**Supplementary table 1** Association between cofounders and FSIQ (unadjusted analysis) 1

|  |  |  |
| --- | --- | --- |
|  | FSIQ | |
|  | Coef(95%CI) | *P* |
| **Child age** | -0.08(-1.95, 1.79) | 0.933 |
| **School** |  |  |
| Village | reference |  |
| Township | 0.70(-1.99, 3.40) | 0.607 |
| County | 1.97(-0.75, 4.70) | 0.155 |
| **Gender** |  |  |
| Boy | reference |  |
| Girl | 0.42(-1.59, 2.43) | 0.683 |
| **Gestational age at birth** | -0.36(-0.97,0.25) | 0.244 |
| **Women's education** |  |  |
| Primary | reference |  |
| Secondary | 5.20(3.16, 7.24) | <0.001 |
| ≥ High school | 15.54(12.31, 18.78) | <0.001 |
| **Women's occupation at enrollment** |  |  |
| Farmer | reference |  |
| Others | 4.73(2.69, 6.76) | <0.001 |
| **Father's education** |  |  |
| Primary | reference |  |
| Secondary | 5.45(2.37, 8.53) | 0.001 |
| ≥ High school | 11.53(8.02, 15.04) | <0.001 |
| **Father's occupation at enrollment** |  |  |
| Farmer | reference |  |
| Others | 2.50(0.44,4.57) | 0.018 |
| **Duration of breastfeeding** |  |  |
| < 6 months | reference |  |
| 6-12 months | 0.33(-2.89, 3.54) | 0.842 |
| 12-18 months | -2.93(-5.73, 0.14) | 0.040 |
| ≥ 18 months | -4.96(-8.29, 1.62) | 0.004 |
| **Intervention group** |  |  |
| Folic acid | reference |  |
| Folic acid/Iron | -0.89(-3.27, 1.49) | 0.462 |
| Multiple micronutrients | -0.95(-3.32, 1.43) | 0.433 |
| **Household wealth index at enrollment** |  |  |
| Poorest | reference |  |
| Middle | 2.54(0.15, 4.94) | 0.038 |
| Richest | 7.32(4.95, 9.69) | <0.001 |

