**LIST OF SUPPLEMENTARY MATERIALS**

* **Table S1:** Post-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to cardiovascular disease mortality after breast cancer diagnosis (n=8,932 cases) in Nurses’ Health Study and Nurses’ Health Study II.
* **Table S2:** Pre-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II (n=8,555).
* **Table S3:** Dietary glycemic index, glycemic load, insulin index, and insulin load reported in the first FFQ after diagnosis in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II.
* **Table S4:** Post-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II, stratified by post-diagnostic BMI.
* **Table S5:** Post-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II, stratified by menopausal status.
* **Table S6:** Post-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis (n=8,932 cases) in Nurses’ Health Study and Nurses’ Health Study II.
* **Table S7:** Dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II, using complete case method (n=5,960).

**Table S1. Post-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to cardiovascular disease mortality after breast cancer diagnosis (n=8,932 cases) in Nurses’ Health Study and Nurses’ Health Study II.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Cardiovascular disease mortality** | | |
| **Quintile** | **Median** | **No. of deaths** | **Model 1** | **Model 2** |
| **Dietary Glycemic Index** | | | | |
| 1 | 48.1 | 39 | 1 | 1 |
| 2 | 50.7 | 60 | 1.40 (0.94-2.10) | 1.33 (0.89-2.00) |
| 3 | 52.4 | 66 | 1.49 (1.00-2.21) | 1.36 (0.91-2.03) |
| 4 | 54.0 | 76 | 1.68 (1.14-2.48) | 1.53 (1.03-2.26) |
| 5 | 56.2 | 71 | 1.64 (1.11-2.43) | 1.40 (0.94-2.09) |
| **P *trend*** |  |  | 0.008 | 0.09 |
| **Dietary Glycemic Load** | | | | |
| 1 | 86.5 | 39 | 1 | 1 |
| 2 | 101.8 | 52 | 1.23 (0.81-1.87) | 1.27 (0.83-1.93) |
| 3 | 111.0 | 78 | 1.77 (1.20-2.60) | 1.69 (1.13-2.52) |
| 4 | 120.7 | 73 | 1.55 (1.05-2.29) | 1.52 (1.01-2.29) |
| 5 | 135.8 | 70 | 1.49 (1.00-2.20) | 1.43 (0.94-2.19) |
| **P *trend*** |  |  | 0.04 | 0.10 |
| **Dietary Insulin Index** | | | | |
| 1 | 35.6 | 34 | 1 | 1 |
| 2 | 40.2 | 61 | 1.56 (1.03-2.38) | 1.62 (1.05-2.49) |
| 3 | 42.8 | 58 | 1.36 (0.89-2.07) | 1.25 (0.80-1.95) |
| 4 | 45.2 | 68 | 1.46 (0.97-2.21) | 1.33 (0.86-2.07) |
| 5 | 48.7 | 91 | 1.62 (1.09-2.41) | 1.60 (1.04-2.48) |
| **P *trend*** |  |  | 0.04 | 0.11 |
| **Dietary Insulin Load** | | | | |
| 1 | 581 | 49 | 1 | 1 |
| 2 | 656 | 62 | 1.19 (0.82-1.73) | 1.16 (0.79-1.72) |
| 3 | 698 | 66 | 1.20 (0.83-1.73) | 1.04 (0.70-1.54) |
| 4 | 741 | 69 | 1.23 (0.85-1.78) | 1.14 (0.77-1.70) |
| 5 | 805 | 66 | 1.40 (0.97-2.03) | 1.37 (0.91-2.06) |
| **P *trend*** |  |  | 0.08 | 0.16 |

Model 1 stratified by cohort and adjusted for age at diagnosis (year) and calendar year of diagnosis.

Model 2 stratified by cohort and adjusted for age at diagnosis (year), calendar year of diagnosis, time between diagnosis and first FFQ (year), calendar year at start of follow-up of each-2-year questionnaire cycle, pre-diagnostic BMI (<20, 20 to <22.5, 22.5 to <25, 25.0 to <30, 30 to <35, ≥35 kg/m2, missing), BMI change after diagnosis (no change (≥-0.5 to ≤0.5 kg/m2), decrease (<-0.5 kg/m2), increase (>0.5-2 kg/m2), increase (>2 kg/m2), missing), post-diagnostic smoking (never, past, current 1-14/day, current 15-24/day, current ≥25/day, missing), post-diagnostic physical activity (<5, 5 to <11.5, 11.5 to <22, ≥22 MET-h/week, missing), oral contraceptive use (ever, never), post-diagnostic alcohol consumption (<0.15, 0.15 to <2.0, 2.0 to 7.5, ≥7.5 g/day), post-diagnostic total energy intake (quintiles, kcal/day), pre-diagnostic menopausal status, age at menopause, and postmenopausal hormone use (premenopausal, postmenopausal and age at menopause<50 year and never postmenopausal hormone use, postmenopausal and age at menopause<50 year and past postmenopausal hormone use, postmenopausal and age at menopause<50 year and current postmenopausal hormone use, postmenopausal and age at menopause≥50 year and never postmenopausal hormone use, postmenopausal and age at menopause≥50 year and past postmenopausal hormone use, postmenopausal and age at menopause≥50 year and current postmenopausal hormone use, missing), post-diagnostic aspirin use (never, past, current, missing), race (non-Hispanic white, other), stage of disease (I, II, III), ER/PR status (ER/PR positive, ER positive and PR negative, ER/PR negative, missing), radiotherapy (yes, no, missing), chemotherapy (yes, no, missing), and hormonal treatment (yes, no, missing).

