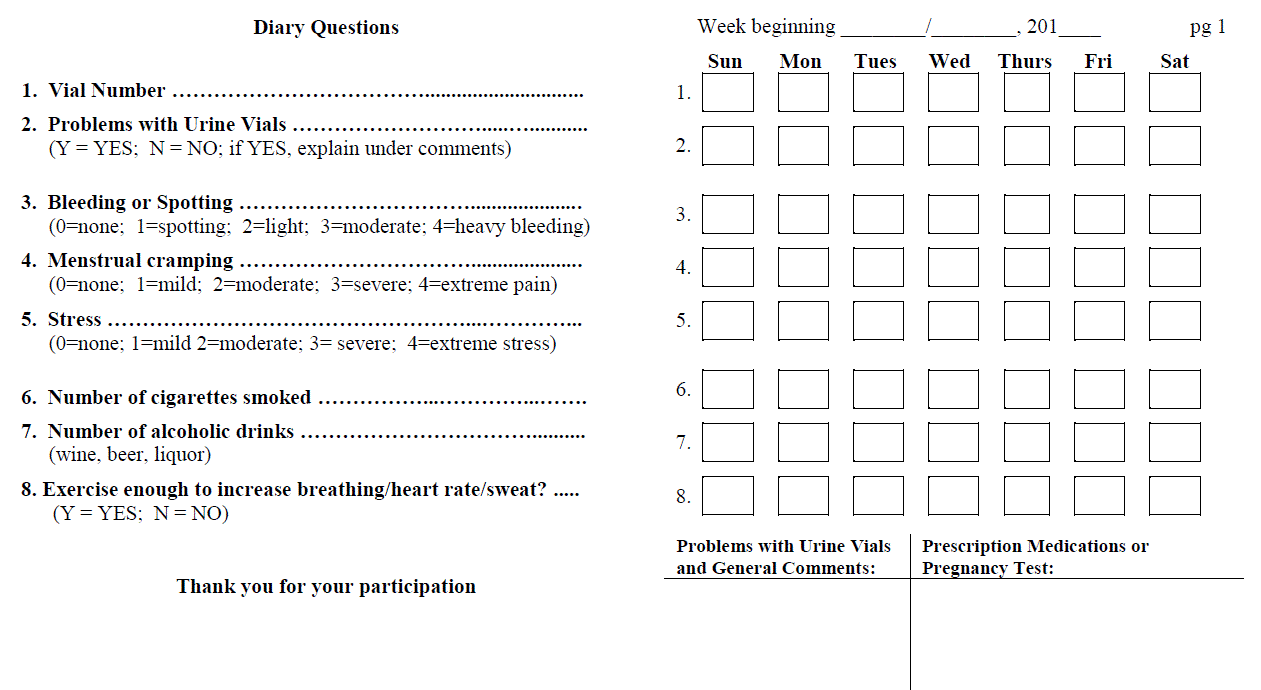
**Figure S1.** Menstrual cycle function diary card



|  |  |  |  |
| --- | --- | --- | --- |
| **Table S1.** Coefficients of variation for thyroid hormone assays | | | |
| Hormone | Coefficient of variation (%) | | |
| Low | Medium | High |
| TSH (µIU/mL) | 5.8 | 7.4 | 7.3 |
| Total T4 (µg/dL) | 5.9 | 4.7 | 3.2 |
| Total T3 (ng/dL) | 10.2 | 5.8 | 6.9 |
| Free T4 (ng/dL) | 8.6 | 6.8 | 8.0 |
| Free T3 (pg/mL) | 4.8 | 2.8 | 2.7 |

|  |  |  |
| --- | --- | --- |
| **Table S2.** Multi-day hormonal outcomes | | |
| **Hormone** | **Title** | **Description** |
| FSH | Early follicular phase level | Geometric mean of values for cycle days 2-4 |
| Late luteal phase level | Geometric mean of values for the last 3 cycle days |
| Pd3G | Luteal phase maximum | Geometric mean of maximum value in the luteal phase and the values for the day before and after |
| Mid-luteal phase level | Geometric mean of values for luteal days 5-7 |
| E13G | Follicular phase maximum | Geometric mean of maximum value in the follicular phase and the values for the day before and after |
| Luteal phase maximum | Geometric mean of maximum value in the luteal phase and the values for the day before and after |
| Early follicular phase level | Geometric mean of values for cycle days 2-4 |
| Preovulatory level | Geometric mean of values for 3 days prior to the day of ovulation |
| Mid-luteal phase level | Geometric mean of values for luteal days 5-7 |

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| **Table S3.** Predicted mean values and 95% confidence intervals (95% CI) of menstrual cycle function outcomes from regression modelsa for associations with personal characteristics among Michigan women without thyroid disease, 2004-2014 | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  |  |  | Cycle length | | | | Bleed length | | Bleed intensity | | | Follicular phase length | | | | | Luteal phase length | | | | Cycle length standard deviation (per woman) | | | | |
|  |  |  |  |
|  |  |  |  | Mean (95% CI) | | | | Mean (95% CI) | | Mean (95% CI) | | | Mean (95% CI) | | | | | Mean (95% CI) | | | | Mean (95% CI) | | | | |
| **Age (years)** |  |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| 18-30 |  |  |  | 35.8 (29.9, 41.8) | | | | 6.1 (5.4, 6.7) | | 2.4 (2.3, 2.6) | | | 23.7 (17.4, 29.9) | | | | | 12.2 (11.0, 13.5) | | | | 5.6 (2.6, 8.7) | | | | |
