**Supplemental Table 1. Mean (± SD) plasma concentrations of vitamins B6 (PLP) and B12, erythrocyte folate, and plasma homocysteine (Hcys) according to sociodemographic characteristics among school-age children from Mesoamerica**

| Characteristics | N\* | Plasma PLP (nmol/L) | Plasma vitamin B12 (pmol/L) | Erythrocyte folate (nmol/L) | Plasma Hcys (µmol/L) |
| --- | --- | --- | --- | --- | --- |
| Overall  | 237 | 68 | ± | 40 | 406 | ± | 234 | 828 | ± | 270 | 7.1 | ± | 3.3 |
| Sex |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Female | 124 | 66 | ± | 34 | 428 | ± | 230 | 839 | ± | 290 | 6.6 | ± | 2.9 |
| Male | 113 | 70 | ± | 46 | 381 | ± | 237 | 815 | ± | 247 | 7.6 | ± | 3.7 |
| P† |  | 0.98 | 0.02 | 0.49 | 0.05 |
| Age (years) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <9 | 79 | 72 | ± | 47 | 423 | ± | 251 | 839 | ± | 293 | 6.5 | ± | 3.2 |
| 9 - <11 | 82 | 68 | ± | 39 | 412 | ± | 186 | 841 | ± | 270 | 6.4 | ± | 2.5 |
| ≥11 | 76 | 64 | ± | 34 | 383 | ± | 262 | 801 | ± | 246 | 8.4 | ± | 3.9 |
| P, trend‡ |  | 0.31 | 0.16 | 0.39 | 0.0006 |
| Height-for-age Z score |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <-2 | 13 | 58 | ± | 26 | 317 | ± | 172 | 867 | ± | 211 | 7.7 | ± | 1.6 |
| -2 - <-1 | 45 | 66 | ± | 26 | 442 | ± | 315 | 863 | ± | 215 | 7.2 | ± | 2.7 |
| -1 - <0 | 89 | 78 | ± | 54 | 389 | ± | 187 | 852 | ± | 308 | 7.3 | ± | 4.0 |
| 0 - <1 | 55 | 59 | ± | 30 | 427 | ± | 249 | 771 | ± | 277 | 6.7 | ± | 3.2 |
| ≥1 | 35 | 66 | ± | 30 | 402 | ± | 218 | 796 | ± | 229 | 7.0 | ± | 2.9 |
| P, trend |  | 0.42 | 0.53 | 0.04 | 0.15 |
| BMI-for-age Z score |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <-1 | 34 | 65 | ± | 44 | 494 | ± | 332 | 890 | ± | 265 | 6.7 | ± | 3.0 |
| -1 - <0 | 49 | 57 | ± | 20 | 417 | ± | 197 | 803 | ± | 286 | 6.5 | ± | 2.0 |
| 0 - <1 | 71 | 75 | ± | 48 | 351 | ± | 173 | 800 | ± | 221 | 7.4 | ± | 3.9 |
| ≥1 | 83 | 69 | ± | 39 | 412 | ± | 244 | 840 | ± | 299 | 7.3 | ± | 3.5 |
| P, trend |  | 0.24 | 0.15 | 0.64 | 0.32 |
| Maternal age (years) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <30 | 36 | 60 | ± | 32 | 366 | ± | 199 | 823 | ± | 277 | 7.6 | ± | 3.1 |
| 30 - <35 | 51 | 61 | ± | 25 | 369 | ± | 181 | 815 | ± | 273 | 7.0 | ± | 2.4 |
| 35 - <40 | 78 | 73 | ± | 42 | 423 | ± | 229 | 857 | ± | 282 | 7.2 | ± | 3.6 |
| 40 - <45 | 45 | 74 | ± | 51 | 440 | ± | 261 | 794 | ± | 246 | 6.6 | ± | 3.2 |
| ≥45 | 27 | 71 | ± | 45 | 426 | ± | 322 | 827 | ± | 269 | 7.2 | ± | 4.6 |
| P, trend |  | 0.13 | 0.24 | 0.91 | 0.11 |
| Maternal height (cm) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (148.9) | 62 | 63 | ± | 37 | 337 | ± | 168 | 832 | ± | 255 | 6.4 | ± | 2.6 |
| Q2 (153.2) | 58 | 79 | ± | 46 | 416 | ± | 292 | 881 | ± | 286 | 6.4 | ± | 2.9 |
