**Supplementary Table 1** Comparison of maternal and perinatal characteristics between the study sample and the initial 3D cohort participants

| Characteristics |  | Study sample(*n* 1599) |  | 3D Cohort Study(*n* 2366) | *P* |
| --- | --- | --- | --- | --- | --- |
|  |  | *n* | % |  | *n* | % |  |
| Maternal age  | 19-24 y | 98 | 6.1 |  | 172 | 7.3 | 0.288 |
|  | 25-34 y | 1158 | 72.6 |  | 1670 | 70.8 |
|  | ≥ 35 y | 339 | 21.3 |  | 518 | 21.9 |
|  | Missing  | 4 | − |  | 6 | − |  |
|  |  |  |  |  |  |  |  |
| Maternal education | Secondary school diploma or less | 117 | 7.4 |  | 237 | 10.1 | 0.004 |
|  | Higher than secondary school diploma | 1471 | 92.6 |  | 2111 | 89.9 |
|  | Missing  | 11 | − |  | 18 | − |  |
|  |  |  |  |  |  |  |  |
| Household income (CAD) | < $60,000 | 420 | 27.4 |  | 707 | 31.5 | 0.008 |
| ≥ $60,000 | 1114 | 72.6 |  | 1541 | 68.5 |
|  | Missing | 65 | − |  | 118 | − |  |
|  |  |  |  |  |  |  |  |
| Mother’s immigrant status  | Non immigrant | 1114 | 69.8 |  | 1536 | 65.1 | 0.003 |
| Immigrant | 483 | 30.2 |  | 823 | 34.9 |
|  | Missing | 2 | − |  | 7 | − |  |
|  |  |  |  |  |  |  |  |
| Parity  | 0 | 881 | 55.1 |  | 1280 | 54.2 | 0.587 |
|  | 1+ | 718 | 44.9 |  | 1083 | 45.8 |
|  | Missing  | − | − |  | 3 | − |  |
|  |  |  |  |  |  |  |  |
| Mode of delivery | Vaginal | 1187 | 74.3 |  | 1639 | 73.5 | 0.606 |
|  | Cesarean | 410 | 25.7 |  | 590 | 26.5 |
|  | Missing  | 2 | − |  | 137 | − |  |
|  |  |  |  |  |  |  |  |
| Maternal smoking during pregnancy  | No | 1389 | 87.1 |  | 2024 | 85.7 | 0.242 |
| Yes | 206 | 12.9 |  | 337 | 14.3 |
|  | Missing  | 4 | − |  | 5 | − |  |
|  |  |  |  |  |  |  |  |
| Gestational diabetes | No | 1448 | 90.8 |  | 2002 | 89.7 | 0.308 |
|  | Yes | 147 | 9.2 |  | 229 | 10.3 |
|  | Missing  | 4 | − |  | 135 | − |  |
|  |  |  |  |  |  |  |  |
| Overweight/obese before pregnancy\* | No | 1061 | 70.2 |  | 1543 | 69.5 | 0.689 |
| Yes | 451 | 29.8 |  | 677 | 30.5 |
|  | Missing | 87 | − |  | 146 | − |  |
|  |  |  |  |  |  |  |  |
| Infant sex | Boy | 801 | 50.1 |  | 1122 | 50.2 | 0.952 |
|  | Girl | 798 | 49.9 |  | 1111 | 49.8 |
|  | Missing  | − | − |  | 133 | − |  |
|  |  |  |  |  |  |  |  |
| Birth weight | ≤ 4000 g | 1454 | 90.9 |  | 2046 | 91.6 | 0.487 |
|  | > 4000 g | 145 | 9.1 |  | 187 | 8.4 |
|  | Missing  | − | − |  | 133 | − |  |

CAD Canadian Dollar.

\* BMI ≥ 25, derived from reported weight before pregnancy and measured height at the first prenatal visit.