1 Linear regression model was used. CI, Confidence interval; Coef, coefficient; FSIQ, Full-Scale Intelligence Quotient.

**Supplementary table 2** Association between cofounders and malnutrition status in early school aged children (unadjusted analysis) 1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Underweight | |  | Thinness | |  | Stunting | |
|  | OR(95% CI) | *P* |  | OR(95% CI) | *P* |  | OR(95% CI) | *P* |
| **Child age** | 2.40(1.22, 4.70) | 0.011 |  | 1.98(1.08, 3.63) | 0.028 |  | 2.90(1.15, 7.31) | 0.024 |
| **School** |  |  |  |  |  |  |  |  |
| Village | reference |  |  | reference |  |  | reference |  |
| Township | 0.39(0.12, 1.31) | 0.129 |  | 0.49(0.17, 1.43) | 0.193 |  | 1.18(0.38, 3.66) | 0.776 |
| County | 0.55(0.19, 1.58) | 0.265 |  | 1.06(0.47, 2.37) | 0.888 |  | 0.60(0.13, 2.66) | 0.497 |
| **Gender** |  |  |  |  |  |  |  |  |
| Boy | reference |  |  | reference |  |  | reference |  |
| Girl | 0.95(0.48, 1.87) | 0.874 |  | 0.79(0.42, 1.51) | 0.483 |  | 0.83(0.33, 2.12) | 0.705 |
| **Gestational age at birth** | 0.83(0.69, 1.01) | 0.064 |  | 0.85(0.71, 1.02) | 0.081 |  | 0.83(0.64, 1.07) | 0.155 |
| **Women's education** |  |  |  |  |  |  |  |  |
| Primary | reference |  |  | reference |  |  | reference |  |
| Secondary | 0.32(0.16, 0.64) | 0.001 |  | 0.49(0.26, 0.92) | 0.028 |  | 0.38(0.15, 0.96) | 0.041 |
| ≥ High school | 0.12(0.02, 0.89) | 0.038 |  | 0.38(0.11, 1.32) | 0.129 |  | 0.31(0.11, 0.78) | 0.025 |
| **Women's occupation at enrollment** |  |  |  |  |  |  |  |  |
| Farmer | reference |  |  | reference |  |  | reference |  |
| Others | 0.84(0.41, 1.70) | 0.619 |  | 0.72(0.37, 1.41) | 0.340 |  | 0.30(0.09, 1.04) | 0.058 |
| **Father's education** |  |  |  |  |  |  |  |  |
| Primary | reference |  |  | reference |  |  | reference |  |
| Secondary | 0.47(0.20, 1.08) | 0.077 |  | 0.51(0.22, 1.17) | 0.113 |  | 0.41(0.14, 1.20) | 0.103 |
| ≥ High school | 0.30(0.09, 0.94) | 0.039 |  | 0.62(0.23, 1.63) | 0.330 |  | 0.19(0.04, 1.03) | 0.054 |
| **Father's occupation at enrollment** |  |  |  |  |  |  |  |  |
| Farmer | reference |  |  | reference |  |  | reference |  |
| Others | 1.02(0.51, 2.05) | 0.948 |  | 0.59(0.31, 1.10) | 0.097 |  | 0.67(0.27, 1.64) | 0.377 |
| **Duration of breastfeeding** |  |  |  |  |  |  |  |  |
| < 6 months | reference |  |  | reference |  |  | reference |  |
| 6-12 months | 0.98(0.35, 2.71) | 0.723 |  | 0.94(0.35, 2.54) | 0.909 |  | 0.33(0.06, 1.72) | 0.186 |
| 12-18 months | 0.47(0.18, 1.23) | 0.125 |  | 0.77(0.32, 1.86) | 0.567 |  | 0.46(0.14, 1.54) | 0.208 |
| ≥ 18 months | 0.98(0.35, 2.71) | 0.969 |  | 0.85(0.30, 2.43) | 0.761 |  | 0.98(0.28, 3.49) | 0.976 |
| **Intervention group** |  |  |  |  |  |  |  |  |
| Folic acid | reference |  |  | reference |  |  | reference |  |
| Folic acid/Iron | 0.91(0.43, 1.91) | 0.795 |  | 1.68(0.82, 3.45) | 0.155 |  | 0.59(0.20, 1.74) | 0.336 |
| Multiple micronutrients | 0.47(0.19, 1.15) | 0.098 |  | 0.92(0.41, 2.08) | 0.848 |  | 0.58(0.19, 1.73) | 0.327 |
| **Household wealth index at enrollment** |  |  |  |  |  |  |  |  |
| Poorest | reference |  |  | reference |  |  | reference |  |
| Middle | 1.22(0.57, 2.62) | 0.613 |  | 1.27(0.64, 2.53) | 0.494 |  | 0.46(0.15, 1.39) | 0.170 |
| Richest | 0.52(0.21, 1.30) | 0.162 |  | 0.36(0.14, 0.89) | 0.028 |  | 0.52(0.18, 1.50) | 0.229 |