| Q3 (157.1) | 60 | 65 | ± | 42 | 474 | ± | 240 | 828 | ± | 294 | 7.8 | ± | 4.2 |
| Q4 (162.0) | 57 | 65 | ± | 35 | 399 | ± | 206 | 769 | ± | 237 | 7.8 | ± | 3.2 |
| P, trend |  | 0.67 | 0.02 | 0.11 | 0.003 |
| Maternal body mass index (kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <25 | 52 | 67 | ± | 48 | 401 | ± | 260 | 802 | ± | 272 | 6.2 | ± | 2.3 |
| 25 - <30 | 92 | 73 | ± | 44 | 412 | ± | 211 | 846 | ± | 265 | 6.9 | ± | 3.4 |
| ≥30 | 93 | 64 | ± | 31 | 403 | ± | 242 | 825 | ± | 276 | 7.8 | ± | 3.6 |
| P, trend |  | 0.82 | 0.87 | 0.74 | 0.006 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Maternal parity |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 16 | 81 | ± | 58 | 421 | ± | 214 | 750 | ± | 370 | 6.8 | ± | 2.6 |
| 2 | 77 | 69 | ± | 38 | 414 | ± | 251 | 868 | ± | 275 | 6.7 | ± | 2.8 |
| 3 | 81 | 70 | ± | 40 | 434 | ± | 216 | 815 | ± | 278 | 6.7 | ± | 3.1 |
| ≥4 | 62 | 62 | ± | 38 | 348 | ± | 229 | 807 | ± | 211 | 8.2 | ± | 4.1 |
| P, trend |  | 0.08 | 0.04 | 0.62 | 0.04 |
| Paternal height (cm) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (159.0) | 60 | 73 | ± | 35 | 387 | ± | 272 | 854 | ± | 261 | 7.7 | ± | 4.0 |
| Q2 (165.0) | 61 | 67 | ± | 41 | 361 | ± | 180 | 857 | ± | 254 | 7.1 | ± | 3.1 |
| Q3 (169.6) | 56 | 78 | ± | 54 | 425 | ± | 252 | 782 | ± | 269 | 6.6 | ± | 3.3 |
| Q4 (176.4) | 56 | 57 | ± | 23 | 462 | ± | 222 | 814 | ± | 305 | 6.9 | ± | 2.8 |
| P, trend |  | 0.03 | 0.009 | 0.23 | 0.21 |
| Paternal body mass index (kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <25 | 62 | 67 | ± | 39 | 407 | ± | 236 | 821 | ± | 256 | 6.5 | ± | 2.6 |
| 25 - <30 | 102 | 69 | ± | 35 | 422 | ± | 273 | 843 | ± | 261 | 7.7 | ± | 4.0 |
| ≥30 | 69 | 70 | ± | 49 | 387 | ± | 167 | 811 | ± | 302 | 6.7 | ± | 2.8 |
| P, trend |  | 0.85 | 0.80 | 0.83 | 0.74 |
| Parental smoking history |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Neither parent ever smoked | 87 | 74 | ± | 47 | 414 | ± | 219 | 804 | ± | 287 | 7.1 | ± | 3.1 |
| One parent ever smoked | 116 | 66 | ± | 38 | 394 | ± | 238 | 857 | ± | 269 | 7.1 | ± | 3.5 |
| Both parents ever smoked | 28 | 62 | ± | 26 | 397 | ± | 177 | 800 | ± | 220 | 7.3 | ± | 3.4 |
| P |  | 0.18 | 0.75 | 0.59 | 0.97 |
| Parental metabolic syndrome |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No parent | 91 | 68 | ± | 34 | 431 | ± | 234 | 839 | ± | 231 | 6.8 | ± | 3.1 |
| Mother only | 56 | 67 | ± | 36 | 398 | ± | 292 | 837 | ± | 286 | 7.6 | ± | 4.2 |
| Father only | 49 | 73 | ± | 51 | 415 | ± | 197 | 801 | ± | 311 | 6.7 | ± | 2.5 |
| Both parents | 34 | 66 | ± | 47 | 363 | ± | 186 | 822 | ± | 305 | 7.6 | ± | 3.4 |
| P, trend |  | 0.48 | 0.17 | 0.54 | 0.31 |
