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| Supplementary Table1. Participant characteristics between participants included (N=15,992) and excluded (N=70,696) at the NHS II 1989 baseline assessment  |
| 　 | Included (N=45,992) | Excluded(N=70,696) |
| Trauma exposed | 15163 (33.0) | 23114 (32.7) |
| Age in 1989 | 34.0 (4.7) | 34.6 (4.6) |
| Parents' education at birth, ≥college | 15163 (32.9) | 23314 (32.7) |
| Highest somatotype, age 5 | 2.5 (1.2) | 2.5 (1.3) |
| Race |  |  |
|  African American, Asian, and Latina | 2097 (4.6) | 4328 (6.1) |
|  Caucasian | 42268 (91.9) | 63893 (90.4) |
|  Other | 835 (1.8) | 1458 (2.1) |
|  Unknown | 792 (1.7) | 1017 (1.4) |
| Body mass index (kg/m2) | 24.2 (5.2) |  |
| Cigarette smoking |  |  |
|  Never | 30263 (65.8) | 45391 (64.2) |
|  former smoker | 9183 (20.0) | 15693 (22.2) |
|  Current, 1-14 cigs/day | 2371 (5.2) | 3609 (5.1) |
|  Current, 15-24 cigs/day | 2618 (5.7) | 3740 (5.3) |
|  Current, 25+ cigs/day | 1298 (2.8) | 1753 (2.5) |
|  Missing | 259 (0.6) | 510 (0.7) |
| Alcohol intake |  |  |
|  0 grams/day | 18072 (39.3) | 25589 (36.2) |
|  1-<5 grams/day | 18504 (40.2) | 30032 (42.5) |
|  5-<10 grams/day | 4757 (10.3) | 7539 (10.7) |
|  10-<<20 grams/day | 3427 (7.5) | 5519 (7.8) |
|  20+ grams/day | 700 (1.5) | 1147 (1.6) |
|  Missing | 532 (1.2) | 870 (1.2) |
| Physical activitya |  |  |
|  <3 MET hrs/wk | 7241 (15.8) | 10341 (14.7) |
|  3-8.9 MET hrs/wk | 10602 (23.1) | 15641 (22.2) |
|  9-17.9 MET hrs/wk | 9636 (21.0) | 14564 (20.7) |
|  18-26.9 MET hrs/wk | 5987 (13.0) | 9247 (13.1) |
|  27+ MET hrs/wk | 12470 (27.2) | 20701 (29.4) |
| Oral contraceptive use  |  |  |
|  Never | 5953 (13.0) | 13301 (18.9) |
|  Current | 7026 (15.3) | 7982 (11.3) |
|  Past | 32913 (71.7) | 49111 (69.7) |
|  Missing | 42 (0.1) | 100 (0.1) |
| Menopausal status |  |  |
|  Premenopause | 44313 (96.4) | 68600 (97.0) |
|  Postmenopausal, natural or surgical | 1331 (2.9) | 1450 (2.1) |
|  Unclear status | 348 (0.8) | 646 (0.9) |
| Current Ibuprofen Medication (2+ times/wk) | 9829 (21.4) | 12873 (18.2) |
| Ever use of Antidepressantb | 5328 (11.6) | 6492 (9.2) |
| a MET hrs/wk=metabolic equivalent hours/week |
| b First assessed in 1993 |

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| Supplementary table 2. Adjusted hazard ratios (95% confidence intervals) for the association between trauma exposure and PTSD symptoms with risk of incident thyroid diseases with 1-year lag and 2- and 4-year lags, 1989 to 2013  |
|   | 1-year lag between PTSD and thyroid disease | 3-year lag between PTSD and thyroid disease | 5-year lag between PTSD and thyroid disease |
|   | Cases, n | HR (95% CI)\* | Cases, n | HR (95% CI)\* | Cases, n | HR (95% CI)\* |
| Incident hypothyroidism |
| No trauma exposure | 1741 | 1.00 | 1719 | 1.00 | 1666 | 1.00 |
