SUPPLEMENTARY MATERIAL

Table S1: Growth and develoment outcomes associated with selenium in 36-month old children in Ha Nam province, Vietnam.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Unadjusted model | | Adjusted model 1 | |
|  | Estimate (95% CI) | p-value | Estimate (95% CI) | p-value |
| Selenium |  |  |  |  |
| HAZ score (n = 659) | 0.56 (0.15, 0.96) | <0.01 | 0.44 (0.04, 0.83) | 0.03 |
| BSID: cognition (n = 630) | 2.17 (-0.66, 5.00) | 0.13 | 1.73 (-1.04, 4.50) | 0.22 |
| BSID: language (n = 630) | 2.40 (-1.84, 6.63) | 0.27 | 1.73 (-2.41, 5.86) | 0.41 |
| BSID: motor (n = 630) | 4.96 (-0.49, 10.40) | 0.07 | 4.59 (-0.75, 9.93) | 0.09 |
| BSID: social-emotional (n = 622) | 2.92 (-1.97, 7.82) | 0.24 | 2.64 (-2.24, 7.53) | 0.29 |

Adjusted model 1: adjusted for mother’s education, trial arm, sex of the child, exclusive breastfeeding and wealth index score.

HAZ: height-for-age z-score, BSID: Bayley Scales of Infant development, CI: confidence interval.

Table S2: Growth and develoment outcomes associated with log-fingernail arsenic levels in 36-month old children in Ha Nam province, Vietnam.

|  | Unadjusted model | | Adjusted model 1 | | | Adjusted model 2 | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Estimate (95% CI) | p-value | Estimate (95% CI) | p-value | Estimate (95% CI) | | p-value |
| Height-for-age z-score (n = 657) |  |  |  |  |  | |  |
| LogeArsenic | -0·11 (-0·24, 0·02) | 0·097 | -0·05 (-0·18, 0·08) | 0·46 | -0·09 (-0·47, 0·29) | | 0·65 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 0·52 (-0·17, 1·22) | | 0·14 |
| LogeArsenic x Selenium | ·· | ·· | ·· | ·· | -0·03 (-0·56, 0·62) | | 0·92 |
| Intercept | -1·24 (-1·37, -1·10) | < 0·001 | -1·87 (-2·50, -1·23) | < 0·001 | -2·15 (-2·93, -1·37) | | < 0·001 |
|  |  |  |  |  |  | |  |
| BSID: cognition (n = 628) |  |  |  |  |  | |  |
| LogeArsenic | -1·45 (-2·23, -0·66) | <0·001 | -0·83 (-1·75, 0·09) | 0·078 | -1·25 (-3·89, 1·38) | | 0·35 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 2·85 (-1·96, 7·66) | | 0·25 |
| LogeArsenic x Selenium | ·· | ·· | ·· | ·· | 0·56 (-3·53, 4·66) | | 0·79 |
| Intercept | 94·70 (93·84, 95·55) | < 0·001 | 90·94 (86·52, 95·36) | < 0·001 | 89·35 (83·99, 94·71) | | < 0·001 |
|  |  |  |  |  |  | |  |
| BSID: language (n = 628) |  |  |  |  |  | |  |
| LogeArsenic | -2·10 (-3·23, -0·97) | <0·001 | -1·95 (-3·32, -0·58) | 0·005 | -2·11 (-6·04, 1·82) | | 0·29 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 2·47 (-4·71, 9·64) | | 0·50 |
| LogeArsenic x Selenium | ·· | ·· | ·· | ·· | 0·12 (-5·98, 6·22) | | 0·97 |
| Intercept | 102·41 (101·17, 103·64) | < 0·001 | 98·70 (92·12, 105·29) | < 0·001 | 97·39 (89·39, 105·39) | | < 0·001 |
|  |  |  |  |  |  | |  |
| BSID: motor (n = 628) |  |  |  |  |  | |  |
| LogeArsenic | -1·85 (-3·33, -0·37) | 0·014 | -0·95 (-2·74, 0·84) | 0·30 | -3·12 (-8·22, 1·98) | | 0·23 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 8·23 (-1·09, 17·54) | | 0·083 |
| LogeArsenic x Selenium | ·· | ·· | ·· | ·· | 3·70 (-4·22, 11·61) | | 0·36 |
| Intercept | 107·99 (106·37, 109·60) | < 0·001 | 107·04 (98·45, 115·64) | < 0·001 | 101·72 (91·34, 112·10) | | < 0·001 |
|  |  |  |  |  |  | |  |
| BSID: social-emotional (n = 621) |  |  |  |  |  | |  |
| LogeArsenic | -1·00 (-2·37, 0·36) | 0·15 | -0·78 (-2·40, 0·84) | 0·35 | -2·22 (-6·84, 2·39) | | 0·35 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 5·10 (-3·37, 13·57) | | 0·24 |
| LogeArsenic x Selenium | ·· | ·· | ·· | ·· | 2·14 (-5·02, 9·35) | | 0·55 |
| Intercept | 98·06 (96·57, 99·55) | < 0·001 | 94·15 (86·32, 101·98) | < 0·001 | 91·21 (81·73, 100·70) | | < 0·001 |

Adjusted model 1: adjusted for mother’s education, trial arm, sex of the child, exclusive breastfeeding and wealth index score.