| 31-40 |  |  |  | 30.2 (26.9, 33.5) | | | | 5.7 (5.3, 6.0) | | 2.3 (2.2, 2.3) | | | 17.5 (13.9, 21.1) | | | | | 12.9 (12.3, 13.5) | | | | 4.5 (2.9, 6.1) | | | | |
| 41-54 |  |  |  | 31.9 (27.7, 36.1) | | | | 5.4 (4.9, 5.8) | | 2.1 (2.0, 2.2) | | | 17.7 (13.2, 22.2) | | | | | 13.4 (12.6, 14.3) | | | | 5.5 (3.5, 7.5) | | | | |
| **Education** | |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| High school | |  |  | 26.3 (17.9, 34.6) | | | | 5.3 (4.4, 6.2) | | 2.4 (2.2, 2.7) | | | 13.6 (4.9, 22.3) | | | | | 12.8 (11.2, 14.4) | | | | 1.7 (-2.4, 5.8) | | | | |
| Some college or technical school | | | | 30.8 (26.2, 35.5) | | | | 5.4 (5.0, 5.9) | | 2.3 (2.2, 2.4) | | | 18.5 (13.5, 23.5) | | | | | 13.4 (12.5, 14.3) | | | | 4.1 (1.8, 6.3) | | | | |
| College graduate or more | | |  | 30.3 (26.0, 34.6) | | | | 5.9 (5.4, 6.4) | | 2.1 (2.0, 2.3) | | | 17.1 (12.6, 21.7) | | | | | 12.6 (11.7, 13.5) | | | | 5.3 (3.3, 7.2) | | | | |
| **Income** |  |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| <$50,000/year | |  |  | 29.3 (24.5, 34.0) | | | | 5.6 (5.0, 6.1) | | 2.2 (2.1, 2.4) | | | 16.8 (11.8, 21.9) | | | | | 12.9 (11.9, 13.8) | | | | 4.2 (2.0, 6.4) | | | | |
| ≥$50,000/year | |  |  | 30.8 (26.7, 34.8) | | | | 5.7 (5.2, 6.1) | | 2.3 (2.1, 2.4) | | | 17.7 (13.3, 22.1) | | | | | 13.1 (12.3, 13.9) | | | | 4.7 (2.7, 6.7) | | | | |
| **Parity** | |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| 0 prior pregnancies | |  |  | 31.8 (23.3, 40.3) | | | | 5.7 (4.9, 6.6) | | 2.2 (2.0, 2.5) | | | 19.2 (10.2, 28.1) | | | | | 12.6 (11.0, 14.1) | | | | 5.7 (1.9, 9.6) | | | | |
| 1-2 prior pregnancies | | |  | 29.5 (24.6, 34.5) | | | | 5.8 (5.2, 6.4) | | 2.2 (2.1, 2.4) | | | 15.8 (10.5, 21.0) | | | | | 13.0 (12.0, 14.0) | | | | 5.4 (3.2, 7.7) | | | | |
| 3 or more prior pregnancies | | | | 30.1 (25.5, 34.7) | | | | 5.5 (4.9, 6.0) | | 2.2 (2.1, 2.4) | | | 18.1 (13.1, 23.0) | | | | | 13.2 (12.3, 14.1) | | | | 3.0 (0.8, 5.2) | | | | |
| **Body Mass Index category**b | | | | | |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| Normal |  |  |  | 29.2 (24.5, 33.8) | | | | 6.2 (5.7, 6.7) | | 2.2 (2.1, 2.3) | | | 15.9 (10.9, 20.9) | | | | | 12.7 (11.8, 13.6) | | | | 4.3 (2.0, 6.6) | | | | |