**Table S2: Pre-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II (n=8,555).**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Breast cancer specific mortality** | | | **All-cause mortality** | | |
| **Quintile** | **Median** | **No. of deaths** | **Model 1** | **Model 2** | **No. of deaths** | **Model 1** | **Model 2** |
| **Dietary Glycemic Index** | | | | | | | |
| 1 | 47.9 | 209 | 1 | 1 | 518 | 1 | 1 |
| 2 | 50.9 | 173 | 0.87 (0.71-1.06) | 0.97 (0.79-1.19) | 431 | 0.84 (0.74-0.96) | 0.88 (0.77-1.00) |
| 3 | 52.8 | 191 | 0.97 (0.79-1.18) | 1.08 (0.89-1.32) | 453 | 0.93 (0.82-1.05) | 0.97 (0.85-1.10) |
| 4 | 54.5 | 202 | 1.03 (0.84-1.25) | 1.11 (0.91-1.35) | 478 | 0.97 (0.86-1.10) | 1.00 (0.88-1.14) |
| 5 | 57.2 | 230 | 1.18 (0.98-1.43) | 1.21 (0.99-1.46) | 494 | 1.08 (0.96-1.22) | 1.03 (0.91-1.17) |
| **P *trend*** |  |  | 0.03 | 0.03 |  | 0.08 | 0.29 |
| **Dietary Glycemic Load** | | | | | | | |
| 1 | 76.0 | 235 | 1 | 1 | 542 | 1 | 1 |
| 2 | 94.0 | 196 | 0.92 (0.76-1.12) | 0.92 (0.76-1.13) | 479 | 0.91 (0.80-1.03) | 0.93 (0.81-1.05) |
| 3 | 105.6 | 196 | 0.96 (0.79-1.16) | 1.05 (0.86-1.29) | 459 | 0.87 (0.77-0.99) | 0.97 (0.85-1.11) |
| 4 | 118.0 | 203 | 1.04 (0.85-1.27) | 1.11 (0.90-1.36) | 466 | 0.93 (0.81-1.05) | 1.00 (0.87-1.14) |
| 5 | 138.0 | 175 | 0.96 (0.78-1.19) | 1.16 (0.93-1.45) | 428 | 0.93 (0.81-1.07) | 1.08 (0.93-1.24) |
| **P *trend*** |  |  | 0.96 | 0.09 |  | 0.38 | 0.21 |
| **Dietary Insulin Index** | | | | | | | |
| 1 | 35.6 | 238 | 1 | 1 | 526 | 1 | 1 |
| 2 | 39.8 | 196 | 0.82 (0.68-0.99) | 0.85 (0.69-1.04) | 467 | 0.89 (0.79-1.01) | 0.89 (0.78-1.01) |
| 3 | 42.3 | 212 | 0.94 (0.78-1.13) | 0.98 (0.80-1.20) | 469 | 0.94 (0.83-1.06) | 0.99 (0.86-1.13) |
| 4 | 45.0 | 178 | 0.80 (0.66-0.97) | 0.89 (0.71-1.10) | 440 | 0.87 (0.76-0.98) | 0.94 (0.81-1.08) |
| 5 | 48.9 | 181 | 0.85 (0.70-1.04) | 0.98 (0.78-1.22) | 472 | 0.89 (0.78-1.01) | 0.98 (0.85-1.13) |
| **P *trend*** |  |  | 0.09 | 0.97 |  | 0.06 | 0.99 |
| **Dietary Insulin Load** | | | | | | | |
| 1 | 577 | 241 | 1 | 1 | 549 | 1 | 1 |
| 2 | 646 | 207 | 0.85 (0.71-1.03) | 0.87 (0.71-1.06) | 521 | 0.92 (0.81-1.03) | 0.91 (0.80-1.03) |
| 3 | 692 | 188 | 0.83 (0.68-1.00) | 0.90 (0.73-1.11) | 464 | 0.87 (0.77-0.99) | 0.93 (0.82-1.07) |
| 4 | 742 | 204 | 0.95 (0.78-1.15) | 0.97 (0.79-1.20) | 471 | 0.95 (0.83-1.07) | 0.97 (0.85-1.11) |
| 5 | 821 | 165 | 0.82 (0.66-1.02) | 0.94 (0.74-1.20) | 369 | 0.90 (0.78-1.03) | 1.00 (0.86-1.17) |
| **P *trend*** |  |  | 0.16 | 0.91 |  | 0.18 | 0.75 |

Model 1 stratified by cohort and adjusted for age at diagnosis (year) and calendar year of diagnosis.