1 Logistic regression model was used. CI, Confidence interval. OR, Odds ratio.

**Supplementary table 3 Number of complete and imputed data in different variables**

|  |  |  |
| --- | --- | --- |
| Variable | Complete | Imputed |
| Weight at birth | 643 | 7 |
| Weight at 6 month | 589 | 61 |
| Weight at 12 month | 595 | 55 |
| Weight at 18 month | 572 | 78 |
| Weight at 24 month | 586 | 64 |
| Length at birth | 605 | 45 |
| Length at 6 month | 587 | 63 |
| Length at 12 month | 595 | 55 |
| Length at 18 month | 570 | 80 |
| Length at 24 month | 585 | 65 |
| Father’s education | 647 | 3 |
| Mother’s job | 640 | 10 |
| Father’s job | 637 | 13 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Supplementary table 4** Baseline characteristics of participants in follow-up and lost to follow-up 1 | | | |
|  | Groups | | *P* |
|  | Follow-up | Lost to follow-up |
| **Child characteristics** |  |  |  |
| Number of children | 650 | 655 |  |
| Child age, mean±SD, y | 8.31±0.53 | 8.34±0.52 | 0.280 |
| Birth weight, mean±SD, kg | 3.17±0.42 | 3.20±0.39 | 0.191 |
| Gender, n (%) |  |  | 0.998 |
| Boy | 396(60.9) | 399(60.9) |  |
| Girl | 254(39.1) | 256(39.1) |  |
| Gestational age at birth, mean±SD, wk | 39.95±1.56 | 39.98±1.47 | 0.738 |
| **Women’s characteristics** |  |  |  |
| Maternal age, mean±SD, y | 33.52±4.57 | 33.12±4.45 | 0.110 |
| Women's education, n (%) |  |  | 0.794 |
| <3 years | 34(5.2) | 31(4.7) |  |
| Primary | 169(26.1) | 163(24.9) |  |
| Secondary | 375(57.8) | 378(57.8) |  |
| ≥ High school | 71(10.9) | 82(12.6) |  |
| Women's occupation at enrollment, n (%) |  |  | 0.135 |
| Farmer | 561(86.7) | 547(83.8) |  |
| Others | 86(13.3) | 106(16.2) |  |
| BMI at enrollment, mean±SD | 20.86(2.20) | 20.78(2.22) | 0.488 |
| **Others** |  |  |  |
| Father's education, n (%) |  |  | 0.546 |
| <3 years | 7(1.1) | 4(0.6) |  |
| Primary | 65(10.1) | 63(9.7) |  |
| Secondary | 435(67.2) | 426(65.3) |  |
| ≥ High school | 140(21.6) | 159(24.4) |  |
| Father's occupation at enrollment, n (%) |  |  | 0.108 |
| Farmer | 520(80.1) | 500(76.5) |  |
| Others | 129(19.9) | 154(23.5) |  |
| Household wealth index at enrollment, n (%) |  |  | 0.150 |
| Poorest | 166(25.5) | 139(21.2) |  |
| Middle | 262(40.3) | 269(41.1) |  |
| Richest | 222(34.2) | 247(37.7) |  |
| 1 Values are n(%) or means ± SD | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Supplementary table 5** Association between weight, height during different periods of postnatal life and general intellectual development and four composite scores in early school aged children (sensitivity analysis, multiple imputation method) 1 | | | | | | | | | | | | | | |
|  | FSIQ | |  | VCI | |  | WMI | |  | PRI | |  | PSI | |
|  | Coef(95%CI) | *P* |  | Coef(95%CI) | *P* |  | Coef(95%CI) | *P* |  | Coef(95%CI) | *P* |  | Coef(95%CI) | *P* |
| **Model 1** a | | | | | | | | | | | | | | |
| **0-6 months** | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.49(-0.47, 1.46) | 0.315 |  | 1.00(-0.17, 2.17) | 0.095 |  | -0.01(-0.94, 0.94) | 0.998 |  | 0.54(-0.49, 1.56) | 0.305 |  | 0.16(-0.84, 1.17) | 0.750 |