| Highest parental education level  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Incomplete elementary | 21 | 54 | ± | 22 | 267 | ± | 112 | 747 | ± | 272 | 9.2 | ± | 4.5 |
| Complete elementary | 27 | 53 | ± | 20 | 312 | ± | 125 | 821 | ± | 187 | 7.3 | ± | 2.6 |
| Incomplete secondary | 64 | 72 | ± | 46 | 410 | ± | 235 | 870 | ± | 280 | 7.2 | ± | 3.3 |
| Complete secondary | 44 | 74 | ± | 38 | 505 | ± | 332 | 832 | ± | 312 | 6.0 | ± | 2.9 |
| Post secondary | 81 | 71 | ± | 44 | 417 | ± | 193 | 814 | ± | 261 | 7.0 | ± | 3.3 |
| P, trend |  | 0.02 | <0.0001 | 0.79 | 0.003 |
| Number of household assets5 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-4 | 45 | 49 | ± | 18 | 296 | ± | 155 | 813 | ± | 233 | 7.8 | ± | 4.2 |
| 5-7 | 91 | 73 | ± | 46 | 413 | ± | 282 | 832 | ± | 279 | 6.7 | ± | 2.9 |
| 8-9 | 45 | 59 | ± | 25 | 390 | ± | 167 | 771 | ± | 303 | 7.0 | ± | 3.2 |
| 10-12 | 56 | 82 | ± | 46 | 492 | ± | 213 | 878 | ± | 253 | 7.2 | ± | 3.4 |
| P, trend |  | 0.0002 | <0.0001 | 0.36 | 0.61 |
| Household income |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lower <25% | 45 | 57 | ± | 27 | 369 | ± | 170 | 806 | ± | 273 | 7.7 | ± | 3.7 |
| Medium 25-75% | 108 | 69 | ± | 40 | 406 | ± | 270 | 842 | ± | 282 | 6.8 | ± | 3.0 |
| Higher >75% | 79 | 73 | ± | 47 | 433 | ± | 217 | 822 | ± | 260 | 7.1 | ± | 3.6 |
| P, trend |  | 0.04 | 0.07 | 0.85 | 0.18 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Food insecurity |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No insecurity | 77 | 75 | ± | 45 | 445 | ± | 205 | 908 | ± | 292 | 7.1 | ± | 3.0 |
| Mild insecurity | 65 | 69 | ± | 38 | 428 | ± | 278 | 826 | ± | 280 | 6.8 | ± | 3.1 |
| Moderate insecurity | 54 | 67 | ± | 43 | 404 | ± | 243 | 777 | ± | 224 | 7.2 | ± | 4.0 |
| Severe insecurity | 40 | 56 | ± | 28 | 305 | ± | 166 | 738 | ± | 226 | 7.5 | ± | 3.4 |
| P, trend |  | 0.005 | <0.0001 | 0.0002 | 0.50 |
| Country of origin |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Guatemala | 29 | 66 | ± | 48 | 306 | ± | 164 | 891 | ± | 224 | 6.2 | ± | 1.7 |
| El Salvador | 29 | 83 | ± | 60 | 285 | ± | 115 | 760 | ± | 190 | 4.5 | ± | 2.0 |
| Dominican Republic | 28 | 63 | ± | 33 | 354 | ± | 189 | 556 | ± | 205 | 7.5 | ± | 3.4 |
| Honduras | 28 | 77 | ± | 50 | 517 | ± | 209 | 1057 | ± | 216 | 6.5 | ± | 2.8 |
| Nicaragua | 31 | 52 | ± | 22 | 349 | ± | 165 | 768 | ± | 236 | 8.5 | ± | 3.6 |
| Panama | 18 | 58 | ± | 32 | 475 | ± | 183 | 678 | ± | 216 | 9.0 | ± | 2.2 |
| Costa Rica | 20 | 77 | ± | 33 | 513 | ± | 183 | 949 | ± | 223 | 9.2 | ± | 2.8 |
| Mexico | 27 | 76 | ± | 35 | 527 | ± | 356 | 1025 | ± | 281 | 5.4 | ± | 2.3 |
| Belize | 27 | 60 | ± | 26 | 399 | ± | 302 | 757 | ± | 206 | 8.3 | ± | 4.7 |
| P |   | 0.99 | 0.0002 | 0.07 | 0.002 |