Model 2 stratified by cohort and adjusted for age at diagnosis (year), calendar year of diagnosis, time between diagnosis and first FFQ (year), calendar year at start of follow-up of each-2-year questionnaire cycle, pre-diagnostic BMI (<20, 20 to <22.5, 22.5 to <25, 25.0 to <30, 30 to <35, ≥35 kg/m2, missing), BMI change after diagnosis (no change (≥-0.5 to ≤0.5 kg/m2), decrease (<-0.5 kg/m2), increase (>0.5-2 kg/m2), increase (>2 kg/m2), missing), post-diagnostic smoking (never, past, current 1-14/day, current 15-24/day, current ≥25/day, missing), post-diagnostic physical activity (<5, 5 to <11.5, 11.5 to <22, ≥22 MET-h/week, missing), oral contraceptive use (ever, never), pre-diagnostic alcohol consumption (<0.15, 0.15 to <2.0, 2.0 to 7.5, ≥7.5 g/day), pre-diagnostic total energy intake (quintiles, kcal/day), pre-diagnostic menopausal status, age at menopause, and postmenopausal hormone use (premenopausal, postmenopausal and age at menopause<50 year and never postmenopausal hormone use, postmenopausal and age at menopause<50 year and past postmenopausal hormone use, postmenopausal and age at menopause<50 year and current postmenopausal hormone use, postmenopausal and age at menopause≥50 year and never postmenopausal hormone use, postmenopausal and age at menopause≥50 year and past postmenopausal hormone use, postmenopausal and age at menopause≥50 year and current postmenopausal hormone use, missing), post-diagnostic aspirin use (never, past, current, missing), race (non-Hispanic white, other), stage of disease (I, II, III), ER/PR status (ER/PR positive, ER positive and PR negative, ER/PR negative, missing), radiotherapy (yes, no, missing), chemotherapy (yes, no, missing), and hormonal treatment (yes, no, missing).

**Table S3: Dietary glycemic index, glycemic load, insulin index, and insulin load reported in the first FFQ after diagnosis in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Breast cancer specific mortality** | | | **All-cause mortality** | | |
| **Quintile** | **Median** | **No. of deaths** | **Model 1** | **Model 2** | **No. of deaths** | **Model 1** | **Model 2** |
| **Dietary Glycemic Index** | | | | | | | |
| 1 | 47.8 | 184 | 1 | 1 | 432 | 1 | 1 |
| 2 | 50.7 | 210 | 1.09 (0.89-1.33) | 1.07 (0.87-1.30) | 490 | 1.09 (0.96-1.24) | 1.15 (1.01-1.31) |
| 3 | 52.6 | 200 | 1.02 (0.84-1.25) | 1.08 (0.88-1.32) | 484 | 1.05 (0.92-1.19) | 1.06 (0.93-1.21) |
| 4 | 54.3 | 252 | 1.25 (1.03-1.51) | 1.15 (0.95-1.39) | 550 | 1.17 (1.03-1.32) | 1.12 (0.99-1.28) |
| 5 | 56.8 | 225 | 1.12 (0.92-1.37) | 1.10 (0.90-1.35) | 567 | 1.25 (1.10-1.41) | 1.17 (1.03-1.33) |
| **P *trend*** |  |  | 0.10 | 0.23 |  | 0.0003 | 0.03 |
| **Dietary Glycemic Load** | | | | | | | |
| 1 | 83.4 | 213 | 1 | 1 | 495 | 1 | 1 |
| 2 | 100.0 | 208 | 1.02 (0.84-1.23) | 0.89 (0.73-1.08) | 493 | 0.99 (0.87-1.12) | 0.94 (0.83-1.07) |
| 3 | 111.0 | 210 | 0.99 (0.82-1.20) | 0.98 (0.81-1.20) | 511 | 0.98 (0.86-1.11) | 1.03 (0.91-1.17) |
| 4 | 122.1 | 220 | 1.11 (0.91-1.34) | 1.02 (0.84-1.25) | 501 | 1.00 (0.88-1.14) | 1.00 (0.88-1.14) |
| 5 | 140.0 | 220 | 1.13 (0.93-1.36) | 1.07 (0.87-1.31) | 523 | 1.09 (0.96-1.23) | 1.07 (0.94-1.23) |
| **P *trend*** |  |  | 0.16 | 0.28 |  | 0.20 | 0.17 |
| **Dietary Insulin Index** | | | | | | | |
| 1 | 35.4 | 205 | 1 | 1 | 437 | 1 | 1 |
| 2 | 40.2 | 224 | 1.01 (0.83-1.22) | 0.96 (0.79-1.17) | 505 | 1.06 (0.93-1.21) | 1.07 (0.94-1.22) |
| 3 | 43.0 | 214 | 0.95 (0.79-1.16) | 0.95 (0.78-1.17) | 492 | 1.02 (0.90-1.17) | 1.08 (0.94-1.24) |
| 4 | 45.7 | 231 | 1.04 (0.86-1.26) | 1.04 (0.85-1.27) | 543 | 1.09 (0.96-1.23) | 1.15 (1.01-1.32) |
| 5 | 49.4 | 197 | 0.89 (0.73-1.09) | 0.90 (0.73-1.11) | 546 | 1.03 (0.91-1.17) | 1.05 (0.91-1.20) |
| **P *trend*** |  |  | 0.37 | 0.53 |  | 0.58 | 0.33 |
| **Dietary Insulin Load** | | | | | | | |
| 1 | 577 | 218 | 1 | 1 | 503 | 1 | 1 |
| 2 | 654 | 221 | 0.98 (0.81-1.19) | 0.94 (0.77-1.13) | 512 | 0.98 (0.87-1.11) | 0.97 (0.85-1.10) |
| 3 | 699 | 213 | 0.93 (0.77-1.12) | 0.87 (0.71-1.06) | 521 | 1.00 (0.89-1.13) | 0.97 (0.85-1.10) |
| 4 | 748 | 232 | 1.06 (0.88-1.27) | 1.07 (0.88-1.30) | 531 | 1.05 (0.93-1.19) | 1.13 (0.99-1.29) |
| 5 | 822 | 187 | 0.89 (0.73-1.09) | 0.89 (0.72-1.10) | 456 | 1.02 (0.89-1.15) | 0.99 (0.86-1.13) |
| **P *trend*** |  |  | 0.49 | 0.61 |  | 0.54 | 0.48 |

Model 1 stratified by cohort and adjusted for age at diagnosis (year) and calendar year of diagnosis.