**Supplementary Table 2** Odds ratios and 95% confidence intervals for overweight/obesity at age 2 years (WHO definition) by rapid weight gain and significant covariates (*n* 1111)\*

| Characteristics |  | OR | 95% CI | *P*-value |
| --- | --- | --- | --- | --- |
| (Intercept) |  | 0.02 | 0.01, 0.03 | <0.001 |
| RWG in the first year of life | No | 1.00 | − |  |
| Yes | 7.04 | 3.93, 13.09 | <0.001 |
| Birth weight | ≤ 4000 g | 1.00 | − |  |
| > 4000 g | 5.98 | 2.87, 12.18 | <0.001 |

WHO, World Health Organization; OR, odds ratio; CI, confidence interval; RWG, rapid weight gain; AIC, Akaike Information Criterion.
\*Covariates considered in the multivariable logistic regression analyses: breastfeeding variables, maternal age, maternal education, household income, mother’s immigrant status, parity, mode of delivery, maternal smoking during pregnancy, gestational diabetes, overweight status before pregnancy, infant sex, gestational age at birth, and birth weight. In order to select a parsimonious model, we examined the univariable association between each risk factor and the outcome. Variables where the p-value was <0.2, based on the likelihood ratio test, were selected for consideration in building the final model. Model selection was then carried out to minimize AIC in a stepwise manner. All variables were tested for significant interactions; none were significant. Individuals with incomplete values for selected covariates were removed before undertaking regression analyses.

**Supplementary Table 3** Odds ratios and 95% confidence intervals for rapid weight gain in first year by breastfeeding practices and significant covariates after imputing missing values in covariates (*n* 1452)\*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | OR | 95% CI | *P*-value |
| Model I: RWG in the first year as the outcome and total breastfeeding duration as the key exposure  |
| (Intercept) |  | 0.17 | 0.13, 0.23 | <0.001 |
| Total breastfeeding duration | ≥ 12 months  | 1.00 | − |  |
| 6 months to < 12 months | 1.77 | 1.30, 2.41 | <0.001 |
| <6 months  | 2.44 | 1.78, 3.37 | <0.001 |
| Overweight/obese before pregnancy† | No | 1.00 | − |  |
| Yes | 1.31 | 1.00, 1.70 | 0.047 |
| Parity | 0 | 1.00 | − |  |
| 1+ | 0.60 | 0.47, 0.78 | <0.001 |
| Maternal age | 25-34 y | 1.00 | − |  |
| 19-24 y | 1.72 | 1.07, 2.76 | 0.024 |
| ≥35 y | 1.21 | 0.89, 1.64 | 0.223 |
| Mother’s immigrant status | Non immigrant | 1.00 | − |  |
| Immigrant | 1.60 | 1.21, 2.11 | 0.001 |
| Gestational age at birth | ≥ 39 weeks | 1.00 | − |  |
| 37 to <39 weeks | 2.67 | 2.06, 3.48 | <0.001 |
| Birth weight | ≤ 4000 g | 1.00 | − |  |
| > 4000 g | 0.30 | 0.16, 0.53 | <0.001 |
| Model II: RWG in the first year as the outcome and exclusive breastfeeding duration as the key exposure  |
| (Intercept) |  | 0.20 | 0.14, 0.29 | <0.001 |
| Exclusive breastfeeding duration | ≥ 6 months | 1.00 | − |  |
| 3 to < 6 months | 1.18 | 0.79, 1.77 | 0.422 |
| 1 to < 3 months | 1.82 | 1.19, 2.81 | 0.006 |
| < 1 month (or no breastfeeding) | 1.94 | 1.34, 2.84 | 0.001 |
| Overweight/obese before pregnancy† | No | 1.00 | − |  |
| Yes | 1.35 | 1.04, 1.76 | 0.026 |
| Parity | 0 | 1.00 | − |  |
| 1+ | 0.61 | 0.47, 0.79 | <0.001 |
| Maternal age | 25-34 y | 1.00 | − |  |
| 19-24 y | 1.78 | 1.11, 2.84 | 0.016 |
| ≥35 y | 1.11 | 0.82, 1.51 | 0.485 |
| Mother’s immigrant status | Non immigrant | 1.00 | − |  |
| Immigrant | 1.40 | 1.07, 1.83 | 0.015 |
| Gestational age at birth | ≥ 39 weeks | 1.00 | − |  |
| 37 to <39 weeks | 2.61 | 2.01, 3.39 | <0.001 |
| Birth weight | ≤ 4000 g | 1.00 | − |  |
| > 4000 g | 0.29 | 0.15, 0.51 | <0.001 |
| Model III: RWG in the first year as the outcome and a combination of breastfeeding duration as the key exposure  |
| (Intercept) |  | 0.15 | 0.09, 0.24 | <0.001 |
| Combination of breastfeeding duration  | ≥12 months total & ≥6 months exclusive | 1.00 | − |  |
| ≥12 months total & <6 months exclusive  | 1.20 | 0.73, 2.02 | 0.485 |
| <12 months total & ≥6 months exclusive  | 1.59 | 0.82, 3.05 | 0.166 |
| <12 months total & <6 months exclusive  | 2.43 | 1.55, 3.93 | <0.001 |
| Overweight/obese before pregnancy† | No | 1.00 | − |  |
| Yes | 1.34 | 1.03, 1.75 | 0.029 |
| Parity | 0 | 1.00 | − |  |
| 1+ | 0.60 | 0.46, 0.78 | <0.001 |
| Maternal age | 25-34 y | 1.00 | − |  |
| 19-24 y | 1.71 | 1.06, 2.74 | 0.026 |
| ≥35 y | 1.22 | 0.89, 1.65 | 0.208 |
| Mother’s immigrant status | Non immigrant | 1.00 | − |  |
| Immigrant | 1.60 | 1.21, 2.11 | 0.001 |
| Gestational age at birth | ≥ 39 weeks | 1.00 | − |  |
| 37 to <39 weeks | 2.70 | 2.08, 3.52 | <0.001 |
| Birth weight | ≤ 4000 g | 1.00 | − |  |
| > 4000 g | 0.30 | 0.16, 0.52 | <0.001 |