| Overweight | |  |  | 29.3 (23.8, 34.8) | | | | 5.4 (4.8, 6.0) | | 2.2 (2.1, 2.4) | | | 16.3 (10.5, 21.1) | | | | | 12.6 (11.4, 13.7) | | | | 5.3 (2.7, 7.8) | | | | |
| Obese |  |  |  | 32.3 (27.0, 37.5) | | | | 5.0 (4.5, 5.6) | | 2.3 (2.2, 2.5) | | | 20.1 (14.6, 25.6) | | | | | 13.7 (12.7, 14.7) | | | | 3.9 (1.4, 6.5) | | | | |
| **Smoking Status**c | |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| Never smoker | |  |  | 31.4 (27.7, 35.2) | | | | 5.7 (5.3, 6.1) | | 2.2 (2.1, 2.3) | | | 19.0 (14.9, 23.1) | | | | | 12.5 (11.8, 13.2) | | | | 4.5 (2.7, 6.3) | | | | |
| Former smoker | |  |  | 26.3 (19.3, 33.3) | | | | 5.1 (4.3, 5.9) | | 2.3 (2.1, 2.5) | | | 12.1 (4.0, 20.2) | | | | | 15.0 (13.5, 16.5) | | | | 3.3 (0.0, 6.7) | | | | |
| Current smoker | |  |  | 28.2 (21.1, 35.2) | | | | 5.9 (5.2, 6.7) | | 2.4 (2.2, 2.6) | | | 15.4 (9.2, 21.6) | | | | | 13.0 (11.8, 14.1) | | | | 5.7 (2.3, 9.0) | | | | |
| **Average Behavior during study** | | | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| *Weekly exercise* |  |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| 0 times |  |  |  | 30.5 (25.8, 35.2) | | | | 5.5 (4.8, 6.2) | | 2.3 (2.1, 2.5) | | | 18.9 (14.3, 23.5) | | | | | 13.7 (12.3, 15.1) | | | | 4.8 (2.2, 7.4) | | | | |
| 1-3 times | |  |  | 30.1 (26.8, 33.5) | | | | 5.7 (5.3, 6.1) | | 2.3 (2.1, 2.4) | | | 17.0 (13.4, 20.6) | | | | | 12.9 (12.1, 13.6) | | | | 4.5 (2.2, 6.8) | | | | |
| >3 times | |  |  | 29.7 (25.7, 33.8) | | | | 5.7 (5.2, 6.2) | | 2.2 (2.0, 2.3) | | | 17.0 (12.8, 21.1) | | | | | 12.8 (11.8, 13.7) | | | | 4.2 (1.9, 6.6) | | | | |
| *Stress*d |  |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| Low |  |  |  | 30.5 (26.7, 34.4) | | | | 5.5 (5.0, 6.0) | | 2.2 (2.1, 2.4) | | | 17.7 (13.6, 21.8) | | | | | 12.8 (11.9, 13.7) | | | | 4.6 (2.0, 7.2) | | | | |
| Moderate | |  |  | 30.3 (26.8, 33.8) | | | | 5.8 (5.4, 6.3) | | 2.2 (2.1, 2.3) | | | 17.1 (13.4, 20.8) | | | | | 13.3 (12.5, 14.0) | | | | 3.9 (1.6, 6.2) | | | | |
| High |  |  |  | 29.1 (24.6, 33.6) | | | | 5.5 (4.8, 6.1) | | 2.3 (2.1, 2.5) | | | 17.3 (12.8, 21.9) | | | | | 12.4 (11.2, 13.7) | | | | 5.1 (2.7, 7.4) | | | | |
| *Smoking* |  |  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| None |  |  |  | 30.4 (26.8, 33.9) | | | | 5.6 (5.2, 6.0) | | 2.2 (2.1, 2.3) | | | 17.6 (13.8, 21.3) | | | | | 13.0 (12.4, 13.7) | | | | 4.2 (2.5, 5.9) | | | | |