| Trauma/ No symptoms | 3922 | 1.08 (1.02-1.15) | 3804 | 1.08 (1.02-1.15) | 3553 | 1.08 (1.02-1.15) |
| Trauma/1-3 symptoms | 1089 | 1.12 (1.04-1.21) | 1004 | 1.12 (1.04-1.21) | 901 | 1.12 (1.04-1.21) |
| Trauma/4-5 symptoms | 748 | 1.23 (1.13-1.34) | 677 | 1.23 (1.13-1.34) | 602 | 1.23 (1.13-1.34) |
| Trauma/6-7 symptoms | 493 | 1.26 (1.14-1.40) | 454 | 1.26 (1.14-1.40) | 413 | 1.26 (1.14-1.40) |
| Incident hyperthyroidism |
| No trauma exposure | 216 | 1.00 | 214 | 1.00 | 193 | 1.00 |
| Trauma/ No symptoms | 411 | 0.93 (0.79-1.10) | 397 | 0.94 (0.79-1.11) | 367 | 0.98 (0.82-1.16) |
| Trauma/1-3 symptoms | 92 | 0.83 (0.65-1.06) | 81 | 0.79 (0.61-1.02) | 71 | 0.81 (0.61-1.06) |
| Trauma/4-5 symptoms | 77 | 1.16 (0.89-1.51) | 69 | 1.13 (0.86-1.49) | 60 | 1.17 (0.87-1.57) |
| Trauma/6-7 symptoms | 51 | 1.17 (0.86-1.60) | 46 | 1.14 (0.82-1.58) | 40 | 1.16 (0.82-1.65) |
| \* Fully adjusted for age, race, parental education, somatotype at age 5, physical activity, body mass index, alcohol consumption, cigarette smoking, menopause status, ibuprofen use and antidepressant use |
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| Supplementary table 3. Adjusted hazard ratios (95% confidence intervals) for the association between thyroid disease and incident PTSD symptoms among population with ever trauma exposed (N=14,193), 1989 to 2013, to investigate possible reverse causation  |
|   | PTSD 1+Sx | PTSD 4+Sx |
|   | Cases, n | HR(95% CI)\* | Cases, n | HR(95% CI)\* |
|  |
| No hypothyroidism | 6387 | 1.00 | 3383 | 1.00 |
| Prevalent hypothyroidism | 293 | 1.12 (0.99-1.27) | 162 | 1.17 (0.99-1.38) |
|  |  |  |  |  |
| No hyperthyroidism | 6656 | 1.00 | 3531 | 1.00 |
| Prevalent hyperthyroidism | 24 | 0.81 (0.54-1.22) | 14 | 0.89 (0.52-1.53) |
| \* adjusted for age, race, parental education, somatotype at age 5, physical activity, body mass index, alcohol consumption, cigarette smoking, menopause status, ibuprofen use and antidepressant use |

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| Supplementary table 4. Association between trauma/PTSD symptoms and risk of incident thyroid disease, restricted to women with a physician examination, 1989 to 2013 |
|  | No trauma | Trauma+ PTSD symptom(Sx)s | p-trend |
|  | exposure | No Sx | 1-3 Sx | 4-5 Sx | 6-7 Sx |
|   | HR (95% CI) | HR (95% CI) | HR (95% CI) | HR (95% CI) | HR (95% CI) |
|  | Incident hypothyroidism |
| cases, n | 1,555 | 3550 | 991 | 677 | 435 |  |
| (person-year) | (205,591) | (412,074) | (105,631) | (64,657) | (40,262) |
| Model 1 | 1 | 1.11 (1.05-1.18) | 1.17 (1.08-1.27) | 1.32 (1.21-1.45) | 1.39 (1.25-1.55) | <0.001 |
| Model 2 | 1 | 1.10 (1.03-1.17) | 1.14 (1.06-1.24) | 1.29 (1.18-1.41) | 1.35 (1.21-1.50) | <0.001 |