OR, odds ratio; CI, confidence interval; RWG, rapid weight gain; AIC, Akaike Information Criterion.
\*Covariates considered in the multivariable logistic regression analyses: maternal age, maternal education, household income, mother’s immigrant status, parity, mode of delivery, maternal smoking during pregnancy, gestational diabetes, overweight status before pregnancy, infant sex, gestational age at birth, and birth weight. In order to select a parsimonious model, we examined the univariable association between each risk factor and the outcome. Variables where the p-value was <0.2, based on the likelihood ratio test, were selected for consideration in building the final model. Model selection was then carried out to minimize AIC in a stepwise manner. All variables were tested for significant interactions; none were significant. We imputed missing values to covariates by using an iterative imputation method (missForest)24.

† BMI ≥ 25, derived from reported weight before pregnancy and height measured at the first prenatal visit.

**Supplementary Table 4** Odds ratios and 95% confidence intervals for overweight/obesity at age 2 years (IOTF criteria) by rapid weight gain and significant covariates after imputing missing values in covariates (*n* 1111)\*

| Characteristics |  | OR | 95% CI | *P*-value |
| --- | --- | --- | --- | --- |
| (Intercept) |  | 0.06 | 0.03, 0.12 | <0.001 |
| RWG in the first year of life | No | 1.00 | − |  |
| Yes | 6.65 | 4.21, 10.75 | <0.001 |
| Overweight/obese before pregnancy† | No | 1.00 | − |  |
| Yes | 1.76 | 1.13, 2.72 | 0.011 |
| Maternal education: Secondary school diploma or less | No | 1.00 | − |  |
| Yes | 2.10 | 0.94, 4.33 | 0.056 |
| Birth weight | ≤ 4000 g | 1.00 | − |  |
| > 4000 g | 4.67 | 2.49, 8.59 | <0.001 |

IOTF, International Obesity Task Force; OR, odds ratio; CI, confidence interval; RWG, rapid weight gain; AIC, Akaike Information Criterion.
\*Covariates considered in the multivariable logistic regression analyses: breastfeeding variables, maternal age, maternal education, household income, mother’s immigrant status, parity, mode of delivery, maternal smoking during pregnancy, gestational diabetes, overweight status before pregnancy, infant sex, gestational age at birth, and birth weight. In order to select a parsimonious model, we examined the univariable association between each risk factor and the outcome. Variables where the p-value was <0.2, based on the likelihood ratio test, were selected for consideration in building the final model. Model selection was then carried out to minimize AIC in a stepwise manner. All variables were tested for significant interactions; none were significant. We imputed missing values to covariates by using an iterative imputation method (missForest) 24.

† BMI ≥ 25, derived from reported weight before pregnancy and height measured at the first prenatal visit.