| Any smoking | |  |  | 29.4 (23.8, 35.1) | | | | 5.7 (5.0, 6.5) | | 2.3 (2.1, 2.5) | | | 16.4 (10.6, 22.3) | | | | | 12.6 (11.3, 13.8) | | | | 5.5 (2.6, 8.3) | | | | |
| *Weekly alcohol consumption* | | |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  | |  |  |  |
| 0 servings | |  |  | 30.2 (26.3, 34.1) | | | | 5.7 (5.2, 6.2) | | 2.3 (2.1, 2.4) | | | 17.6 (13.6, 21.6) | | | | | 13.4 (12.5, 14.3) | | | | 5.0 (2.4, 7.7) | | | | |
| >0 servings | |  |  | 30.1 (26.7, 33.6) | | | | 5.6 (5.2, 6.0) | | 2.2 (2.1, 2.3) | | | 17.2 (13.6, 20.8) | | | | | 12.7 (12.0, 13.3) | | | | 4.3 (2.5, 6.0) | | | | |
| aAll models only control for each covariate and age (continuous) and in models for cycle length, follicular phase length, and cycle length standard deviation, an additional quadratic term for age  bBody mass index (kg/m2)=weight (lb) / [height (in)]2 x 703 and defined as: normal: 18.5-24.9; overweight: 25.0-29.9; obese: ≥30.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| cBased on the questionnaire responses and daily diaries during the study  dStress determination is based on a combination of duration and intensity | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table S4.** Predicted mean values and 95% confidence intervals (95% CI) of creatinine-adjusted hormone outcomes from regression modelsa for associations with personal characteristics among Michigan women without thyroid disease, 2004-2014 | | | | | | | | | | |
|  | Early follicular level FSH  (mIU/mg Cr) | Late luteal level FSH  (mIU/mg Cr) | Luteal phase maximum Pd3G  (µg/mg Cr) | | Mid-luteal level Pd3G  (µg/mg Cr) | Follicular phase maximum E13G  (ng/mg Cr) | Luteal phase maximum E13G  (ng/mg Cr) | Early follicular level E13G  (ng/mg Cr) | Preovulatory level E13G  (ng/mg Cr) | Mid-luteal level E13G  (ng/mg Cr) |
|
|  | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) | | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) |
| **Age (years)** |  |  |  | |  |  |  |  |  |  |
|  |  |  | |  |
| 18-30 | 4.3 (0.6, 7.9) | 1.9 (-1.3, 5.2) | 11.7 (9.2, 14.1) | | 11.1 (8.8, 13.4) | 39.3 (30.6, 48.1) | 32.6 (24.6, 40.6) | 9.2 (6.7, 11.7) | 31.2 (24.4, 38.0) | 22.3 (17.4, 27.2) |