Model 2 stratified by cohort and adjusted for age at diagnosis (year), calendar year of diagnosis, time between diagnosis and first FFQ (year), calendar year at start of follow-up of each-2-year questionnaire cycle, pre-diagnostic BMI (<20, 20 to <22.5, 22.5 to <25, 25.0 to <30, 30 to <35, ≥35 kg/m2, missing), BMI change after diagnosis (no change (≥-0.5 to ≤0.5 kg/m2), decrease (<-0.5 kg/m2), increase (>0.5-2 kg/m2), increase (>2 kg/m2), missing), post-diagnostic smoking (never, past, current 1-14/day, current 15-24/day, current ≥25/day, missing), post-diagnostic physical activity (<5, 5 to <11.5, 11.5 to <22, ≥22 MET-h/week, missing), oral contraceptive use (ever, never), first post-diagnostic alcohol consumption (<0.15, 0.15 to <2.0, 2.0 to 7.5, ≥7.5 g/day), first post-diagnostic total energy intake (quintiles, kcal/day), pre-diagnostic menopausal status, age at menopause, and postmenopausal hormone use (premenopausal, postmenopausal and age at menopause<50 year and never postmenopausal hormone use, postmenopausal and age at menopause<50 year and past postmenopausal hormone use, postmenopausal and age at menopause<50 year and current postmenopausal hormone use, postmenopausal and age at menopause≥50 year and never postmenopausal hormone use, postmenopausal and age at menopause≥50 year and past postmenopausal hormone use, postmenopausal and age at menopause≥50 year and current postmenopausal hormone use, missing), post-diagnostic aspirin use (never, past, current, missing), race (non-Hispanic white, other), stage of disease (I, II, III), ER/PR status (ER/PR positive, ER positive and PR negative, ER/PR negative, missing), radiotherapy (yes, no, missing), chemotherapy (yes, no, missing), and hormonal treatment (yes, no, missing).

**Table S4: Post-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II, stratified by post-diagnostic BMI.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Breast cancer specific mortality** | | **All-cause mortality** | |
| **Quintile** | **Median** | **BMI<25 kg/m2**  **(451 deaths)** | **BMI≥25 kg/m2**  **(597 deaths)** | **BMI<25 kg/m2**  **(1,107 deaths)** | **BMI≥25 kg/m2**  **(1,378 deaths)** |
| **Dietary Glycemic Index** | | | | | |
| 1 | 48.1 | 1 | 1 | 1 | 1 |
| 2 | 50.7 | 1.15 (0.83-1.58) | 0.94 (0.71-1.23) | 1.15 (0.94-1.41) | 1.05 (0.88-1.26) |
| 3 | 52.4 | 1.20 (0.87-1.65) | 1.19 (0.91-1.55) | 1.21 (0.98-1.48) | 1.18 (0.99-1.41) |
| 4 | 54.0 | 0.97 (0.70-1.33) | 1.23 (0.94-1.61) | 1.16 (0.94-1.42) | 1.16 (0.97-1.39) |
| 5 | 56.2 | 1.07 (0.78-1.47) | 1.18 (0.91-1.52) | 1.20 (0.98-1.47) | 1.21 (1.01-1.44) |
| **P *trend*** |  | 0.95 | 0.06 | 0.11 | 0.02 |
| **P *Interaction*** |  | 0.35 | | 0.39 | |
| **Dietary Glycemic Load** | | | | | |
| 1 | 86.5 | 1 | 1 | 1 | 1 |
| 2 | 101.8 | 0.89 (0.66-1.21) | 1.21 (0.93-1.58) | 0.95 (0.78-1.17) | 1.14 (0.95-1.36) |
| 3 | 111.0 | 0.84 (0.61-1.16) | 1.32 (1.01-1.72) | 1.12 (0.92-1.38) | 1.19 (1.00-1.41) |
| 4 | 120.7 | 1.10 (0.81-1.50) | 1.05 (0.79-1.40) | 1.18 (0.96-1.45) | 1.09 (0.91-1.31) |
| 5 | 135.8 | 1.01 (0.74-1.38) | 1.55 (1.18-2.03) | 1.17 (0.95-1.43) | 1.31 (1.09-1.57) |
| **P *trend*** |  | 0.61 | 0.01 | 0.05 | 0.01 |
| **P *Interaction*** |  | 0.27 | | 0.19 | |
| **Dietary Insulin Index** | | | | | |
| 1 | 35.6 | 1 | 1 | 1 | 1 |
| 2 | 40.2 | 0.79 (0.58-1.06) | 0.97 (0.73-1.28) | 0.95 (0.77-1.16) | 1.14 (0.94-1.39) |
| 3 | 42.8 | 0.87 (0.63-1.19) | 0.97 (0.73-1.30) | 1.04 (0.84-1.28) | 1.14 (0.93-1.38) |
| 4 | 45.2 | 0.89 (0.65-1.22) | 1.05 (0.79-1.39) | 1.11 (0.91-1.37) | 1.22 (1.00-1.48) |
| 5 | 48.7 | 0.76 (0.54-1.05) | 1.16 (0.87-1.54) | 1.11 (0.90-1.37) | 1.26 (1.03-1.53) |
| **P *trend*** |  | 0.21 | 0.24 | 0.17 | 0.02 |
| **P *Interaction*** |  | 0.12 | | 0.15 | |
| **Dietary Insulin Load** | | | | | |
| 1 | 581 | 1 | 1 | 1 | 1 |
| 2 | 656 | 0.76 (0.56-1.01) | 1.05 (0.80-1.38) | 0.90 (0.74-1.10) | 1.09 (0.90-1.30) |
| 3 | 698 | 0.74 (0.54-1.01) | 1.16 (0.88-1.53) | 0.97 (0.79-1.19) | 1.16 (0.96-1.39) |
| 4 | 741 | 1.12 (0.83-1.50) | 1.04 (0.78-1.39) | 1.30 (1.06-1.58) | 1.15 (0.96-1.39) |
| 5 | 805 | 0.68 (0.48-0.95) | 1.36 (1.02-1.82) | 1.04 (0.84-1.29) | 1.37 (1.13-1.67) |
| **P *trend*** |  | 0.26 | 0.06 | 0.12 | 0.001 |
| **P *Interaction*** |  | 0.07 | | 0.06 | |

