**Supplementary Materials**

Supplementary Table S1: Long-term survival status of the study cohort according to baseline characteristics and screening history

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Long-term survival status** | |  |  |
| **Variables** | **Alive** | **Dead** | ***P*-value** | **Hazard ratio1** |
|  | N= 20916 (85.8%) | N=3471 (14.2%) |  | HR (95% CI) |
| **Age at diagnosis (years),** n (%) |  |  |  |  |
| 40–49 | 9337 (89.9) | 1050 (10.1) | <0.001 | 1.00 |
| 50–59 | 7315 (87.0) | 1094 (13.0) |  | 1.31 (1.02–1.43) |
| 60–69 | 3206 (82.0) | 703 (18.0) |  | 1.99 (1.81–2.20) |
| 70–79 | 1058 (62.9) | 624 (37.1) |  | 4.14 (3.74–4.58) |
| **Socioeconomic status,** n (%) |  |  |  |  |
| NHI, upper 50% | 10897 (88.2) | 1464 (11.8) | <0.001 | 1.00 |
| NHI, lower 50% | 9327 (84.5) | 1706 (15.5) |  | 1.31 (1.22–1.4) |
| MAP | 692 (69.7) | 301 (30.3) |  | 2.08 (1.83–2.35) |
| **Anatomical site,** n (%) |  |  |  |  |
| Inner part | 3384 (88.3) | 449 (11.7) | <0.001 | 1.00 |
| Outer part | 8491 (83.8) | 1641 (16.2) |  | 1.23 (1.11–1.37) |
| Central portion | 970 (86.1) | 157 (13.9) |  | 1.06 (0.88–1.27) |
| Others | 8071 (86.8) | 1224 (13.2) |  | 1.04 (0.93–1.16) |
| **SEER Stage,** n (%) |  |  |  |  |
| DCIS | 2936 (96.4) | 110 (3.6) | <0.001 | 0.49 (0.4–0.59) |
| Localized | 10510 (92.4) | 864 (7.6) |  | 1.00 |
| Regional | 5879 (81.3) | 1353 (18.7) |  | 2.58 (2.37–2.81) |
| Distant | 232 (22.4) | 802 (77.6) |  | 18.5 (16.75–20.43) |
| Unknown | 1359 (79.9) | 342 (20.1) |  | 2.56 (2.26–2.90) |
| **Histological subtype,** n (%) |  |  |  |  |
| DICS | 2936 (96.4) | 110 (3.6) | <0.001 | 0.48 (0.39–0.58) |
| Ductal carcinoma | 15512 (84.2) | 2920 (15.8) |  | 1.00 |
| Lobular carcinoma | 1010 (87.2) | 148 (12.8) |  | 0.78 (0.66–0.92) |
| Others | 1458 (83.3) | 293 (16.7) |  | 0.95 (0.84–1.08) |
| *HR, hazard ratio; 95% CI, 95% confident interval; NHI, National Health Insurance; MAP, Medical Aid Program; SEES, Surveillance, Epidemiology, and End Results; DCIS, Ductal carcinoma in situ.*  *1Hazard ratio for all-cause mortality; adjusted for screening history, age, socioeconomic status, stage, histological subtype, and anatomical site.* | | | | |

Supplementary Table S2: Hazard ratios for total mortality, breast cancer (BC)-specific mortality, and non-BC-specific mortality stratified by age group and stage at diagnosis according to the screening history

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Total mortality1** | **BC-specific mortality1** | **Non-BC-specific mortality1** |
| HR (95% CI) | HR (95% CI) | HR (95% CI) |
| **Stage at diagnosis** |  |  |  |
| **DCIS** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.43 (0.3–0.63) | 0.62 (0.26–1.43) | 0.39 (0.26–0.60) |
| **Localized** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.68 (0.59–0.78) | 0.58 (0.49–0.70) | 0.83 (0.67–1.02) |
| **Regional** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.64 (0.58–0.72) | 0.64 (0.57–0.73) | 0.64 (0.50–0.80) |
| **Distant** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.77 (0.66–0.89) | 0.76 (0.66–0.89) | 0.88 (0.42–1.84) |
| **Unknown** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.53 (0.43–0.66) | 0.48 (0.37–0.62) | 0.74 (0.48–1.14) |
| **Age at diagnosis (years)** | |  |  |
| **40**–**49**2 |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.72 (0.63–0.81) | 0.71 (0.62–0.81) | 0.75 (0.52–1.08) |
| **50**–**59**2 |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.69 (0.61–0.78) | 0.65 (0.57–0.74) | 0.97 (0.70–1.33) |
| **60**–**69**2 |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.64 (0.55–0.75) | 0.61 (0.51–0.74) | 0.71 (0.54–0.94) |
| **≥70**2 |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.56 (0.47–0.66) | 0.50 (0.40–0.63) | 0.64 (0.50–0.82) |
| HR, hazard ratio; 95% CI, 95% confident interval; DCIS, Ductal carcinoma in situ.  1Adjusted for age, socioeconomic status, stage, histological subtype, and anatomic site.  2Adjusted for socioeconomic status, stage, histological subtype, and anatomic site (invasive cancer only). | | | | |

Supplementary Table S3: Hazard ratios for total mortality, breast cancer (BC)-specific mortality, and non-BC-specific mortality stratified by age group and stage at diagnosis according to the screening history (Excluding DCIS and distant stage, N=20,307)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Total mortality1** | **BC-specific mortality1** | **Non-BC-specific mortality1** |
|  | HR (95% CI) | HR (95% CI) | HR (95% CI) |
| **Overall** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.64 (0.6–0.7) | 0.61 (0.55–0.66) | 0.74 (0.64–0.85) |
| **Age at diagnosis (years)** | |  |  |
| **Age 40**–**49** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.71 (0.61–0.82) | 0.70 (0.60–0.82) | 0.77 (0.53–1.12) |
| **Age 50**–**59** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.64 (0.56–0.74) | 0.59 (0.5–0.69) | 0.91 (0.66–1.26) |
| **Age 60**–**69** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.64 (0.54–0.76) | 0.59 (0.48–0.74) | 0.71 (0.54–0.95) |
| **Age ≥70** |  |  |  |
| Never screened | 1.00 | 1.00 | 1.00 |
| Screened | 0.53 (0.45–0.63) | 0.44 (0.34–0.56) | 0.65 (0.5–0.83) |
| *HR, hazard ratio; 95% CI, 95% confident interval.*  *1Adjusted for age, socioeconomic status, stage, histological subtype, and anatomic site.* | | | |