**Footnotes to Supplemental Table 1**

PLP, pyridoxal phosphate; Hcys, homocysteine

\* Total may be less than 237 due to missing values.

† χ2 score statistic from linear regression models with each vitamin or homocysteine as the outcome and indicator variables for the characteristic as predictors.

‡ From linear regression models with each vitamin or homocysteine as the outcome and a variable representing ordinal categories of each characteristic as a continuous predictor. Robust estimates of the variance were specified in all models.

§ From a list that included car, bicycle, refrigerator/freezer, gas stove, electric stove, blender, microwave, washing machine, color TV, sound set, computer, and internet.

**Supplemental Table 2. Mean (± SD) concentrations of plasma vitamins B6 (PLP) and B12, and erythrocyte folate according to food groups intake among school-age children from Mesoamerica**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  Food group | N\*  | Plasma PLP(nmol/L) | Plasma vitamin B12 (pmol/L) | Erythrocyte folate (nmol/L) |
| Dairy† |  |  |  |  |  |  |  |  |  |  |
| ≤ 4 servings per day | 52 | 61 | ± | 30 | 317 | ± | 154 | 766 | ± | 243 |
| 5-6 servings per day | 79 | 65 | ± | 41 | 411 | ± | 207 | 794 | ± | 267 |
| 7 servings per day | 43 | 71 | ± | 34 | 485 | ± | 295 | 888 | ± | 277 |
| ≥ 8 servings per day | 52 | 79 | ± | 53 | 445 | ± | 266 | 886 | ± | 294 |
| P, trend‡ |  | 0.02 | 0.005 | 0.007 |
| Meat§ |  |  |  |  |  |  |  |  |  |  |
| ≤ 4 servings per week | 61 | 64 | ± | 34 | 364 | ± | 240 | 793 | ± | 184 |
| 5-6 servings per week | 59 | 70 | ± | 49 | 409 | ± | 203 | 835 | ± | 287 |
| 1.5 servings per day | 28 | 70 | ± | 36 | 439 | ± | 256 | 867 | ± | 305 |
| > 1.5 serving per day | 78 | 71 | ± | 53 | 439 | ± | 227 | 762 | ± | 306 |
| P, trend |  | 0.44 | 0.02 | 0.63 |
| Fish|| |  |  |  |  |  |  |  |  |  |  |
| ≤ 3 servings per month | 46 | 62 | ± | 28 | 337 | ± | 179 | 799 | ± | 227 |
| One serving per week | 59 | 72 | ± | 54 | 380 | ± | 204 | 802 | ± | 276 |
| 2-4 servings per week | 72 | 68 | ± | 35 | 453 | ± | 265 | 910 | ± | 296 |
| ≥ 5 servings per week | 49 | 71 | ± | 42 | 456 | ± | 258 | 759 | ± | 252 |
| P, trend |  | 0.34 | 0.0006 | 0.87 |
| Green leafy vegetables¶  |  |  |  |  |  |  |  |  |  |  |
| One serving per day | 62 | 69 | ± | 47 | 402 | ± | 216 | 779 | ± | 272 |
| 2-3 servings per day | 72 | 69 | ± | 42 | 392 | ± | 249 | 807 | ± | 255 |
| 4-5 serving per day | 43 | 63 | ± | 28 | 453 | ± | 284 | 834 | ± | 300 |
| ≥ 6 servings per day | 49 | 71 | ± | 40 | 413 | ± | 194 | 910 | ± | 265 |
| P, trend |  | 0.54 | 0.29 | 0.01 |
| Fortified foods\*\* |  |  |  |  |  |  |  |  |  |  |
| ≤ 4 servings per day | 41 | 60 | ± | 22 | 384 | ± | 252 | 723 | ± | 258 |
| 5-6 servings per day | 59 | 64 | ± | 32 | 477 | ± | 290 | 832 | ± | 308 |
| 7-8 servings per day | 51 | 72 | ± | 48 | 431 | ± | 210 | 799 | ± | 242 |
| > 8 servings per day | 75 | 75 | ± | 48 | 359 | ± | 180 | 899 | ± | 256 |
| P, trend |   | 0.06 | 0.22 | 0.002 |

