**Supplementary data**

**Prenatal exposure to persistent organic pollutants and rapid weight gain and overweight in infancy**

Damaskini Valvi\*, Michelle Ann Mendez, Raquel Garcia-Esteban, Ferran Ballester, Jesús Ibarluzea, Fernando Goñi, Joan O. Grimalt, Sabrina Llop, Loreto Santa Marina, Esther Vizcaino, Jordi Sunyer and Martine Vrijheid

\*Corresponding author contact information:

Centre for Research in Environmental Epidemiology (CREAL)

88 Dr. Aiguader St, 08003 Barcelona

Email: [dvalvi@creal.cat](mailto:dvalvi@creal.cat)

Telephone: +34 93 214 7325 Fax: +34 93 214 7302

**Table S1. Infant and parental characteristics by infant overweight (≥ 85th percentile, WHO) at the age of 14 months in the total study population and in (including the Sabadell subcohort) and in the Gipuzcoa and Valencia subcohorts only.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Total study population**  **(N=1198)** | | | **Gipuzkoa and Valencia subcohorts only**  **(N=704)** | | |
| **Covariates** | **BMI <85**th **p** | **BMI=>85th p** |  | **BMI <85**th **p** | **BMI=>85th p** |  |
|  | **N=840** | **N=358** |  | **N=472** | **N=232** |  |
|  | **Valueª** | **Valueª** | **p-value** | **Valueª** | **Valueª** | **p-value** |
| **Infant characteristics** |  |  |  |  |  |  |
| Female sex | 48.4 | 46.1 | 0.56 | 47.5 | 47.8 | 0.92 |
| Gestational age (weeks) | 39.8 ± 1.2 | 39.8 ± 1.2 | 0.99 | 39.8 ± 1.2 | 39.9 ± 1.2 | 0.69 |
| Birthweight (g) | 3259 ± 418 | 3389 ± 429 | <0.01 | 3279 ± 436 | 3396 ± 446 | <0.01 |
| Birhweight z-score (SD) – *All* | -0.10 ± 0.88 | 0.16 ± 0.88 | <0.01 | -0.07 ± 0.92 | 0.18 ± 0.91 | <0.01 |
| *- Females* | -0.16 ± 0.92 | 0.14 ± 0.96 | <0.01 | -0.13 ± 0.94 | 0.16 ± 0.99 | 0.01 |
| *-Males* | -0.05 ± 0.85 | 0.18 ± 0.80 | <0.01 | -0.01 ± 0.90 | 0.20 ± 0.84 | 0.02 |
| Birth lenght (cm) | 49.6 ± 2.0 | 49.5 ± 1.9 | 0.33 | 49.8 ± 2.1 | 49.5 ± 2.0 | 0.13 |
| Weight at 6 months (gr) | 7471 ± 746 | 8270 ± 891 | <0.01 | 7520 ± 784 | 8178 ± 908 | <0.01 |
| Weight z-score at 6 months (SD) - *All* | -0.24 ± 0.78 | 0.62 ± 0.87 | <0.01 | -0.19 ± 0.80 | 0.54 ± 0.89 | <0.01 |
| *- Females* | -0.24 ± 0.77 | 0.58 ± 0.80 | <0.01 | -0.24 ± 0.82 | 0.47 ± 0.79 | <0.01 |