Adjusted model 2: adjusted as in adjusted model 1 and in addition fingernail selenium, interaction with fingernail selenium.

HAZ: height-for-age z-score, BSID: Bayley Scales of Infant development, CI: confidence interval.

Table S3: Growth and development outcomes associated with log-fingernail mercury in 36-month old children in Ha Nam Province, Vietnam.

|  | Unadjusted model | | Adjusted model 1 | | Adjusted model 2 | |
| --- | --- | --- | --- | --- | --- | --- |
|  | Estimate (95% CI) | p-value | Estimate (95% CI) | p-value | Estimate (95% CI) | p-value |
| Height-for-age z-score (n = 657) |  |  |  |  |  |  |
| LogeMercury | 0·10 (-0·00, 0·19) | 0·056 | 0·07 (-0·03, 0·17) | 0·18 | -0·03 (-0·38, 0·32) | 0·86 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 0·55 (-0·34, 1·45) | 0·23 |
| LogeMercury x Selenium | ·· | ·· | ·· | ·· | 0·12 (-0·40, 0·63) | 0·66 |
| Intercept | -1·00 (-1·15, -0·85) | < 0·001 | -1·76 (-2·42, -1·11) | < 0·001 | -2·12 (-2·99, -1·25) | < 0·001 |
|  |  |  |  |  |  |  |
| BSID: cognition (n = 628) |  |  |  |  |  |  |
| LogeMercury | 0·38 (-0·22, 0·98) | 0·21 | 0·37 (-0·31, 1·05) | 0·28 | -4·91 (-7·52, -2·30) | <0·001 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 13·72 (7·37, 20·08) | <0·001 |
| LogeMercury x Selenium | ·· | ·· | ·· | ·· | 7·85 (4·04, 11·67) | <0·001 |
| Intercept | 96·61 (95·65, 97·57) | < 0·001 | 91·84 (87·33, 96·35) | < 0·001 | 83·07 (77·05, 89·08) | < 0·001 |
|  |  |  |  |  |  |  |
| BSID: language (n = 628) |  |  |  |  |  |  |
| LogeMercury | 1·16 (0·29, 2·03) | 0·01 | 1·19 (0·17, 2·21) | 0·022 | -5·30 (-9·22, -1·38) | 0·008 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 15·69 (6·14, 25·24) | 0·001 |
| LogeMercury x Selenium | ·· | ·· | ·· | ·· | 9·77 (4·03, 15·50) | 0·001 |
| Intercept | 106·04 (104·65, 107·43) | < 0·001 | 101·08 (94·34, 107·82) | < 0·001 | 90·99 (81·95, 100·04) | < 0·001 |
|  |  |  |  |  |  |  |
| BSID: motor (n = 628) |  |  |  |  |  |  |
| LogeMercury | 0·07 (-1·07, 1·20) | 0·91 | 0·12 (-1·20, 1·44) | 0·86 | -1·60 (-6·69, 3·49) | 0·54 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 8·99 (-3·41, 21·40) | 0·16 |
| LogeMercury x Selenium | ·· | ·· | ·· | ·· | 2·25 (-5·20, 9·70) | 0·55 |
| Intercept | 109·76 (107·95, 111·57) | < 0·001 | 107·91 (99·17, 116·66) | < 0·001 | 101·90 (90·15, 113·65) | < 0·001 |
|  |  |  |  |  |  |  |
| BSID: Social Emotional (n = 620) |  |  |  |  |  |  |
| LogeMercury | -0·25 (-1·30, 0·80) | 0·64 | 0·20 (-1·00, 1·40) | 0·75 | -1·41 (-6·32, 3·51) | 0·57 |
| Selenium (μg/g) | ·· | ·· | ·· | ·· | 6·68 (-4·96, 18·33) | 0·26 |
| LogeMercury x Selenium | ·· | ·· | ·· | ·· | 2·13 (-5·02, 9·28) | 0·58 |
| Intercept | 98·62 (96·95, 100·29) | < 0·001 | 94·97 (86·98, 102·96) | < 0·001 | 90·82 (79·84, 101·80) | < 0·001 |

Adjusted model 1: adjusted for mother’s education, trial arm, sex of the child, exclusive breastfeeding and wealth index score.