**Footnotes to Supplemental Table 2**

PLP, pyridoxal phosphate

\* N may be less than 237 due to missing values on specific items of the FFQ.

† Portion sizes: milk, one glass; American cheese, one slice; fresh cheese, one piece; cream cheese, one tablespoon; and cream, one tablespoon.

‡ From linear regression models with each vitamin as the outcome and a variable representing ordinal categories of each food group as a continuous predictor.

§ Includes beef or pork as main or side dishes (one serving), ham (one slice), hotdog (one unit), and hamburger (one unit).

|| Includes canned tuna or sardines (one serving) and fish (one serving).

¶ Includes herbs and green leaves (1/2 cup), broccoli (1/2 cup), and spinach (1/2 cup).

\*\* Includes white and sweet bread (one unit), flour and corn tortillas (one unit) and breakfast cereal (one cup).

**Supplemental Table 3. Metabolic syndrome component scores\* according to plasma vitamin B6 and B12, erythrocyte folate, and plasma homocysteine concentrations among school-age children from Mesoamerica**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Biomarker quartile (median) | Waist circumference |  | HOMA-IR |  | MAP |  | Serum HDL-cholesterol |  | Serum triglycerides |
| Mean score | SD | AMD† | 95% CI |  | Mean score | SD | AMD† | 95% CI |  | Mean score | SD | AMD† | 95% CI |  | Mean score | SD | AMD† | 95% CI |  | Mean score | SD | AMD† | 95% CI |
| Plasma PLP (nmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (36) | 0.02 | 0.16 | Reference |  | 0.04 | 0.53 | Reference |  | 0.03  | 0.15 | Reference |  | -0.03 | 0.27 | Reference |  | -0.03 | 0.45 | Reference |
| Q2 (49) | -0.02 | 0.14 | -0.03  | -0.08, 0.02 |  | -0.16 | 0.57 | -0.10 | -0.29, 0.08 |  | 0.00 | 0.15 | 0.00 | -0.05, 0.05 |  | 0.00 | 0.28 | 0.01 | -0.09, 0.11 |  | -0.02 | 0.37 | -0.05 | -0.20, 0.10 |
| Q3 (65) | 0.01 | 0.17 | -0.03 | -0.07, 0.02 |  | 0.11 | 0.66 | 0.15 | -0.03, 0.32 |  | -0.02 | 0.12 | -0.02 | -0.07, 0.02 |  | 0.00 | 0.28 | 0.03 | -0.06, 0.12 |  | 0.05 | 0.43 | 0.02 | -0.12, 0.16 |
| Q4 (107) | 0.02 | 0.14 | 0.01  | -0.05, 0.06 |  | 0.03 | 0.58 | -0.11 | -0.30, 0.08 |  | -0.01 | 0.16 | -0.01 | -0.06, 0.04 |  | 0.02 | 0.27 | 0.02 | -0.07, 0.12 |  | 0.04 | 0.47 | -0.01 | -0.18, 0.15 |
| P, trend‡ | 0.62 | 0.40 |  | 0.55 | 0.38 |  | 0.39 | 0.63 |  | 0.40 | 0.66 |  | 0.37 | 0.94 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Plasma vitamin B12 (pmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (191) | 0.03 | 0.15 | Reference |  | 0.18 | 0.65 | Reference |  | -0.01 | 0.14 | Reference |  | -0.13 | 0.28 | Reference |  | 0.17 | 0.48 | Reference |