| *- Males* | -0..24 ± 0.79 | 0.65 ± 0.94 | <0.01 | -0.15 ± 0.79 | 0.60 ± 0.98 | <0.01 |
| Lenght at 6 months (cm) | 67.0 ± 2.3 | 67.3 ± 2.5 | 0.02 | 67.1 ± 2.3 | 67.3 ± 2.4 | 0.26 |
| Weight at 14 months (gr) | 9805 ± 929 | 11292 ± 1111 | <0.01 | 9715 ± 941 | 11134 ± 1031 | <0.01 |
| Lenght at 14 months (cm) | 77.1 ± 2.9 | 77.0 ± 3.6 | 0.87 | 76.7 ± 2.9 | 76.3 ± 3.7 | 0.13 |
| Exclusive breastfeeding >16 weeks | 48.4 | 46.9 | 0.63 | 47.1 | 47.8 | 0.84 |
|  |  |  |  |  |  |  |
| **Maternal characteristics** |  |  |  |  |  |  |
| Serum DDE ng/g (GM ± GSD) | 131 ± 2.4 | 134 ± 2.0 | 0.67 | 139 ± 2.3 | 130 ± 2.6 | 0.31 |
| Serum HCB ng/g (GM ± GSD) | 41.6 ± 2.5 | 41.8 ± 2.4 | 0.97 | 45.4 ± 2.7 | 43.1 ± 2.4 | 0.49 |
| Serum ∑PCB ng/g (GM ± GSD) | 90.4 ± 2.0 | 93.8 ± 2.0 | 0.41 | 109 ± 2.0 | 111 ± 1.9 | 0.73 |
| Parity – first born child | 55.3 | 54.6 | 0.83 | 53.6 | 54.3 | 0.86 |
| Age at delivery (years) | 31.8 ± 4.2 | 32.0 ± 4.0 | 0.58 | 32 ± 4.1 | 32 ± 3.7 | 0.83 |
| Pre-pregnancy BMI ≥ 25 kg/m² | 24.5 | 31.0 | 0.02 | 25.2 | 28.0 | 0.40 |
| Education |  |  |  |  |  |  |
| Primary | 26.1 | 19.3 |  | 26.7 | 14.2 |  |
| Secondary | 40.4 | 42.0 |  | 39.4 | 41.0 |  |
| University | 33.5 | 38.7 | 0.03 | 33.9 | 44.8 | <0.01 |
| Social class |  |  |  |  |  |  |
| I+II | 21.3 | 24.3 |  | 21.0 | 28.9 |  |
| III | 27.7 | 28.8 |  | 24.8 | 27.1 |  |
| IV+V | 50.9 | 46.9 | 0.38 | 54.2 | 44.0 | 0.02 |
| Country of origin |  |  |  |  |  |  |
| Spain | 92.0 | 91.9 |  | 91.5 | 94.8 |  |
| Latin America/Other | 8.0 | 8.1 | 0.94 | 8.5 | 5.2 | 0.12 |
| Smoking during pregnancy |  |  |  |  |  |  |
| No | 70.6 | 68.2 |  | 68.9 | 68.5 |  |
| Yes - until 1st trimester | 16.1 | 13.4 |  | 15.7 | 14.2 |  |
| Yes - until 3rd trimester | 13.3 | 18.4 | 0.06 | 15.5 | 17.3 | 0.77 |
|  |  |  |  |  |  |  |
| **Paternal characteristics** |  |  |  |  |  |  |
| BMI ≥ 25 kg/m² | 53.1 | 59.8 | 0.04 | 55.4 | 57.0 | 0.68 |
| Social class |  |  |  |  |  |  |
| I+II | 22.3 | 22.2 |  | 19.2 | 23.5 |  |
| III | 16.7 | 16.5 |  | 15.7 | 16.5 |  |
| IV+V | 60.9 | 61.3 | 0.99 | 65.1 | 60.0 | 0.35 |
| ªValues are Mean ± SD or %.  b Chi-square for categorical variables; t-test for continuous variables (all continuous variables included in the table are normally distributed). | | | | | | |