| Height gain, cm/6 months | 0.79(-0.14, 1.74) | 0.094 |  | 1.11(-0.05, 2.27) | 0.061 |  | 0.66(-0.23, 1.55) | 0.143 |  | 0.62(-0.26, 1.51) | 0.166 |  | 0.17(-0.76, 1.10) | 0.714 |
| **6-12 months** | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 1.75(0.71, 2.78) | 0.001 |  | 1.69(0.41, 2.97) | 0.010 |  | 1.26(0.24, 2.28) | 0.016 |  | 1.61(0.55, 2.67) | 0.003 |  | 0.83(-0.19, 1.86) | 0.110 |
| Height gain, cm/6 months | 0.65(-0.23, 1.54) | 0.147 |  | 0.74(-0.33, 1.81) | 0.173 |  | 0.42(-0.48, 1.33) | 0.353 |  | 0.83(-0.15, 1.82) | 0.095 |  | 0.13(-0.78, 1.05) | 0.773 |
| **12-18 months** | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.52(-0.82, 1.87) | 0.436 |  | 1.03(-0.71, 2.79) | 0.237 |  | -0.11(-1.50, 1.27) | 0.867 |  | 0.30(-0.91, 1.51) | 0.622 |  | 0.52(-0.72, 1.75) | 0.411 |
| Height gain, cm/6 months | 0.89(-0.22, 2.00) | 0.113 |  | 1.14(-0.17, 2.45) | 0.088 |  | 0.67(-0.33, 1.67) | 0.186 |  | 0.59(-0.50, 1.67) | 0.284 |  | 0.60(-0.46, 1.66) | 0.261 |
| **18-24 months** | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.69(-0.56, 1.94) | 0.273 |  | 0.18 (-1.30, 1.65) | 0.811 |  | 0.86(-0.68, 2.41) | 0.256 |  | 0.61(-0.64, 1.86) | 0.336 |  | 0.59(-0.52, 1.70) | 0.299 |
| Height gain, cm/6 months | 1.07(-0.03, 2.16) | 0.055 |  | 1.14(-0.27, 2.54) | 0.111 |  | 0.79(-0.15, 1.73) | 0.100 |  | 0.98(-0.21, 2.17) | 0.104 |  | 0.66(-0.36, 1.68) | 0.208 |
| **Model 2** b | | | | | | | | | | | | | | |
| **0-6 months** | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.21(-0.81, 1.22) | 0.690 |  | 0.73(-0.52, 1.99) | 0.251 |  | -0.18(-1.13, 0.77) | 0.716 |  | 0.36(-0.72, 1.43) | 0.513 |  | -0.13(-1.16, 0.90) | 0.798 |
| Height gain, cm/6 months | 0.67(-0.17, 1.51) | 0.118 |  | 0.96(-0.09, 2.01) | 0.074 |  | 0.64(-0.21, 1.50) | 0.138 |  | 0.55(-0.29, 1.40) | 0.200 |  | 0.03(-0.86, 0.91) | 0.950 |
| **6-12 months** | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 1.46(0.41, 2.50) | 0.006 |  | 1.31(0.02, 2.61) | 0.047 |  | 1.08(0.01, 2.16) | 0.048 |  | 1.41(0.31, 2.51) | 0.012 |  | 0.67(-0.43, 1.76) | 0.234 |
| Height gain, cm/6 months | 0.41(-0.44, 1.27) | 0.343 |  | 0.54(-0.51, 1.60) | 0.311 |  | 0.23(-0.66, 1.12) | 0.614 |  | 0.60(-0.36, 1.57) | 0.220 |  | -0.03(-0.92, 0.86) | 0.939 |
| **12-18 months** | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.15(-1.06, 1.36) | 0.806 |  | 0.65(-0.92, 2.23) | 0.407 |  | -0.36(-1.65, 0.93) | 0.572 |  | 0.14(-1.05, 1.33) | 0.817 |  | 0.17(-1.02, 1.35) | 0.784 |
| Height gain, cm/6 months | 0.78(-0.31, 1.87) | 0.155 |  | 0.96(-0.31, 2.23) | 0.135 |  | 0.71(-0.31, 1.72) | 0.168 |  | 0.48(-0.61, 1.58) | 0.383 |  | 0.81-0.56, 1.55) | 0.352 |
| **18-24 months** | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.76(-0.48, 1.99) | 0.226 |  | 0.30(-1.15, 1.74) | 0.686 |  | 0.88(-0.64, 2.39) | 0.241 |  | 0.60(-0.68, 1.88) | 0.354 |  | 0.46(-0.65, 1.57) | 0.418 |
| Height gain, cm/6 months | 0.60(-0.61, 1.82) | 0.318 |  | 0.72(-0.82, 2.25) | 0.347 |  | 0.37(-0.60, 1.33) | 0.458 |  | 0.62(-0.70, 1.93) | 0.349 |  | 0.32(-0.73. 1.38) | 0.547 |