Stratified by cohort and adjusted for age at diagnosis (year), calendar year of diagnosis, time between diagnosis and first FFQ (year), calendar year at start of follow-up of each-2-year questionnaire cycle, post-diagnostic smoking (never, past, current 1-14/day, current 15-24/day, current ≥25/day, missing), post-diagnostic physical activity (<5, 5 to <11.5, 11.5 to <22, ≥22 MET-h/week, missing), oral contraceptive use (ever, never), post-diagnostic alcohol consumption (<0.15, 0.15 to <2.0, 2.0 to 7.5, ≥7.5 g/day), post-diagnostic total energy intake (quintiles, kcal/day), pre-diagnostic menopausal status, age at menopause, and postmenopausal hormone use (premenopausal, postmenopausal and age at menopause<50 year and never postmenopausal hormone use, postmenopausal and age at menopause<50 year and past postmenopausal hormone use, postmenopausal and age at menopause<50 year and current postmenopausal hormone use, postmenopausal and age at menopause≥50 year and never postmenopausal hormone use, postmenopausal and age at menopause≥50 year and past postmenopausal hormone use, postmenopausal and age at menopause≥50 year and current postmenopausal hormone use, missing), post-diagnostic aspirin use (never, past, current, missing), race (non-Hispanic white, other), stage of disease (I, II, III), ER/PR status (ER/PR positive, ER positive and PR negative, ER/PR negative, missing), radiotherapy (yes, no, missing), chemotherapy (yes, no, missing), and hormonal treatment (yes, no, missing).

**Table S5: Post-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II, stratified by menopausal status.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Breast cancer specific mortality** | | **All-cause mortality** | |
| **Quintile** | **Median** | **Premenopausal**  **(316 deaths)** | **Postmenopausal**  **(696 deaths)** | **Premenopausal**  **(434 deaths)** | **Postmenopausal**  **(1,972 deaths)** |
| **Dietary Glycemic Index** | | | | | |
| 1 | 48.1 | 1 | 1 | 1 | 1 |
| 2 | 50.7 | 1.14 (0.79-1.65) | 1.00 (0.77-1.29) | 1.12 (0.80-1.55) | 1.10 (0.95-1.28) |
| 3 | 52.4 | 1.06 (0.73-1.53) | 1.19 (0.92-1.53) | 1.15 (0.83-1.57) | 1.18 (1.01-1.37) |
| 4 | 54.0 | 1.04 (0.72-1.51) | 1.15 (0.90-1.48) | 1.18 (0.86-1.62) | 1.12 (0.96-1.30) |
| 5 | 56.2 | 0.98 (0.68-1.42) | 1.30 (1.02-1.66) | 1.01 (0.73-1.39) | 1.35 (1.16-1.56) |
| **P *trend*** |  | 0.78 | 0.02 | 0.90 | 0.0002 |
| **P *Interaction*** |  | 0.09 | | 0.12 | |
| **Dietary Glycemic Load** | | | | | |
| 1 | 86.5 | 1 | 1 | 1 | 1 |
| 2 | 101.8 | 1.11 (0.76-1.60) | 1.08 (0.85-1.39) | 0.97 (0.71-1.32) | 1.09 (0.94-1.27) |
| 3 | 111.0 | 1.24 (0.85-1.83) | 1.14 (0.89-1.46) | 1.12 (0.81-1.53) | 1.18 (1.01-1.37) |
| 4 | 120.7 | 1.20 (0.81-1.79) | 1.10 (0.85-1.43) | 1.12 (0.80-1.55) | 1.13 (0.97-1.31) |
| 5 | 135.8 | 1.49 (1.01-2.20) | 1.27 (0.98-1.64) | 1.33 (0.95-1.85) | 1.22 (1.05-1.43) |
| **P *trend*** |  | 0.04 | 0.08 | 0.07 | 0.01 |
| **P *Interaction*** |  | 0.71 | | 0.09 | |
| **Dietary Insulin Index** | | | | | |
| 1 | 35.6 | 1 | 1 | 1 | 1 |
| 2 | 40.2 | 0.96 (0.67-1.39) | 0.92 (0.71-1.18) | 0.96 (0.70-1.30) | 1.09 (0.93-1.28) |
| 3 | 42.8 | 1.18 (0.80-1.71) | 0.85 (0.65-1.12) | 1.03 (0.74-1.43) | 1.13 (0.96-1.33) |
| 4 | 45.2 | 1.03 (0.70-1.54) | 1.04 (0.81-1.35) | 1.00 (0.71-1.40) | 1.22 (1.04-1.43) |
| 5 | 48.7 | 1.01 (0.65-1.56) | 1.02 (0.78-1.32) | 0.93 (0.64-1.35) | 1.26 (1.07-1.47) |
| **P *trend*** |  | 0.81 | 0.61 | 0.85 | 0.002 |
| **P *Interaction*** |  | 0.36 | | 0.12 | |
| **Dietary Insulin Load** | | | | | |
| 1 | 581 | 1 | 1 | 1 | 1 |
| 2 | 656 | 1.00 (0.68-1.46) | 0.95 (0.75-1.21) | 0.85 (0.61-1.17) | 1.09 (0.94-1.26) |
| 3 | 698 | 1.14 (0.76-1.71) | 0.96 (0.75-1.22) | 0.93 (0.66-1.31) | 1.15 (0.99-1.34) |
| 4 | 741 | 1.27 (0.85-1.90) | 1.10 (0.86-1.41) | 1.10 (0.78-1.54) | 1.24 (1.07-1.45) |
| 5 | 805 | 1.10 (0.71-1.69) | 1.06 (0.82-1.38) | 1.03 (0.71-1.48) | 1.30 (1.11-1.52) |
| **P *trend*** |  | 0.44 | 0.44 | 0.53 | 0.0003 |
| **P *Interaction*** |  | 0.92 | | 0.95 | |