Adjusted model 2: adjusted as in adjusted model 1 and in addition fingernail selenium, interaction with fingernail selenium.

HAZ: height-for-age z-score, BSID: Bayley Scales of Infant Development, CI: confidence interval.

Table S4: Growth and development outcomes associated with log-transformed fingernail lead in 36-month old children in Ha Nam Province, Vietnam.

|  | Unadjusted model | | | Adjusted model 1 | | | Adjusted model 2 | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Estimate (95% CI) | p-value | Estimate (95% CI) | | p-value | Estimate (95% CI) | | p-value |
| Height-for-age z-score (n = 658) |  |  |  | |  |  | |  |
| LogeLead | -0·03 (-0·12, 0·06) | 0·51 | -0·04 (-0·13, 0·06) | | 0·46 | -0·04 (-0·36, 0·28) | | 0·81 |
| Selenium (μg/g) | ·· | ·· | ·· | | ·· | 0·50 (-0·13, 1·12) | | 0·12 |
| LogeLead x Selenium | ·· | ·· | ·· | | ·· | -0·02 (-0·52, 0·47) | | 0·93 |
| Intercept | -1·10 (-1·22, -0·98) | < 0·001 | -1·80 (-2·46, -1·14) | | < 0·001 | -2·04 (-2·80, -1·28) | | < 0·001 |
|  |  |  |  | |  |  | |  |
| BSID: cognition (n = 630) |  |  |  | |  |  | |  |
| LogeLead | -1·22 (-1·78, -0·65) | <0·001 | -0·88 (-1·53, -0·24) | | 0·007 | -2·73 (-5·05, -0·41) | | 0·017 |
| Selenium (μg/g) | ·· | ·· | ·· | | ·· | -0·42 (-4·79, 3·96) | | 0·85 |
| LogeLead x Selenium | ·· | ·· | ·· | | ·· | 2·93 (-0·58, 6·45) | | 0·10 |
| Intercept | 97·37 (96·64, 98·10) | < 0·001 | 92·55 (88·02, 97·08) | | < 0·001 | 93·36 (88·10, 98·62) | | < 0·001 |
|  |  |  |  | |  |  | |  |
| BSID: language (n = 630) |  |  |  | |  |  | |  |
| LogeLead | -2·02 (-2·84, -1·21) | < 0·001 | -1·97 (-2·92, -1·02) | | < 0·001 | -2·73 (-6·18, 0·71) | | 0·12 |
| Selenium (μg/g) | ·· | ·· | ·· | | ·· | 2·18 (-4·31, 8·68) | | 0·51 |
| LogeLead x Selenium | ·· | ·· | ·· | | ·· | 1·01 (-4·21, 6·23) | | 0·71 |
| Intercept | 106·54 (105·49, 107·58) | < 0·001 | 102·44 (95·73, 109·15) | | < 0·001 | 101·64 (93·82, 109·45) | | < 0·001 |
|  |  |  |  | |  |  | |  |
| BSID: motor (n = 630) |  |  |  | |  |  | |  |
| LogeLead | -1·53 (-2·60, -0·46) | 0·005 | -1·22 (-2·47, 0·04) | | 0·057 | -5·45 (-9·93, -0·96) | | 0·017 |
| Selenium (μg/g) | ·· | ·· | ·· | | ·· | -0·76 (-9·22, 7·69) | | 0·86 |
| LogeLead x Selenium | ·· | ·· | ·· | | ·· | 6·52 (-0·28, 13·32) | | 0·060 |
| Intercept | 111·31 (109·93, 112·68) | < 0·001 | 109·36 (100·55, 118·16) | | < 0·001 | 110·42 (100·24, 120·59) | | < 0·01 |
|  |  |  |  | |  |  | |  |
| BSID: Social Emotional (n = 622) |  |  |  | |  |  | |  |
| LogeLead | -0·85 (-1·85, 0·14) | 0·092 | -0·33 (-1·47, 0·81) | | 0·49 | -0·69 (-5·00, 3·62) | | 0·75 |
| Selenium (μg/g) | ·· | ·· | ·· | | ·· | 2·52 (-5·58, 10·62) | | 0·54 |
| LogeLead x Selenium | ·· | ·· | ·· | | ·· | 0·40 (-6·12, 6·92) | | 0·90 |
| Intercept | 99·94 (98·66, 101·22) | < 0·001 | 94·81 (86·77, 102·85) | | < 0·001 | 93·78 (74·33, 103·23) | | < 0·001 |

Adjusted model 1: adjusted for mother’s education, trial arm, sex of the child, exclusive breastfeeding and wealth index score.

Adjusted model 2: adjusted as in adjusted model 1 and in addition fingernail selenium, interaction with fingernail selenium.

HAZ: height-for-age z-score, BSID: Bayley Scales of Infant Development, CI: confidence interval.