1 Multilevel models were used to adjust for the effect of randomization by villages, with township to level 3, village to level 2, and individual to level 1. CI, Confidence interval; Coef, coefficient; FSIQ, Full-Scale Intelligence Quotient; PRI, Perceptual Reasoning Index; PSI, Processing Speed Index; VCI, Verbal Comprehension Index; WMI, Working Memory Index.

a *P* value adjusted for the age of children, gestational weeks, type of micronutrient supplement, sex of children.

b *P* value adjusted for the age of children, gestational weeks, type of micronutrient supplement, sex of children, household wealth index, mother’s educational level, father’s educational level, maternal occupation, father’s occupation, child school level, duration of breastfeeding.

**Supplementary table 6** Association between weight, height during two different periods of postnatal life and malnutrition status in early school aged children (sensitivity analysis, multiple imputation method) 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Underweight | | | | | | |  | | Thinness | | | | | | |  | Stunting | | | | | | |
|  | Model 1 a | | |  | Model 2 b | | |  | | Model 1 a | | |  | Model 2 b | | |  | Model 1 a | | |  | Model 2 b | | |
|  | OR | 95%CI | |  | OR | 95%CI | |  | | OR | 95%CI | |  | OR | 95%CI | |  | OR | 95%CI | |  | OR | 95%CI | |
| **0-6 months** | | | | | | | | | | | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.31 | 0.20 | 0.48 |  | 0.30 | 0.19 | 0.48 |  | 0.49 | | 0.34 | 0.70 |  | 0.47 | 0.32 | 0.70 |  | 0.47 | 0.27 | 0.83 |  | 0.51 | 0.29 | 0.90 |
| Height gain, cm/6 months | 0.69 | 0.46 | 1.04 |  | 0.74 | 0.49 | 1.13 |  | 0.86 | | 0.63 | 1.17 |  | 0.89 | 0.65 | 1.22 |  | 0.49 | 0.23 | 1.01 |  | 0.48 | 0.22 | 1.04 |
| **6-12 months** | | | | | | | | | | | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.62 | 0.40 | 0.95 |  | 0.62 | 0.38 | 1.01 |  | 0.69 | | 0.49 | 0.97 |  | 0.66 | 0.45 | 0.97 |  | 0.69 | 0.42 | 1.15 |  | 0.60 | 0.34 | 1.07 |
| Height gain, cm/6 months | 0.81 | 0.54 | 1.23 |  | 0.75 | 0.47 | 1.19 |  | 0.91 | | 0.66 | 1.27 |  | 0.92 | 0.65 | 1.30 |  | 0.72 | 0.43 | 1.21 |  | 0.69 | 0.40 | 1.19 |
| **12-18 months** | | | | | | | | | | | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.87 | 0.56 | 1.36 |  | 0.86 | 0.54 | 1.37 |  | 0.91 | | 0.63 | 1.33 |  | 0.93 | 0.63 | 1.38 |  | 0.56 | 0.32 | 0.97 |  | 0.53 | 0.29 | 0.97 |
| Height gain, cm/6 months | 0.76 | 0.54 | 1.07 |  | 0.77 | 0.53 | 1.13 |  | 0.84 | | 0.62 | 1.14 |  | 0.89 | 0.64 | 1.23 |  | 0.71 | 0.41 | 1.24 |  | 0.68 | 0.38 | 1.20 |
| **18-24 months** | | | | | | | | | | | | | | | | | | | | | | | | |
| Weight gain, kg/6 months | 0.50 | 0.31 | 0.80 |  | 0.47 | 0.27 | 0.81 |  | 0.62 | | 0.42 | 0.91 |  | 0.61 | 0.40 | 0.92 |  | 0.60 | 0.34 | 1.04 |  | 0.65 | 0.36 | 1.16 |
| Height gain, cm/6 months | 0.72 | 0.48 | 1.07 |  | 0.72 | 0.48 | 1.09 |  | 0.95 | | 0.63 | 1.42 |  | 0.98 | 0.65 | 1.48 |  | 0.78 | 0.48 | 1.27 |  | 0.80 | 0.47 | 1.36 |

1 Multi-variables logistic regression model was used. CI, Confidence interval. OR, Odds ratio.

a *P* value adjusted for the age of children, gestational weeks, type of micronutrient supplement, sex of children.

