**Table S1.** Spearman correlation coefficients of maternal serum PFAS concentrations (ng/mL) among mothers in the Avon Longitudinal Study of Parents and Children sub-study population (n=457).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | PFOA | PFOS | PFHxS | PFNA |
| PFOA  p-value  PFOS  p-value  PFHxS  p-value  PFNA  p-value | --  0.63  <0.0001  0.49  <0.0001  0.59  <0.0001 | --  0.51  <0.0001  0.60  <0.0001 | --  0.41  <0.0001 | -- |

**Table S2.** Regression coefficients (β) and 95% confidence intervals for the association between quintiles of maternal serum PFAS concentrations (ng/mL) and birth weight (g), crown to heel length (cm), and head circumference (cm).

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Birth Weighta**  **n=447** | | | | **Crown to Heel Lengthb**  **n=412** | | | | **Head Circumferenceb**  **n=416** | |
|  | **Quintile Range (ng/mL)** | **Unadjusted** β (95% CI) | | | **Adjusted** β (95% CI) | | **Unadjusted** β (95% CI) | **Adjusted** β (95% CI) | **Unadjusted** β (95% CI) | | **Adjusted** β (95% CI) | |
| **PFOS** |  |  | |  | | |  |  |  | |  | |
| Q1c | 4.7-10.4 | Reference | | | | | Reference | | Reference | | | |
| Q2 | 10.5-12.7 | -129.28  (-285.83, 27.26) | | | -121.48  (-280.39, 37.44) | | -0.43  (-1.11, 0.26) | -0.43  (-1.13, 0.28) | -0.23  (-0.64, 0.18) | | -0.22  (-0.65, 0.21) | |
| Q3 | 12.8-14.8 | -203.13  (-357.90, -48.37)\* | | | -54.73  (-209.63, 100.17) | | -0.28  (-0.97, 0.41) | -0.08  (-0.77, 0.62) | -0.19  (-0.61, 0.22) | | -0.05  (-0.47, 0.38) | |
| Q4 | 14.9-18.8 | -197.29  (-351.64, -42.95)\* | | | -132.98  (-286.81, 20.84) | | -0.64  (-1.33, 0.05) | -0.54  (-1.23, 0.15) | -0.39  (-0.79, 0.02) | | -0.33  (-0.75, 0.09) | |
| Q5 | 18.9-49.1 | -220.03  (-374.37, -65.69)\* | | | -140.18  (-290.42, 10.05) | | -0.70  (-1.38, -0.01)\* | -0.61  (-1.29, 0.06) | -0.41  (-0.82, -0.01)\* | | -0.32  (-0.73, 0.09) | |
| p-trend |  | 0.004 | | | 0.09 | | 0.04 | 0.08 | 0.03 | | 0.10 | |
|  |  |  | | |  | |  |  |  | |  | |
| **PFOA** |  |  |  | | | |  |  |  | |  | |
| Q1 | 1.2-2.1 | Reference | | | | | Reference | | Reference | | | |
| Q2 | 2.2-2.6 | -47.94  (-206.08, 110.20) | | | 17.89  (-139.50, 175.29) | | -0.49  (-1.18, 0.21) | -0.09  (-0.80, 0.61) | -0.11  (-0.53, 0.31) | | 0.07  (-0.36, 0.50) | |
| Q3 | 2.7-3.2 | -9.84  (-169.25, 149.57) | | | 9.60  (-153.20, 172.41) | | 0.17  (-0.53, 0.87) | 0.18  (-0.54, 0.91) | 0.03  (-0.40, 0.45) | | 0.03  (-0.41, 0.48) | |
| Q4 | 3.3-4.0 | -188.73  (-345.28, -32.18)\* | | | -56.63  (-215.17, 101.92) | | -0.49  (-1.20, 0.21) | -0.09  (-0.82, 0.63) | -0.27  (-0.69, 0.15) | | -0.07  (-0.51, 0.37) | |
| Q5 | 4.1-12.4 | -96.02  (-254.15, 62.12) | | | 2.00  (-156.46, 160.46) | | -0.48  (-1.18, 0.22) | -0.23  (-0.94, 0.48) | -0.03  (-0.44, 0.39) | | 0.09  (-0.34, 0.52) | |
| p-trend |  | 0.06 | | | 0.72 | | 0.23 | 0.54 | 0.66 | | 0.89 | |
|  |  |  | | |  | |  |  |  | |  | |
| **PFHxS** |  |  |  | | | |  |  |  | |  | |
| Q1 | 0.5-1.2 | Reference | | | | | Reference | | Reference | | | |
| Q2 | 1.3-1.6 | -153.81  (-313.35, 5.74) | | | -100.08  (-257.17, 57.00) | | -0.55  (-1.26, 0.16) | -0.35  (-1.06, 0.35) | -0.24  (-0.66, 0.18) | | -0.10  (-0.53, 0.33) | |
| Q3 | 1.7-1.9 | -78.94  (-245.06, 87.19) | | | -55.58  (-222.37, 111.21) | | -0.58  (-1.33, 0.16) | -0.31  (-1.07, 0.44) | -0.31  (-0.76, 0.13) | | -0.13  (-0.58, 0.34) | |
| Q4 | 2.0-2.5 | -123.71  (-276.54, 29.12) | | | -71.49  (-221.52, 78.54) | | -0.73  (-1.43, -0.04)\* | -0.58  (-1.27, 0.11) | -0.26  (-0.68, 0.15) | | -0.19  (-0.61, 0.23) | |
| Q5 | 2.6-74.2 | -106.21  (-262.88, 50.46) | | | -69.00  (-223.11, 85.12) | | -0.74  (-1.45, -0.03)\* | -0.56  (-1.26, 0.14) | -0.22  (-0.64, 0.20) | | -0.07  (-0.49, 0.36) | |
| p-trend |  | 0.32 | | | 0.56 | | 0.04 | 0.10 | 0.37 | | 0.66 | |
|  |  |  | | |  | |  |  |  | |  | |
| **PFNA** |  |  |  | | | |  |  |  | |  | |
| Q1 | 0.1 | Reference | | | | | Reference | | Reference | | | |
| Q2 | 0.2 | -22.32  (-405.18, 360.54) | | | 82.96  (-294.38, 460.31) | | 0.28  (-1.47, 2.03) | 0.52  (-1.25, 2.28) | -0.12  (-1.18, 0.93) | | 0.21  (-0.87, 1.30) | |
| Q3 | 0.3 | -155.98  (-533.34, 221.38) | | | -20.55  (-391.38, 350.28) | | -0.14  (-1.86, 1.59) | 0.20  (-1.54, 1.93) | -0.26  (-1.30, 0.78) | | 0.10  (-0.96, 1.17) | |
| Q4 | 0.4 | -185.84  (-564.19, 192.50) | | | -26.14  (-398.79, 346.52) | | 0.19  (-1.54, 1.92) | 0.46  (-1.29, 2.20) | -0.20  (-1.25, 0.84) | | 0.04  (-1.03, 1.11) | |
| Q5 | 0.5-1.6 | -262.29  (-640.64, 116.05) | | | -88.68  (-460.74, 283.38) | | -0.40  (-2.13, 1.34) | -0.11  (-1.86, 1.63) | -0.35  (-1.39, 0.69) | | -0.05  (-1.12, 1.02) | |
| p-trend |  | 0.001 | | | 0.046 | | 0.14 | 0.17 | 0.29 | | 0.24 | |

