disease |  |  |  |  |  |  |
| No. of deaths | 62 | 6 | 7 | 126 | 14 | 4 |
| Age-adjusted HR (95% CI) | 1 | 2.08 (0.89-4.82) | 3.41 (1.52-7.65) | 1 | 1.93 (1.10-3.39) | 0.99 (0.36-2.71) |
| Multivariate HR (95% CI)a | 1 | 2.15 (0.92-5.02) | 3.49 (1.55-7.86) | 1 | 2.20 (1.23-3.92) | 1.20 (0.42-3.41) |
| Multivariate HR (95% CI)b | 1 | 1.54 (0.64-3.70) | 2.54 (1.09-5.89) | 1 | 2.08 (1.16-3.74) | 1.23 (0.43-3.50) |

aStratified by sex and cancer stage (I to IV or unknown) and adjusted for age at cancer diagnosis (continuous), race (White, nonwhite, or unknown), grade of tumor differentiation (well differentiated, moderately differentiated, poorly differentiated, or unknown), location of primary tumor (proximal colon, distal colon, rectum, or unknown), and year of diagnosis (continuous).

bAdditionally adjusted for body mass index (continuous), physical activity (continuous), smoking status (never, past, or current), alcohol intake (continuous), AHEI-2010 (continuous), and regular aspirin use (yes or no).

**Supplementary Table S5.** HRs for 5-year overall and CRC-specific mortality by diabetes treatment.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Outcome** | **No diabetes** | **Metformina** | **Other oral medication** | **Insulin injectionb** | **Neither oral medication nor insulin injection** | **Without information** |
| No. of patients | 3609 | 60 | 106 | 56 | 60 | 147 |
| 5-year overall mortality |  |  |  |  |  |  |
| No. of deaths | 1312 | 13 | 39 | 23 | 31 | 67 |
| Age-adjusted HR (95% CI) | 1 | 0.50 (0.29-0.86) | 0.97 (0.71-1.34) | 1.12 (0.74-1.69) | 1.71 (1.20-2.45) | 1.31 (1.02-1.67) |
| Multivariate HR (95% CI)c | 1 | 0.55 (0.32-0.95) | 1.15 (0.83-1.59) | 1.07 (0.71-1.63) | 1.65 (1.15-2.36) | 1.25 (0.98-1.60) |
| Multivariate HR (95% CI)d | 1 | 0.52 (0.30-0.91) | 1.14 (0.82-1.58) | 1.06 (0.70-1.61) | 1.68 (1.17-2.41) | 1.25 (0.98-1.61) |
| CRC-specific mortality |  |  |  |  |  |  |
| No. of deaths | 1298 | 9 | 36 | 21 | 27 | 59 |
| Age-adjusted HR (95% CI) | 1 | 0.40 (0.21-0.77) | 1.00 (0.72-1.39) | 1.12 (0.73-1.73) | 1.63 (1.11-2.39) | 1.22 (0.94-1.58) |
| Multivariate HR (95% CI)c | 1 | 0.44 (0.23-0.86) | 1.24 (0.89-1.74) | 1.09 (0.70-1.69) | 1.60 (1.09-2.36) | 1.14 (0.88-1.48) |
| Multivariate HR (95% CI)d | 1 | 0.42 (0.22-0.81) | 1.22 (0.87-1.71) | 1.07 (0.69-1.67) | 1.61 (1.09-2.38) | 1.12 (0.86-1.46) |

aIncluding those who used both metformin and other oral medication.

bIncluding those who initially used oral medication and switched to insulin injection.

cStratified by sex and cancer stage (I to IV or unknown) and adjusted for age at cancer diagnosis (continuous), race (White, nonwhite, or unknown), grade of tumor differentiation (well differentiated, moderately differentiated, poorly differentiated, or unknown), location of primary tumor (proximal colon, distal colon, rectum, or unknown), and year of diagnosis (continuous).

dAdditionally adjusted for body mass index (continuous), physical activity (continuous), smoking status (never, past, or current), alcohol intake (continuous), AHEI-2010 (continuous), and regular aspirin use (yes or no).