**Table S2. Multipollutant adjusted effects of POPs (ng/g lipid) on early rapid growth and subsequent overweight in the total study population and in the Gipuzkoa and Valencia subcohorts only.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **POP concentrations** | **Total study population** | | | |  | |  | **Gipuzkoa and Valencia subcohorts only** | | | |
|  | **N** | **Rapid Growth 0-6 monthsª** | **N** | **Overweight at 14 months of ageb** | |  |  | **N** | **Rapid Growth 0-6 monthsª** | **N** | **Overweight at 14 months of ageb** |
|  |  | **RR (95% CI)** |  | **RR (95% CI)** | |  |  |  | **RR (95% CI)** |  | **RR (95% CI)** |
| **DDE** |  |  |  |  | |  |  |  |  |  |  |
| ≤73.6 | 300 | 1 | 282 | 1 | |  |  | 173 | 1 | 150 | 1 |
| >73.6 - 118.8 | 314 | 1.02 (0.76, 1.38) | 300 | 1.09 (0.85, 1.38) | |  |  | 194 | 0.83 (0.56, 1.23) | 182 | 1.10 (0.84, 1.45) |
| >118.8 – 203.1 | 336 | 1.18 (0.87, 1.59) | 319 | 1.01 (0.78, 1.31) | |  |  | 201 | 0.97 (0.66, 1.42) | 184 | 0.85 (0.62, 1.17) |
| >203.1 | 335 | 1.22 (0.89, 1.59) | 297 | 1.28 (0.97, 1.69) | |  |  | 222 | 1.04 (0.69, 1.55) | 188 | 1.24 (0.89, 1.74) |
| Per log ng/g lipid | 1285 | 1.09 (0.97, 1.24) | 1198 | 1.12 (1.01, 1.26) | |  |  | 790 | 1.07 (0.92, 1.25) | 704 | 1.14 (0.98, 1.31) |
| **HCB** |  |  |  |  | |  |  |  |  |  |  |
| ≤22.6 | 291 | 1 | 268 | 1 | |  |  | 172 | 1 | 148 | 1 |
| >22.6 - 41.7 | 302 | 1.01 (0.74, 1.38) | 395 | 1.09 (0.84, 1.43) | |  |  | 172 | 0.97 (0.62, 1.50) | 164 | 1.38 (1.00, 1.92) |
| >41.7 – 73.0 | 336 | 1.16 (0.84, 1.59) | 321 | 1.24 (0.94, 1.64) | |  |  | 189 | 1.29 (0.84, 1.98) | 173 | 1.33 (0.94, 1.87) |
| >73.0 | 356 | 1.38 (0.98, 1.95) | 314 | 1.39 (1.02, 1.88) | |  |  | 257 | 1.51 (0.98, 2.33) | 219 | 1.60 (1.11, 2.31) |
| Per log ng/g lipid | 1285 | 1.11 (0.96, 1.28) | 1198 | 1.17 (1.02, 1.34) | |  |  | 790 | 1.12 (0.95, 1.32) | 704 | 1.21 (1.04, 1.41) |
| **∑PCB** |  |  |  |  | |  |  |  |  |  |  |
| ≤65.4 | 321 | 1 | 305 | 1 | |  |  | 122 | 1 | 108 | 1 |
| >65.4 - 101.3 | 311 | 1.12 (0.84, 1.50) | 299 | 0.77 (0.57, 1.05) | |  |  | 168 | 1.18 (0.76, 1.84) | 156 | 0.73 (0.50, 1.07) |
| >101.3 – 144.6 | 328 | 1.15 (0.84, 1.57) | 302 | 0.91 (0.68, 1.22) | |  |  | 225 | 1.29 (0.84, 1.99) | 200 | 1.00 (0.69, 1.46) |
| >144.6 | 325 | 1.09 (0.76, 1.57) | 292 | 0.91 (0.65, 1.28) | |  |  | 275 | 1.10 (0.68, 1.76) | 240 | 0.85 (0.56, 1.27) |
| Per log ng/g lipid | 1285 | 1.01 (0.84, 1.21) | 1198 | 0.93 (0.76, 1.13) | |  |  | 790 | 1.01 (0.81, 1.24) | 704 | 0.85 (0.68, 1.06) |
| All models are adjusted for all three POPs shown in this table.  ª Rapid growth models are additionally adjusted for study subcohort, infant sex, exact age at examination at 6 months, gestational age, exclusive breastfeeding duration, maternal country of origin, maternal social class, maternal age at delivery, maternal pre-pregnancy BMI status and maternal smoking during pregnancy.  b Overweight models are additionally adjusted for study subcohort, infant sex, exact age at examination at 14 months, exclusive breastfeeding duration, maternal country of origin, maternal education, maternal age at delivery, maternal pre-pregnancy BMI status and maternal smoking during pregnancy. | | | | | | | | | | | |