Abbreviations: PFOS perfluorooctane sulfonic acid; PFOA perfluorooctanoic acid; PFHxS perfluorohexane sulfonic acid; PFNA perfluorononanoic acid; 95% CI 95% confidence interval; Q1 quintile 1; Q2 quintile 2; Q3 quintile 3; Q4 quintile 4; Q5 quintile 5

a In adjusted models, controlling for maternal age, maternal pre-pregnancy BMI, folic acid use, smoking during pregnancy, alcohol use during pregnancy, parity, and gestational age at sample collection.

b In adjusted models, controlling for maternal pre-pregnancy BMI, folic acid use, smoking during pregnancy, parity, and gestational age at sample collection.   
c Q2, Q3, Q4, and Q5 represent quintiles 2, 3, 4, and 5, where Q5 is the highest category of exposure. Quintile 1 (lowest category of exposure) is the reference group.

\*Indicates p<0.05

**Table S3.** Comparison of geometric means (95% CI) of ALSPAC serum perfluoroalkyl substance (PFAS) concentrations among pregnant women to other population- or cohort-level data from North America, Europe, and Asiaa

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Country** | **Sample Size** | **Year(s) of collection** | **PFOA** | **PFOS** | **PFHxS** | **PFNA** |
| ALSPAC | UK | 457 | 1991-1992 | 2.97 (2.87, 3.07) | 14.07  (13.60, 14.56) | 1.93  (1.83, 2.03) | 0.35  (0.34, 0.37) |
| NHANESb | US | 819 | 1999-2000 | 4.80  (4.32, 5.34) | 28.0  (24.6, 31.8) | 1.79  (1.56, 2.06) | 0.51  (0.41, 0.63) |
| NHANESb | US | 1029 | 2015-2016 | 1.36  (1.29, 1.45) | 3.67  (3.34, 4.03) | 0.88  (0.78, 0.99) | 0.53  (0.49, 0.57) |
| DNBC | Denmark | 1594 | 1996-2002 | 4.3  (4.2, 4.4) | 28.3  (27.7, 29.0) | 1.06  (1.03, 1.09) | 0.45  (0.44, 0.46) |
| MISA | Norway | 391 | 2007-2009 | 1.6  (1.6, 1.7) | 8.0  (7.7, 8.4) | 0.47  (0.45, 0.50) | 0.60  (0.58, 0.63) |
| ABC | Denmark | 1533 | 2008-2013 | 1.8  (1.8, 1.9) | 7.7  (7.5, 7.9) | 0.44  (0.43, 0.45) | 0.73  (0.71, 0.75) |
| ACCEPT | Greenland | 207 | 2010-2013 | 1.3  (1.2, 1.4) | 10.9  (10.3, 11.7) | 0.79  (0.73, 0.84) | 1.39  (1.31, 1.47) |
| SBC | Shanghai | 448 | 2013-2015 | 10.7  (10.2, 11.1) | 8.0  (7.6, 8.3) | 0.58  (0.55, 0.61) | 1.51  (1.45, 1.58) |

Abbreviations: PFOA perfluorooctanoic acid; PFOS perfluorooctane sulfonic acid; PFHxS perfluorohexane sulfonic acid; PFNA perfluorononanoic acid; 95% CI 95% confidence interval; UK United Kingdom; US United States of America; ALSPAC Avon Longitudinal Study of Parents and Children; NHANES National Health and Nutrition Examination Survey; DNBC Danish National Birth Cohort; MISA The northern Norway Mother-Child Contaminant Cohort; ABC Aarhus Birth Cohort; ACCEPT The Greenlandic Birth Cohort; SBC Shanghai Birth Cohort

a Adapted from Bjerregaard-Olesen et al., 2017, table 2

b Among total female NHANES population (pregnant and nonpregnant)