b *P* value adjusted for the age of children, gestational weeks, type of micronutrient supplement, sex of children, household wealth index, mother’s educational level, father’s educational level, maternal occupation, father’s occupation, child school level, duration of breastfeeding.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Supplementary table 7** Association between weight, height during different periods of postnatal life and general intellectual development and four composite scores in early school aged children (sensitivity analysis, multiple imputation method) 1 | | | | | | | | | | | | | |
|  | FSIQ | |  | VCI | |  | WMI | |  | PRI | |  | PSI | |
|  | Coef(95%CI) | *P* |  | Coef(95%CI) | *P* |  | Coef(95%CI) | *P* |  | Coef(95%CI) | *P* |  | Coef(95%CI) | *P* |
| **Model 1** a | | | | | | | | | | | | | |
| **0-6 months** | | | | | | | | | | | | | |
| Weight gain |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -5.70(-13.48, 2.08) | 0.151 |  | -5.45(-15.11, 4.22) | 0.269 |  | -2.40(-9.90, 5.09) | 0.529 |  | -8.18(-16.40, 0.04) | 0.051 |  | -1.33(-9.30, 6.65) | 0.744 |
| > 2SD | -2.09(-6.25, 2.08) | 0.326 |  | -1.43(-6.60, 3.74) | 0.588 |  | -1.15(-5.18, 2.88) | 0.575 |  | -1.58(-5.99, 2.83) | 0.483 |  | -2.97(-7.26, 1.32) | 0.174 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| Height gain, cm |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -2.78(-5.13, -0.43) | 0.020 |  | -2.64(-5.53, 0.24) | 0.073 |  | -2.98(-5.27, -0.69) | 0.011 |  | -2.15(-4.67, 0.36) | 0.093 |  | -2.82(-5.29, -0.34) | 0.026 |
| > 2SD | -2.81(-6.58, 0.96) | 0.145 |  | -2.11(-6.74, 2.52) | 0.371 |  | -4.43(-8.04, -0.81) | 0.016 |  | -2.17(-6.13, 1.78) | 0.282 |  | -1.67(-5.57, 2.23) | 0.401 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| **6-12 months** | | | | | | | | | | | | | |
| Weight gain, kg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -4.26(-7.52, -1.01) | 0.010 |  | -3.13(-7.15, 0.89) | 0.127 |  | -4.23(-7.35, -1.10) | 0.008 |  | -4.32(-7.78, -0.86) | 0.014 |  | -3.36(-6.68, -0.03) | 0.048 |
| > 2SD | 4.55(-0.70, 9.79) | 0.089 |  | 9.57(3.04, 16.09) | 0.004 |  | 1.31(-3.73, 6.34) | 0.611 |  | 0.76(-4.81, 6.33) | 0.789 |  | -0.68(-6.06, 4.71) | 0.806 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| Height gain, cm |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -3.45(-6.40, -0.51) | 0.021 |  | -1.99(-5.61, 1.62) | 0.280 |  | -1.94(-4.77, 0.88) | 0.177 |  | -4.98(-8.06, -1.91) | 0.001 |  | -1.13(-4.12, 1.86) | 0.460 |
| > 2SD | -1.80(-4.32, 0.72) | 0.162 |  | -1.70(-4.79, 1.40) | 0.282 |  | -0.37(-2.80, 2.07) | 0.767 |  | -2.23(-4.88, 0.43) | 0.100 |  | -0.02(-2.59, 2.56) | 0.990 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| **12-18 months** | | | | | | | | | | | | | |
| Weight gain, kg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | 2.01(-1.07, 5.10) | 0.201 |  | 3.28(-0.52, 7.07) | 0.091 |  | 1.88(-1.05, 4.81) | 0.208 |  | 1.74(-1.53, 5.01) | 0.297 |  | -1.75(-4.82, 1.32) | 0.263 |