Stratified by cohort and adjusted for age at diagnosis (year), calendar year of diagnosis, time between diagnosis and first FFQ (year), calendar year at start of follow-up of each-2-year questionnaire cycle, pre-diagnostic BMI (<20, 20 to <22.5, 22.5 to <25, 25.0 to <30, 30 to <35, ≥35 kg/m2, missing), BMI change after diagnosis (no change (≥-0.5 to ≤0.5 kg/m2), decrease (<-0.5 kg/m2), increase (>0.5-2 kg/m2), increase (>2 kg/m2), missing), post-diagnostic smoking (never, past, current 1-14/day, current 15-24/day, current ≥25/day, missing), post-diagnostic physical activity (<5, 5 to <11.5, 11.5 to <22, ≥22 MET-h/week, missing), oral contraceptive use (ever, never), post-diagnostic alcohol consumption (<0.15, 0.15 to <2.0, 2.0 to 7.5, ≥7.5 g/day), post-diagnostic total energy intake (quintiles, kcal/day), post-diagnostic aspirin use (never, past, current, missing), race (non-Hispanic white, other), stage of disease (I, II, III), ER/PR status (ER/PR positive, ER positive and PR negative, ER/PR negative, missing), radiotherapy (yes, no, missing), chemotherapy (yes, no, missing), and hormonal treatment (yes, no, missing). In postmenopausal women, it was additionally adjusted for age at menopause, and postmenopausal hormone use.