| Model 3 | 1 | 1.09 (1.03-1.16) | 1.14 (1.05-1.23) | 1.28 (1.17-1.40) | 1.33 (1.19-1.48) | <0.001 |
| Model 4 | 1 | 1.08 (1.02-1.15) | 1.11 (1.02-1.20) | 1.22 (1.11-1.33) | 1.24 (1.11-1.38) | <0.001 |
|  | Incident Graves' hyperthyroidism |
| cases, n | 194 | 369 | 80 | 72 | 45 |  |
| (person-year) | (206,112) | (413,347) | (105,950) | (64,918) | (40,449) |
| Model 1 | 1 | 0.94 (0.79-1.12) | 0.81 (0.62-1.05) | 1.21 (0.92-1.59) | 1.21 (0.88-1.68) | 0.254 |
| Model 2 | 1 | 0.94 (0.79-1.12) | 0.80 (0.62-1.05) | 1.21 (0.92-1.59) | 1.21 (0.87-1.68) | 0.256 |
| Model 3 | 1 | 0.93 (0.78-1.11) | 0.79 (0.61-1.03) | 1.18 (0.90-1.55) | 1.14 (0.82-1.58) | 0.433 |
| Model 4 | 1 | 0.93 (0.78-1.11) | 0.79 (0.61-1.03) | 1.18 (0.90-1.55) | 1.14 (0.82-1.59) | 0.444 |
| Model 1: adjusted for age; Model 2 : adjusted for age, race and childhood factors; Model 3: Model 2+health behavior; Model 4: Model 3 + menopause status, ibuprofen use and antidepressant use |

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| Supplementary Table 5. Association of trauma exposure and PTSD symptoms with risk of incident thyroid diseases, further adjusted for childhood abuse,1989 to 2013  |
|  | No trauma | Trauma+ PTSD symptom(Sx)s | p-trend |
|   | exposure | No Sx | 1-3 Sx | 4-5 Sx | 6-7 Sx |
|  |  | HR (95% CI) | HR (95% CI) | HR (95% CI) | HR (95% CI) |  |
|  | Incident hypothyroidism |
| cases, n | 1,732 (240,463) | 3,904 (475,705) | 1,082 (120,156) | 743 (73,142) | 492 (46,052) |  |
| (person-year) |
| Model 1 | 1 | 1.08 (1.02-1.15) | 1.12 (1.04-1.21) | 1.23 (1.12-1.34) | 1.27 (1.14-1.40) | <0.001 |
| Model 2 | 1 | 1.07 (1.01-1.13) | 1.09 (1.01-1.18) | 1.19 (1.09-1.30) | 1.21 (1.09-1.34) | <0.001 |
| Model 3 | 1 | 1.07 (1.01-1.13) | 1.10 (1.02-1.19) | 1.20 (1.10-1.31) | 1.22 (1.10-1.36) | <0.001 |
| Model 4 | 1 | 1.06 (1.00-1.12) | 1.08 (1.00-1.17) | 1.17 (1.07-1.28) | 1.18 (1.06-1.32) | <0.001 |
|  | Incident Graves' hyperthyroidism |
| cases, n | 216 (241,055) | 410 (477,111) | 91 (120,504) | 75 (73,433) | 51 (46,261) |  |
| (person-year) |
| Model 1 | 1 | 0.93 (0.79-1.10) | 0.82 (0.64-1.04) | 1.13 (0.86-1.47) | 1.17 (0.85-1.60) | 0.44 |
| Model 2 | 1 | 0.91 (0.77-1.08) | 0.79 (0.61-1.01) | 1.07 (0.82-1.41) | 1.09 (0.79-1.50) | 0.79 |
| Model 3 | 1 | 0.94 (0.79-1.11) | 0.82 (0.64-1.06) | 1.14 (0.87-1.50) | 1.19 (0.86-1.64) | 0.38 |
| Model 4 | 1 | 0.92 (0.78-1.09) | 0.80 (0.62-1.02) | 1.09 (0.83-1.44) | 1.12 (0.81-1.55) | 0.65 |
| Model 1: adjusted for age, race, childhood factors, health behaviors, menopause status, ibuprofen use and antidepressant use |
| Model 2: Model 1+ additionally adjusted for childhood physical and emotional abuse |
| Model 3: Model 1+ additionally adjusted for childhood sexual abuse |
| Model 4: Model 1+ additionally adjusted for childhood physical, emotional and sexual abuse |