| > 2SD | 2.74(-3.16,8.65) | 0.363 |  | 5.86(-1.38, 13.10) | 0.112 |  | -1.07(-6.72, 4.58) | 0.710 |  | 1.52(-4.78, 7.82) | 0.636 |  | -0.11(-5.99, 5.76) | 0.969 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| Height gain, cm |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -2.13(-4.27, 0.02) | 0.052 |  | -2.46(-5.08, 0.16) | 0.065 |  | 0.23(-1.87, 2.32) | 0.831 |  | -1.98(-4.34, 0.37) | 0.099 |  | -2.40(-4.54, -0.26) | 0.028 |
| > 2SD | -0.73(-4.03, 2.56) | 0.663 |  | -0.03(-4.08, 4.03) | 0.990 |  | 1.98(-1.22, 5.18) | 0.225 |  | 0.17(-0.34, 3.76) | 0.925 |  | -0.41(-3.67, 2.85) | 0.806 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| **18-24 months** | | | | | | | | | | | | | |
| Weight gain, kg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -0.03(-3.54, 3.48) | 0.985 |  | 0.93(-3.35, 5.21) | 0.671 |  | -1.10(-4.43, 2.23) | 0.518 |  | 0.79(-2.95, 4.53) | 0.679 |  | -1.19(-4.70, 2.32) | 0.507 |
| > 2SD | -0.56(-5.29, 4.17) | 0.817 |  | -3.21(-8.99, 2.57) | 0.276 |  | 0.71(-3.76, 5.18) | 0.755 |  | 1.49(-3.52, 6.50) | 0.561 |  | -0.55(-5.25, 4.15) | 0.818 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| Height gain, cm |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -2.59(-4.90, -0.28) | 0.028 |  | -1.67(-4.52, 1.17) | 0.248 |  | -1.54(-3.80, 0.72) | 0.182 |  | -1.55(-4.09, 1.00) | 0.234 |  | -1.99(-4.33, 0.35) | 0.095 |
| > 2SD | -1.27(-4.10, 1.55) | 0.377 |  | -1.70(-5.17, 1.77) | 0.338 |  | -0.91(-3.64, 1.82) | 0.515 |  | -0.71(-3.78, 2.35) | 0.648 |  | -0.64(-3.46, 2.18) | 0.657 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| **Model 2** b | | | | | | | | | | | | | |
| **0-6 months** | | | | | | | | | | | | | |
| Weight gain, kg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -6.15(-13.68, 1.38) | 0.109 |  | -6.12(-15.40, 3.16) | 0.196 |  | --2.40(-9.74, 4.95) | 0.523 |  | -8.41(-16.42, -0.40) | 0.040 |  | -1.15(-9.02, 6.73) | 0.775 |
| > 2SD | -1.79(-5.83, 2.24) | 0.384 |  | -0.61(-5.59, 4.38) | 0.811 |  | -1.42(-5.38, 2.54) | 0.482 |  | -1.33(-5.63, 2.98) | 0.546 |  | -2.76(-6.99, 1.49) | 0.203 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| Height gain, cm |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -3.31(-5.59, -1.03) | 0.004 |  | -2.89(-5.71,-0.06) | 0.045 |  | -3.78(-6.05, -1.51) | 0.001 |  | -2.86(-5.34, -0.38) | 0.024 |  | -2.87(-5.35, -0.40) | 0.023 |
| > 2SD | -2.50(-6.16, 1.16) | 0.181 |  | -1.33(-5.86, 3.20) | 0.564 |  | -4.35(-7.95, -0.75) | 0.018 |  | -2.48(-6.40, 1.44) | 0.215 |  | -1.38(-5.30, 2.53) | 0.488 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| **6-12 months** | | | | | | | | | | | | | |
| Weight gain, kg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -3.21(-6.39, -0.02) | 0.048 |  | -1.61(-5.52, 2.29) | 0.418 |  | -3.55(-6.62, -0.48) | 0.023 |  | -3.26(-6.66, 0.15) | 0.061 |  | -2.39(-5.70, 0.91) | 0.156 |
| > 2SD | 4.27(-0.95, 9.49) | 0.109 |  | 10.24(3.82, 16.66) | 0.002 |  | 2.19(-2.89, 7.27) | 0.398 |  | 0.74(-4.87, 6.36) | 0.795 |  | 0.47(-4.98, 5.92) | 0.865 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| Height gain, cm |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -3.40(-6.22, -0.57) | 0.018 |  | -2.07(-5.56, 1.43) | 0.247 |  | -2.04(-4.82, 0.74) | 0.150 |  | -5.11(-8.11, -2.11) | 0.001 |  | -1.39(-4.36, 1.59) | 0.356 |