| Q2 (297) | 0.00 | 0.14 | 0.01  | -0.04, 0.06 |  | -0.04 | 0.62 | -0.08 | -0.26, 0.10 |  | 0.02 | 0.13 | -0.01 | -0.05, 0.04 |  | 0.02 | 0.27 | 0.09 | 0.01, 0.18 |  | -0.06 | 0.44 | -0.15 | -0.31, 0.00 |
| Q3 (404) | -0.01 | 0.15 | -0.02  | -0.06, 0.03 |  | -0.04 | 0.54 | -0.09 | -0.28, 0.09 |  | 0.00 | 0.17 | -0.03 | -0.07, 0.02 |  | 0.05 | 0.32 | 0.15 | 0.06, 0.24 |  | -0.07 | 0.37 | -0.21 | -0.37, -0.06 |
| Q4 (719) | -0.01 | 0.17 | 0.00  | -0.06, 0.05 |  | -0.07 | 0.54 | -0.15 | -0.34, 0.04 |  | -0.01 | 0.15 | -0.05 | -0.11, 0.00 |  | 0.03 | 0.24 | 0.14 | 0.05, 0.24 |  | -0.01 | 0.39 | -0.23 | -0.39, -0.07 |
| P, trend | 0.32 | 0.79 |  | 0.06 | 0.16 |  | 0.69 | 0.03 |  | 0.009 | 0.01 |  | 0.15 | 0.02 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Erythrocyte folate (nmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (531) | 0.02 | 0.16 | Reference |  | 0.03 | 0.69 | Reference |  | 0.00 | 0.14 | Reference |  | -0.1 | 0.34 | Reference |  | -0.07 | 0.44 | Reference |
| Q2 (735) | 0.01 | 0.15 | 0.03  | -0.02, 0.08 |  | -0.04 | 0.51 | -0.21 | -0.40, -0.03 |  | -0.01 | 0.14 | 0.01 | -0.04, 0.06 |  | 0.05 | 0.27 | -0.02  | -0.11, 0.08 |  | 0.05 | 0.46 | 0.11 | -0.05, 0.27 |
| Q3 (858) | -0.04 | 0.14 | 0.02  | -0.02, 0.07 |  | 0.01 | 0.53 | -0.04 | -0.24, 0.15 |  | 0.01 | 0.15 | 0.09 | 0.03, 0.14 |  | 0.04 | 0.25 | -0.04 | -0.13, 0.04 |  | -0.03 | 0.38 | 0.07 | -0.08, 0.22 |
| Q4 (1169) | 0.01 | 0.16 | 0.10  | 0.05, 0.16 |  | 0.03 | 0.62 | -0.16 | -0.41, 0.09 |  | 0.00 | 0.16 | 0.06 | -0.01, 0.13 |  | -0.01 | 0.26 | -0.11 | -0.22, 0.00 |  | 0.09 | 0.42 | 0.14 | -0.04, 0.33 |
| P, trend | 0.60 | 0.0003 |  | 0.92 | 0.46 |  | 0.73 | 0.04 |  | 0.15 | 0.04 |  | 0.07 | 0.19 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Plasma Hcys (µmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (3.8) | 0.01 | 0.16 | Reference |  | 0.08 | 0.64 | Reference |  | -0.05  | 0.13 | Reference |  | 0.01 | 0.28 | Reference |  | -0.01 | 0.48 | Reference |
| Q2 (5.5) | 0.00 | 0.14 | 0.02  | -0.03, 0.06 |  | 0.06 | 0.62 | 0.05  | -0.15, 0.25 |  | 0.00 | 0.14 | 0.03 | -0.02, 0.08 |  | 0.01 | 0.27 | 0.00 | -0.09, 0.09 |  | 0.07 | 0.46 | 0.08 | -0.08, 0.24 |
| Q3 (7.5) | -0.02 | 0.17 | 0.05  | -0.01, 0.11 |  | -0.09 | 0.55 | -0.03 | -0.22, 0.16 |  | 0.00 | 0.16 | 0.06 | 0.01, 0.12 |  | 0.00 | 0.28 | 0.01 | -0.09, 0.12 |  | -0.01 | 0.38 | 0.02 | -0.15, 0.20 |
| Q4 (10.5) | 0.03 | 0.15 | 0.07  | 0.01, 0.13 |  | -0.02 | 0.56 | -0.09 | -0.30, 0.13 |  | 0.04 | 0.14 | 0.07 | 0.01, 0.12 |  | -0.04 | 0.33 | -0.04 | -0.15, 0.07 |  | -0.01 | 0.40 | 0.05 | -0.14, 0.23 |
| P, trend | 0.44 | 0.02 |  | 0.27 | 0.26 |  | 0.0005 | 0.02 |  | 0.40 | 0.42 |  | 0.69 | 0.83 |

