

**Supplementary Table 6.** Multivariable linear regression analysis of the association of maternal delivery iPTH concentrations with infant head circumference-for-age Z-scores (HCAZ) at birth.

|                                       | <i>Unadjusted Models<sup>a</sup></i> |                    |                |                       | <i>Multivariable Model<sup>b</sup></i> |                    |                |                       |
|---------------------------------------|--------------------------------------|--------------------|----------------|-----------------------|--|--------------------|----------------|-----------------------|
|                                       | N                                    | Difference in HCAZ | 95% CI         | <i>P</i> <sup>c</sup> | N                                      | Difference in HCAZ | 95% CI         | <i>P</i> <sup>c</sup> |
| Maternal log iPTH <sup>d</sup>        | 534                                  | 0.082              | 0.015, 0.149   | 0.017                 | 489                                    | 0.047              | -0.027, 0.121  | 0.21                  |
| Maternal Magnesium (mmol/L)           | 492                                  | 0.623              | 0.069, 1.177   | 0.028                 | 489                                    | 0.520              | -0.022, 1.062  | 0.06                  |
| Maternal log FGF23 <sup>e</sup>       | 534                                  | 0.020              | 0.012, 0.029   | <0.001                | 489                                    | 0.017              | 0.009, 0.026   | <0.001                |
| Maternal log CRP <sup>e</sup>         | 532                                  | -0.002             | -0.008, 0.004  | 0.46                  | 489                                    | 0.000              | -0.006, 0.006  | 0.94                  |
| Vitamin D Treatment Group             |                                      |                    |                |                       |  |                    |                |                       |
| Placebo                               | 142                                  | ref                | ref            | ref                   | 103                                    | ref                | ref            | ref                   |
| 4200 IU/week                          | 94                                   | -0.125             | -0.374, 0.125  | 0.33                  | 92                                     | -0.195             | -0.457, 0.066  | 0.14                  |
| 16800 IU/week                         | 109                                  | 0.020              | -0.219, 0.259  | 0.87                  | 107                                    | -0.046             | -0.305, 0.213  | 0.73                  |
| 28000 IU/week                         | 189                                  | -0.106             | -0.314, 0.103  | 0.32                  | 187                                    | -0.075             | -0.310, 0.159  | 0.53                  |
| Estimated Protein Intake (g/kg/day)   | 534                                  | -0.408             | -0.623, -0.623 | <0.001                | 489                                    | -0.307             | -0.539, -0.539 | 0.010                 |
| Maternal Age (years)                  | 534                                  | 0.015              | -0.004, 0.034  | 0.17                  | 489                                    | -0.008             | -0.034, 0.018  | 0.56                  |
| Maternal Height (cm)                  | 534                                  | 0.023              | 0.009, 0.038   | 0.002                 | 489                                    | 0.020              | 0.005, 0.035   | 0.010                 |
| Maternal Education                    |                                      |                    |                |                       |  |                    |                |                       |
| Little to no schooling                | 192                                  | ref                | ref            | ref                   | 179                                    | ref                | ref            | ref                   |
| Some or completed secondary education | 281                                  | -0.036             | -0.212, 0.140  | 0.69                  | 252                                    | -0.037             | -0.221, 0.148  | 0.70                  |
| Some or completed tertiary education  | 61                                   | 0.006              | -0.270, 0.282  | 0.97                  | 58                                     | 0.137              | -0.157, 0.432  | 0.36                  |
| Asset Index <sup>f</sup>              | 533                                  | 0.060              | 0.012, 0.108   | 0.015                 | 489                                    | 0.039              | 0.012, 0.091   | 0.15                  |
| Gravidity                             | 534                                  | 0.074              | 0.001, 0.146   | 0.046                 | 489                                    | 0.068              | -0.034, 0.171  | 0.19                  |
| Gestational age at birth (weeks)      | 534                                  | -0.087             | -0.145, -0.029 | 0.003                 | 489                                    | -0.067             | -0.128, -0.006 | 0.031                 |
| Season of Birth <sup>g</sup>          |                                      |                    |                |                       |  |                    |                |                       |
| Spring                                | 85                                   | ref                | ref            | ref                   | 79                                     | ref                | ref            | ref                   |
| Summer                                | 128                                  | 0.033              | -0.228, 0.294  | 0.80                  | 118                                    | 0.032              | -0.229, 0.293  | 0.81                  |
| Autumn                                | 180                                  | 0.163              | -0.083, 0.408  | 0.19                  | 164                                    | 0.131              | -0.114, 0.377  | 0.29                  |
| Winter                                | 141                                  | -0.141             | -0.397, 0.115  | 0.28                  | 128                                    | -0.070             | -0.326, 0.186  | 0.59                  |

<sup>a</sup> Separate univariate models were run for each listed covariate.

<sup>b</sup> Multivariable model adjusted for: maternal log iPTH, maternal magnesium concentrations (mmol/L), maternal log FGF23 concentrations, maternal log CRP concentrations, vitamin D supplementation group (Placebo, 4200 IU/week, 16800 IU/week, 28000 IU/week), estimated protein intake (g/kg/day), maternal age (years), maternal height (cm), maternal education (little to no schooling, some or completed secondary education, some or completed tertiary education), gravidity, gestational age at birth (weeks), season of birth (spring, summer, fall, winter).

<sup>c</sup> *p*<0.05 considered significant.

<sup>d</sup> Variable was log transformed; Regression coefficient represents estimated mean difference in WAZ for a 90% increase in iPTH concentrations, which reflects a large but plausible difference in iPTH concentration that corresponds to the observed effect of high-dose vitamin D (28,000 IU/week) on iPTH, versus placebo.

<sup>e</sup> Variable was log transformed; Regression coefficient represents estimated mean difference in WAZ for a 10% increase in biomarker concentrations.

<sup>f</sup> Derived by data reduction using principal component analysis as measure of indicators of socioeconomic status including: private toilet, electricity, radio, television, mobile phone, landline, fridge, Almirah (wardrobe), table, chair(s), electric fan, DVD player, auto-bike, rickshaw/van, bicycle, motorcycle/motor scooter/ temp/CNG, livestock/herds/ farm animals/poultry, homestead, and land. The first principal component was used to assign each individual an asset score; lower scores reflect lower relative wealth and higher scores indicate greater wealth.

<sup>g</sup> Spring: March-May; Summer: June-August; Autumn: September-November; Winter: December-February.