| > 2SD | -2.61(-5.09, -0.13) | 0.039 |  | -2.55(-5.62, 0.53) | 0.104 |  | -0.80(-3.25, 1.65) | 0.522 |  | -3.21(-5.86, -0.56) | 0.018 |  | -0.23(-2.84, 2.38) | 0.865 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| **12-18 months** | | | | | | | | | | | | | |
| Weight gain, kg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | 2.68(-0.30, 5.66) | 0.078 |  | 3.23(-0.53, 6.99) | 0.092 |  | 2.43(-0.49, 5.35) | 0.103 |  | 2.28 (-0.96, 5.52) | 0.167 |  | -1.61(-4.68, 1.47) | 0.306 |
| > 2SD | 3.26(-2.56, 9.08) | 0.272 |  | 6.78(0.43, 13.99) | 0.065 |  | -0.60(-6.31, 5.11) | 0.838 |  | 2.45(-3.86, 8.76) | 0.446 |  | 0.70(-5.25, 6.66) | 0.817 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| Height gain, cm |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -2.41(-4.50, -0.33) | 0.023 |  | -2.67(-5.24, -0.11) | 0.041 |  | 0.08(-1.99, 2.15) | 0.940 |  | -2.16(-4.48, 0.16) | 0.068 |  | -2.46(-4.59, -0.32) | 0.024 |
| > 2SD | -0.72(-3.92, 2.47) | 0.658 |  | -0.10(-4.06, 3.86) | 0.961 |  | 1.94(-1.27, 5.14) | 0.237 |  | -0.06(-3.62, 3.49) | 0.972 |  | -0.28(-3.56, 2.99) | 0.865 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| **18-24 months** | | | | | | | | | | | | | |
| Weight gain, kg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -0.57(--3.92, 2.79) | 0.741 |  | 0.14(-3.99, 4.27) | 0.947 |  | -1.25(-4.53, 2.03) | 0.456 |  | 0.61(-3.02, 4.23) | 0.742 |  | -1.33(-4.78, 2.13) | 0.452 |
| > 2SD | -0.66(-5.22, 3.91) | 0.777 |  | -3.57(-9.20, 2.06) | 0.214 |  | 0.94(-3.50, 5.39) | 0.678 |  | 1.49(-3.42, 6.40) | 0.551 |  | -0.45(-5.15, 4.25) | 0.851 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |
| Height gain, cm |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| < -2SD | -2.59(-4.86, -0.32) | 0.025 |  | -1.88(-4.70, 0.93) | 0.189 |  | -1.12(-3.39, 1.15) | 0.333 |  | -1.34(-3.87, 1.19) | 0.298 |  | -2.27(-4.62, 0.08) | 0.059 |
| > 2SD | -2.13(-4.86, 0.61) | 0.127 |  | -2.59(-5.97, 0.80) | 0.134 |  | -1.53(-4.24, 1.19) | 0.271 |  | -1.17(-4.17, 1.84) | 0.446 |  | -1.06(-3.88, 1.76) | 0.462 |
| [-2SD, 2SD] | reference |  |  | reference |  |  | reference |  |  | reference |  |  | reference |  |

1 Multilevel models were used to adjust for the effect of randomization by villages, with township to level 3, village to level 2, and individual to level 1. CI, Confidence interval; Coef,

coefficient; FSIQ, Full-Scale Intelligence Quotient; PRI, Perceptual Reasoning Index; PSI, Processing Speed Index; VCI, Verbal Comprehension Index; WMI, Working Memory Index.

a *P* value adjusted for the age of children, gestational weeks, type of micronutrient supplement, sex of children.

b *P* value adjusted for the age of children, gestational weeks, type of micronutrient supplement, sex of children, household wealth index, mother’s educational level, father’s educational level, maternal occupation, father’s occupation, child school level, duration of breastfeeding.