| 31-40 | 8.0 (6.2, 9.7) | 4.6 (3.0, 6.1) | 9.8 (8.6, 11.1) | | 8.8 (7.7, 9.9) | 36.4 (31.8, 40.9 | 29.0 (25.1, 33.0) | 8.8 (7.6, 10.0) | 27.6 (24.3, 31.0) | 19.2 (16.8, 21.5) |
| 41-54 | 10.7 (8.1, 13.3) | 6.5 (4.3, 8.8) | 8.4 (6.6, 10.2) | | 7.1 (5.5, 8.7) | 34.2 (26.9, 41.4) | 26.4 (20.7, 32.0) | 8.4 (6.7, 10.2) | 24.9 (20.0, 29.8) | 16.8 (13.5, 20.2) |
| **Education** |  |  |  | |  |  |  |  |  |  |
| High school | 8.5 (3.8, 13.3) | 4.6 (0.3, 8.9) | 13.3 (10.3, 16.4) | | 12.7 (9.8, 15.6) | 40.0 (28.3, 51.8) | 29.2 (18.8, 39.5) | 9.6 (6.3, 12.8) | 34.7 (25.8, 43.7) | 20.8 (14.2, 27.4) |
| Some college | 9.8 (7.1, 12.5) | 6.3 (4.0, 8.6) | 8.3 (6.5, 10.1) | | 7.6 (6.0, 9.2) | 32.3 (24.9, 39.7) | 25.9 (20.0, 31.8) | 7.9 (6.0, 9.7) | 22.9 (18.2, 27.6) | 17.0 (13.5, 20.5) |
| ≥College | 6.6 (3.9, 9.3) | 3.2 (0.9, 5.6) | 9.8 (7.9, 11.6) | | 8.4 (6.8, 10.0) | 38.1 (31.4, 44.8) | 31.6 (25.5, 37.7) | 9.3 (7.5, 11.2) | 29.8 (24.9, 34.8) | 20.3 (16.6, 24.0) |
| **Income** |  |  |  | |  |  |  |  |  |  |
| <$50,000/year | 7.4 (4.7, 10.1) | 4.2 (1.8, 6.6) | 9.9 (8.0, 11.9) | | 9.0 (7.2, 10.7) | 35.5 (28.1, 42.9) | 27.5 (21.3, 33.8) | 8.3 (6.4, 10.1) | 24.7 (19.5, 30.0) | 19.1 (15.4, 22.7) |
| ≥$50,000/year | 9.0 (6.5, 11.5) | 5.3 (3.1, 7.5) | 9.4 (7.7, 11.2) | | 8.4 (6.8, 9.9) | 36.6 (30.2, 43.1) | 29.7 (24.2, 35.2) | 9.1 (7.4, 10.9) | 29.3 (24.8, 33.9) | 18.7 (15.4, 22.0) |
| **Parity** |  |  |  | |  |  |  |  |  |  |
|  |  |  | |  |
| 0 prior pregnancies | 7.3 (2.9, 11.8) | 4.2 (0.2, 8.2) | 8.0 (5.0, 11.0) | | 7.4 (4.5, 10.3) | 31.3 (21.1, 41.5) | 24.3 (14.6, 34.0) | 7.6 (4.5, 10.7) | 19.3 (10.8, 27.8) | 16.8 (10.7, 22.8) |
| 1-2 pregnancies | 11.4 (8.2, 14.5) | 6.6 (3.8, 9.4) | 10.4 (7.9, 12.8) | | 8.7 (6.7, 10.8) | 33.6 (26.2, 41.0) | 27.2 (19.6, 34.7 | 9.9 (7.8, 12.1 | 28.4 (22.4, 34.4 | 17.5 (13.3, 21.7) |
| ≥3 pregnancies | 6.5 (3.7, 9.2) | 3.8 (1.2, 6.3) | 10.3 (8.3, 12.2) | | 9.2 (7.4, 11.0) | 44.2 (35.7, 52.7) | 32.5 (26.2, 38.8) | 8.5 (6.5, 10.4) | 30.9 (25.7, 36.1) | 21.0 (17.3, 24.7) |
| **Body Mass Index category**b | | |  | |  |  |  |  |  |  |
|  | |  |
| Normal | 8.2 (5.4, 10.9) | 5.0 (2.7, 7.4) | 9.8 (8.0, 11.7) | | 8.8 (7.1, 10.5) | 38.6 (32.0, 45.2) | 34.2 (28.6, 39.7) | 10.4 (8.6, 12.1) | 32.6 (27.8, 37.4) | 21.6 (18.0, 25.2) |