**Table S6. Post-diagnostic dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis (n=8,932 cases) in Nurses’ Health Study and Nurses’ Health Study II.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Breast cancer specific mortality** | | | **All-cause mortality** | | |
| **Quintile** | **Median** | **No. of deaths** | **Model 1** | **Model 2** | **No. of deaths** | **Model 1** | **Model 2** |
| **Dietary Glycemic Index** | | | | | | | |
| 1 | 48.1 | 178 | 1 | 1 | 395 | 1 | 1 |
| 2 | 50.7 | 193 | 1.05 (0.86-1.29) | 1.02 (0.83-1.26) | 475 | 1.10 (0.96-1.26) | 1.11 (0.97-1.27) |
| 3 | 52.4 | 215 | 1.14 (0.93-1.39) | 1.21 (0.99-1.48) | 518 | 1.16 (1.02-1.33) | 1.21 (1.06-1.38) |
| 4 | 54.0 | 228 | 1.17 (0.96-1.43) | 1.15 (0.94-1.40) | 541 | 1.20 (1.06-1.37) | 1.18 (1.03-1.34) |
| 5 | 56.2 | 257 | 1.24 (1.02-1.50) | 1.15 (0.95-1.41) | 594 | 1.41 (1.24-1.61) | 1.24 (1.09-1.41) |
| **P *trend*** |  |  | 0.02 | 0.09 |  | <0.0001 | 0.001 |
| **Dietary Glycemic Load** | | | | | | | |
| 1 | 86.5 | 199 | 1 | 1 | 446 | 1 | 1 |
| 2 | 101.8 | 210 | 1.12 (0.92-1.36) | 1.13 (0.93-1.38) | 472 | 0.98 (0.86-1.12) | 1.09 (0.96-1.25) |
| 3 | 111.0 | 213 | 1.18 (0.97-1.43) | 1.19 (0.97-1.45) | 529 | 1.08 (0.95-1.23) | 1.20 (1.05-1.37) |
| 4 | 120.7 | 194 | 1.08 (0.88-1.32) | 1.12 (0.91-1.38) | 498 | 0.99 (0.87-1.12) | 1.14 (1.00-1.31) |
| 5 | 135.8 | 255 | 1.35 (1.12-1.63) | 1.38 (1.13-1.69) | 578 | 1.20 (1.06-1.36) | 1.30 (1.13-1.49) |
| **P *trend*** |  |  | 0.005 | 0.004 |  | 0.006 | 0.0002 |
| **Dietary Insulin Index** | | | | | | | |
| 1 | 35.6 | 198 | 1 | 1 | 399 | 1 | 1 |
| 2 | 40.2 | 218 | 1.00 (0.82-1.21) | 0.94 (0.77-1.14) | 471 | 1.08 (0.95-1.24) | 1.09 (0.95-1.25) |
| 3 | 42.8 | 206 | 0.94 (0.77-1.15) | 0.96 (0.78-1.18) | 492 | 1.07 (0.93-1.22) | 1.10 (0.95-1.27) |
| 4 | 45.2 | 228 | 1.05 (0.87-1.27) | 1.04 (0.85-1.28) | 554 | 1.14 (1.00-1.30) | 1.20 (1.04-1.38) |
| 5 | 48.7 | 221 | 0.97 (0.80-1.17) | 1.02 (0.82-1.27) | 607 | 1.15 (1.01-1.31) | 1.22 (1.06-1.40) |
| **P *trend*** |  |  | 0.89 | 0.58 |  | 0.03 | 0.003 |
| **Dietary Insulin Load** | | | | | | | |
| 1 | 581 | 204 | 1 | 1 | 445 | 1 | 1 |
| 2 | 656 | 221 | 1.01 (0.84-1.23) | 0.96 (0.79-1.17) | 502 | 1.06 (0.94-1.21) | 1.03 (0.90-1.17) |
| 3 | 698 | 216 | 1.02 (0.84-1.24) | 0.99 (0.81-1.22) | 527 | 1.08 (0.95-1.23) | 1.08 (0.94-1.23) |
| 4 | 741 | 224 | 1.07 (0.89-1.30) | 1.14 (0.93-1.40) | 553 | 1.14 (1.00-1.29) | 1.25 (1.09-1.43) |
| 5 | 805 | 206 | 1.01 (0.82-1.23) | 1.06 (0.86-1.32) | 496 | 1.20 (1.05-1.36) | 1.25 (1.08-1.44) |
| **P *trend*** |  |  | 0.78 | 0.27 |  | 0.004 | 0.0001 |

Model 1 stratified by cohort and adjusted for age at diagnosis (year) and calendar year of diagnosis.

Model 2 stratified by cohort and adjusted for age at diagnosis (year), calendar year of diagnosis, time between diagnosis and first FFQ (year), calendar year at start of follow-up of each-2-year questionnaire cycle, pre-diagnostic BMI (<20, 20 to <22.5, 22.5 to <25, 25.0 to <30, 30 to <35, ≥35 kg/m2, missing), BMI change after diagnosis (no change (≥-0.5 to ≤0.5 kg/m2), decrease (<-0.5 kg/m2), increase (>0.5-2 kg/m2), increase (>2 kg/m2), missing), post-diagnostic smoking (never, past, current 1-14/day, current 15-24/day, current ≥25/day, missing), post-diagnostic physical activity (<5, 5 to <11.5, 11.5 to <22, ≥22 MET-h/week, missing), oral contraceptive use (ever, never), post-diagnostic alcohol consumption (<0.15, 0.15 to <2.0, 2.0 to 7.5, ≥7.5 g/day), post-diagnostic total energy intake (quintiles, kcal/day), pre-diagnostic menopausal status, age at menopause, and postmenopausal hormone use (premenopausal, postmenopausal and age at menopause<50 year and never postmenopausal hormone use, postmenopausal and age at menopause<50 year and past postmenopausal hormone use, postmenopausal and age at menopause<50 year and current postmenopausal hormone use, postmenopausal and age at menopause≥50 year and never postmenopausal hormone use, postmenopausal and age at menopause≥50 year and past postmenopausal hormone use, postmenopausal and age at menopause≥50 year and current postmenopausal hormone use, missing), post-diagnostic aspirin use (never, past, current, missing), race (non-Hispanic white, other), stage of disease (I, II, III), ER/PR status (ER/PR positive, ER positive and PR negative, ER/PR negative, missing), radiotherapy (yes, no, missing), chemotherapy (yes, no, missing), and hormonal treatment (yes, no, missing).