| Overweight | 9.4 (5.9, 12.8) | 6.2 (3.2, 9.2) | 10.0 (7.7, 12.4) | | 9.3 (7.2, 11.5) | 31.9 (22.7, 41.1) | 22.7 (15.5, 29.9) | 8.2 (6.0, 10.4) | 24.6 (18.4, 30.7) | 17.0 (12.6, 21.5) |
| Obese | 7.4 (4.1, 10.7) | 3.2 (0.3, 6.0) | 9.0 (6.7, 11.4) | | 7.8 (5.8, 9.8) | 35.6 (26.4, 44.9) | 25.4 (18.1, 32.7) | 6.8 (4.7, 9.0) | 22.0 (16.2, 27.8) | 16.8 (12.7, 21.0) |
| **Smoking Status**c |  |  |  | |  |  |  |  |  |  |
|  |  |  | |  |
| Never smoker | 7.5 (5.3, 9.6) | 4.2 (2.3, 6.0) | 10.2 (8.7, 11.7) | | 9.1 (7.8, 10.5) | 37.4 (31.9, 42.8) | 29.2 (24.3, 34.2) | 9.6 (8.0, 11.1) | 30.6 (26.5, 34.6) | 20.2 (17.3, 23.2) |
| Former smoker | 7.0 (2.8, 11.3) | 3.3 (-0.5, 7.1) | 8.1 (4.8, 11.4) | | 7.8 (5.0, 10.6) | 38.4 (23.9, 52.9) | 28.4 (16.6, 40.3) | 6.6 (3.5, 9.8) | 20.2 (11.6, 28.8) | 15.1 (9.0, 21.2) |
| Current smoker | 12.4 (8.2, 16.6) | 8.4 (4.7, 12.0) | 8.9 (5.8, 12.0) | | 7.4 (4.7, 10.1) | 29.8 (18.8, 40.9) | 27.5 (19.3, 35.7) | 7.9 (5.5, 10.3) | 22.6 (15.7, 29.5) | 17.6 (12.7, 22.5) |
| **Average Behavior during study** | | |  | |  |  |  |  |  |  |
| *Exercise* |
| 0 times | 8.9 (6.3, 11.6) | 4.2 (0.5, 7.8) | 10.4 (8.0, 12.8) | 8.4 (6.5, 10.3) | | 35.1 (16.4, 53.9) | 25.6 (17.8, 33.4) | 6.9 (4.1, 9.7) | 21.7 (15.9, 27.5) | 19.3 (15.2, 23.5) |
| 1-3 times | 7.3 (5.9, 8.7) | 4.7 (2.7, 6.6) | 9.4 (7.9, 10.8) | 8.6 (7.4, 9.8) | | 32.6 (27.1, 38.1) | 28.3 (23.9, 32.8) | 9.1 (7.6, 10.5) | 25.9 (22.2, 29.5) | 18.0 (15.4, 20.7) |
| >3 times | 7.5 (5.8, 9.1) | 5.4 (2.9, 8.0) | 9.9 (8.1, 11.7) | 8.6 (7.1, 10.1) | | 41.8 (35.1, 48.6) | 30.8 (25.2, 36.4) | 9.0 (7.2, 10.8) | 31.4 (26.9, 35.9) | 20.0 (16.7, 23.3) |
| *Stress*d |  |  |  |  | |  |  |  |  |  |
|
| Low | 7.5 (5.9, 9.0) | 5.4 (3.1, 7.7) | 9.5 (7.8, 11.1) | 8.2 (6.7, 9.6) | | 37.1 (30.6, 43.6) | 26.5 (21.5, 31.5) | 8.3 (6.6, 9.9) | 24.5 (20.2, 28.8) | 17.7 (14.6, 20.7) |
| Moderate | 7.7 (6.3, 9.1) | 4.7 (2.6, 6.8) | 9.1 (7.7, 10.6) | 8.5 (7.3, 9.8) | | 37.4 (31.5, 43.4) | 28.7 (24.0, 33.4) | 9.2 (7.7, 10.7) | 28.0 (24.2, 31.8) | 18.8 (16.1, 21.5) |
| High | 7.4 (5.0, 9.7) | 3.8 (0.4, 7.1) | 11.8 (9.5, 14.1) | 9.5 (7.6, 11.4) | | 29.7 (19.6, 39.8) | 35.0, (27.4, 42.7) | 9.1 (6.7, 11.5) | 30.7 (25.0, 36.4) | 21.6 (17.4, 25.7) |
| *Smoking* |  |  |  |  | |  |  |  |  |  |
|  |  |  |  | |
| None | 6.7 (5.4, 7.9) | 3.9 (2.2, 5.7) | 10.0 (8.6, 11.3) | 8.9 (7.7, 10.1) | | 37.7 (32.8, 42.6) | 29.1 (24.6, 33.6) | 9.3 (7.8, 10.7) | 27.7 (24.1, 31.2) | 19.3 (16.7, 21.9) |
| Any smoking | 10.7 (8.3, 13.1) | 7.9 (4.6, 11.1) | 8.6 (5.9, 11.3) | 7.4 (5.1, 9.6) | | 26.7 (15.3, 38.1) | 27.6 (19.4, 35.7) | 7.2 (4.4, 9.9) | 25.4 (18.6, 32.1) | 17.2 (12.3, 22.1) |
| *Alcohol consumption* | |  |  |  | |  |  |  |  |  |
| 0 servings | 8.4 (6.8, 10.1) | 3.1 (0.7, 5.6) | 9.8 (8.1, 11.5) | 8.8 (7.3, 10.2) | | 35.1 (28.4, 41.8) | 28.0 (22.5, 33.4) | 8.1 (6.3, 9.8) | 26.8 (22.4, 31.2) | 17.2 (14.1, 20.4) |
| >0 servings | 7.1 (5.8, 8.4) | 5.8 (3.9, 7.7) | 9.6 (8.3 11.0) | 8.5 (7.3, 9.7) | | 36.4 (31.2, 41.6) | 29.1 (24.8, 33.5) | 9.3 (7.8, 10.7) | 27.4 (23.7, 31.0) | 19.7 (17.1, 22.3) |

aAll models only control for each covariate and age (continuous)

bBody mass index (kg/m2)=weight (lb) / [height (in)]2 x 703 and defined as: normal: 18.5-24.9; overweight: 25.0-29.9; obese: ≥30.0

cBased on the questionnaire responses and daily diaries during the study

dStress determination is based on a combination of duration and intensity

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table S5.** Thyroid hormone levelsa by population characteristics among women without self-reported thyroid disease (n=86) | | | | | | | | |
|  |  | | Study sample N (%) | TSH (µIU/ml) | Total T4 (µg/dl) | Total T3 (ng/dl) | Free T4 (ng/dl) | Free T3 (pg/ml) |
|  |  | |
| **Age (years)** |  | |  |  |  |  |  |  |
| 18-30 |  | | 15 (17.4) | 1.3 | 8.8 | 105.7 | 0.8 | 3.3 |
| 31-40 |  | | 46 (53.5) | 1.6 | 9.2 | 114.1 | 0.7 | 3.4 |
| 41-54 |  | | 25 (29.1) | 1.2b | 8.8 | 98.2 | 0.8 | 3.1 |
| **Education** | | |  |  |  |  |  |  |
| High school | | | 13 (15.3) | 1.4 | 8.9 | 110.4 | 0.8 | 3.3 |
| Some college or technical school | | | 40 (47.1) | 1.4 | 9.0 | 103.1 | 0.8 | 3.2 |
| College graduate or more | | | 32 (37.7) | 1.5 | 9.1 | 113.6 | 0.8 | 3.4 |
| Missing |  | | 1 |  |  |  |  |  |
| **Income** |  | |  |  |  |  |  |  |
| <$50,000/year | | | 41 (48.2) | 1.5 | 9.0 | 108.4 | 0.8 | 3.3 |
| ≥$50,000/year | | | 44 (52.8) | 1.4 | 9.0 | 107.9 | 0.8 | 3.3 |
| Missing |  | | 1 |  |  |  |  |  |
| **Parity** |  | |  |  |  |  |  |  |
| 0 prior pregnancies | | | 19 (22.1) | 1.5 | 8.6 | 107.1 | 0.8 | 3.2 |
| 1-2 prior pregnancies | | | 28 (32.6) | 1.5 | 9.1 | 106.8 | 0.8 | 3.3 |