**Table S7: Dietary glycemic index, glycemic load, insulin index, and insulin load in relation to mortality after breast cancer diagnosis in the Nurses’ Health Study and Nurses’ Health Study II, using complete case method (n=5,960).**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Breast cancer specific mortality** | | | **All-cause mortality** | | |
| **Quintile** | **Median** | **No. of deaths** | **Model 1** | **Model 2** | **No. of deaths** | **Model 1** | **Model 2** |
| **Dietary Glycemic Index** | | | | | | | |
| 1 | 48.1 | 68 | 1 | 1 | 178 | 1 | 1 |
| 2 | 50.7 | 75 | 1.14 (0.82-1.59) | 1.21 (0.87-1.68) | 198 | 1.09 (0.89-1.33) | 1.06 (0.86-1.30) |
| 3 | 52.3 | 72 | 1.11 (0.80-1.56) | 1.12 (0.80-1.57) | 211 | 1.15 (0.94-1.41) | 1.09 (0.89-1.33) |
| 4 | 53.9 | 80 | 1.25 (0.90-1.73) | 1.28 (0.92-1.78) | 229 | 1.23 (1.01-1.50) | 1.16 (0.95-1.42) |
| 5 | 56.1 | 84 | 1.30 (0.94-1.80) | 1.34 (0.96-1.87) | 239 | 1.30 (1.07-1.58) | 1.28 (1.04-1.56) |
| **P *trend*** |  |  | 0.09 | 0.09 |  | 0.003 | 0.01 |
| **Dietary Glycemic Load** | | | | | | | |
| 1 | 86.8 | 66 | 1 | 1 | 188 | 1 | 1 |
| 2 | 102.2 | 66 | 0.99 (0.70-1.39) | 1.03 (0.72-1.45) | 193 | 0.99 (0.81-1.21) | 0.98 (0.80-1.20) |
| 3 | 111.5 | 79 | 1.18 (0.85-1.64) | 1.20 (0.85-1.67) | 214 | 1.09 (0.89-1.32) | 1.02 (0.84-1.25) |
| 4 | 120.7 | 74 | 1.09 (0.78-1.52) | 1.18 (0.83-1.67) | 220 | 1.06 (0.87-1.28) | 1.08 (0.88-1.33) |
| 5 | 135.0 | 94 | 1.35 (0.98-1.85) | 1.54 (1.09-2.18) | 240 | 1.15 (0.95-1.39) | 1.30 (1.06-1.61) |
| **P *trend*** |  |  | 0.05 | 0.01 |  | 0.13 | 0.008 |
| **Dietary Insulin Index** | | | | | | | |
| 1 | 35.7 | 71 | 1 | 1 | 171 | 1 | 1 |
| 2 | 40.3 | 68 | 1.00 (0.71-1.39) | 0.92 (0.66-1.30) | 200 | 1.14 (0.93-1.40) | 1.11 (0.90-1.37) |
| 3 | 42.9 | 79 | 1.16 (0.84-1.60) | 1.10 (0.78-1.55) | 204 | 1.11 (0.90-1.36) | 1.07 (0.86-1.32) |
| 4 | 45.4 | 83 | 1.21 (0.88-1.67) | 1.14 (0.81-1.61) | 219 | 1.14 (0.93-1.40) | 1.08 (0.87-1.34) |
| 5 | 48.7 | 78 | 1.11 (0.80-1.54) | 1.06 (0.73-1.52) | 261 | 1.20 (0.99-1.46) | 1.26 (1.01-1.57) |
| **P *trend*** |  |  | 0.30 | 0.50 |  | 0.09 | 0.06 |
| **Dietary Insulin Load** | | | | | | | |
| 1 | 583 | 64 | 1 | 1 | 189 | 1 | 1 |
| 2 | 658 | 70 | 1.13 (0.80-1.59) | 1.11 (0.78-1.57) | 203 | 1.09 (0.89-1.33) | 1.07 (0.87-1.31) |
| 3 | 701 | 82 | 1.30 (0.94-1.81) | 1.25 (0.89-1.77) | 220 | 1.13 (0.93-1.37) | 1.06 (0.86-1.30) |
| 4 | 743 | 82 | 1.28 (0.92-1.79) | 1.25 (0.88-1.78) | 231 | 1.19 (0.98-1.45) | 1.17 (0.95-1.44) |
| 5 | 805 | 81 | 1.22 (0.87-1.71) | 1.20 (0.83-1.73) | 212 | 1.20 (0.98-1.46) | 1.29 (1.03-1.61) |
| **P *trend*** |  |  | 0.18 | 0.27 |  | 0.04 | 0.02 |

Model 1 stratified by cohort and adjusted for age at diagnosis (year) and calendar year of diagnosis.

Model 2 stratified by cohort and adjusted for age at diagnosis (year), calendar year of diagnosis, time between diagnosis and first FFQ (year), calendar year at start of follow-up of each-2-year questionnaire cycle, pre-diagnostic BMI (<20, 20 to <22.5, 22.5 to <25, 25.0 to <30, 30 to <35, ≥35 kg/m2), BMI change after diagnosis (no change (≥-0.5 to ≤0.5 kg/m2), decrease (<-0.5 kg/m2), increase (>0.5-2 kg/m2), increase (>2 kg/m2)), post-diagnostic smoking (never, past, current 1-14/day, current 15-24/day, current ≥25/day), post-diagnostic physical activity (<5, 5 to <11.5, 11.5 to <22, ≥22 MET-h/week), oral contraceptive use (ever, never), post-diagnostic alcohol consumption (<0.15, 0.15 to <2.0, 2.0 to 7.5, ≥7.5 g/day), post-diagnostic total energy intake (quintiles, kcal/day), pre-diagnostic menopausal status, age at menopause, and postmenopausal hormone use (premenopausal, postmenopausal and age at menopause<50 year and never postmenopausal hormone use, postmenopausal and age at menopause<50 year and past postmenopausal hormone use, postmenopausal and age at menopause<50 year and current postmenopausal hormone use, postmenopausal and age at menopause≥50 year and never postmenopausal hormone use, postmenopausal and age at menopause≥50 year and past postmenopausal hormone use, postmenopausal and age at menopause≥50 year and current postmenopausal hormone use), post-diagnostic aspirin use (never, past, current), race (Non-Hispanic white, other), stage of disease (I, II, III), ER/PR status (ER/PR positive, ER positive and PR negative, ER/PR negative), radiotherapy (yes, no), chemotherapy (yes, no), and hormonal treatment (yes, no).