| 3 or more prior pregnancies | | | 39 (45.4) | 1.4 | 9.2 | 109.4 | 0.8 | 3.3 |
| **Body Mass Index category**c |  | |  |  |  |  |  |  |
| Normal |  | | 34 (39.5) | 1.6 | 8.8 | 111.4 | 0.8 | 3.4 |
| Overweight | | | 23 (26.7) | 1.4 | 9.0 | 105.3 | 0.8 | 3.3 |
| Obese |  | | 29 (33.7) | 1.3b | 9.3 | 106.2 | 0.8 | 3.2 |
| **Smoking status**d | | |  |  |  |  |  |  |
| Never smoker | | | 51 (59.3) | 1.5 | 9.1 | 111.0 | 0.8 | 3.3 |
| Former smoker | | | 12 (14.0) | 1.2 | 9.2 | 102.7 | 0.8 | 3.2 |
| Current smoker | | | 23 (26.7) | 1.4 | 8.8 | 104.2 | 0.8 | 3.3 |
| **Average behavior over study period** | | | |  |  |  |  |  |
| *Weekly Exercise* | |  | |  |  |  |  |  |
| 0 times |  | 28 (32.6) | | 1.3 | 9.3 | 108.8 | 0.8 | 3.3 |
| 1-3 times | | 29 (33.7) | | 1.6 | 8.8 | 105.8 | 0.7 | 3.3 |
| >3 times | | 29 (33.7) | | 1.5 | 8.9 | 109.6 | 0.8 | 3.2 |
| *Stress*e |  |  | |  |  |  |  |  |
| Low |  | 27 (31.4) | | 1.5 | 8.9 | 100.3 | 0.8 | 3.1 |
| Moderate | | 32 (37.2) | | 1.4 | 8.6 | 110.4 | 0.7 | 3.4 |
| High |  | 27 (31.4) | | 1.4 | 9.6 | 112.9 | 0.8 | 3.4 |
| *Daily Smoking* | |  | |  |  |  |  |  |
| None |  | 63 (73.3) | | 1.5 | 9.1 | 109.4 | 0.8 | 3.3 |
| <10 cigarettes/day | | 12 (14.0) | | 1.4 | 9.3 | 111.8 | 0.8 | 3.6 |
| ≥10 cigarettes/day | | 11 (12.8) | | 1.4 | 8.4 | 96.0 | 0.8 | 3.0 |
| *Weekly alcohol consumption* | |  | |  |  |  |  |  |
| 0 servings | | 25 (29.1) | | 1.2 | 9.0 | 104.2 | 0.8 | 3.2 |
| 1-3 servings | | 42 (48.8) | | 1.6 | 9.2 | 109.8 | 0.8 | 3.4 |
| ≥4 servings | | 19 (22.1) | | 1.5 | 8.7 | 109.2 | 0.8 | 3.3 |
| aGeometric means calculated for TSH, arithmetic means calculated for other hormones | | | | | | |  |  |

bTable includes one outlier who did not report previous diagnosis with thyroid disease but had biochemical evidence of hyperthyroidism (TSH=0.06 µIU/ml, total T4= 12.1 µg/dl, total T3= 148 ng/dl, free T4= 1.24 ng/dl, free T3= 3.73 pg/ml). When excluded, TSH for women 41-54 years increased to 1.4 µIU/ml and for obese women increased to 1.5 µIU/ml.

cBody mass index (kg/m2)=weight (lb) / [height (in)]2 x 703 and defined as: normal: 18.5-24.9; overweight: 25.0-29.9; obese: ≥30.0

dBased on the questionnaire responses and daily diaries during the study

eStress determination is based on a combination of duration and intensity