**Footnotes to Supplemental Table 3**

HOMA-IR, homeostatic model assessment of insulin resistance; MAP, mean arterial pressure; AMD, adjusted mean difference; PLP, pyridoxal phosphate; Hcys, homocysteine

\* Scores for metabolic syndrome components (waist circumference, HOMA-IR, MAP, serum HDL-cholesterol, and serum triglycerides) were computed by regressing each log-transformed component on sex and log-transformed age in linear regression models to obtain standardized residuals.

† From linear regression models adjusted for height-for-age Z score, maternal height, highest parental education level, household food security, number of household assets, country of origin, log-transformed total energy intake, and intake of dairy, meat, fish, and green leafy vegetables. Estimates for the vitamins were adjusted for each other but not for Hcys; estimates for Hcys were adjusted for all vitamins.

‡ From linear regression models with each component score as the outcome and a variable representing medians of ordinal categories of the predictor introduced as a continuous covariate. Robust estimates of the variance were specified in all models.

**Supplemental Table 4. Mean (± SD) plasma concentrations of plasma vitamins B6 (PLP) and B12, erythrocyte folate, and plasma homocysteine (Hcys) according to sociodemographic characteristics among adults from Mesoamerica**

| Characteristics | N\* | Plasma PLP (nmol/L) | Plasma vitamin B12 (pmol/L) | Erythrocyte folate (nmol/L) | Plasma Hcys (µmol/L) |
| --- | --- | --- | --- | --- | --- |
| Overall | 524 | 64 | ± | 72 | 390 | ± | 345 | 800 | ± | 349 | 10.2 | ± | 6.0 |
| Sex |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Female | 264 | 55 | ± | 60 | 423 | ± | 395 | 853 | ± | 356 | 8.4 | ± | 5.0 |
| Male | 260 | 74 | ± | 81 | 356 | ± | 283 | 745 | ± | 333 | 12.0 | ± | 6.4 |
| P† |  | <0.0001 | 0.07 | <0.0001 | <0.0001 |
| Age (years) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <30 | 56 | 62 | ± | 60 | 376 | ± | 359 | 808 | ± | 380 | 9.8 | ± | 6.3 |
| 30 - <35 | 110 | 65 | ± | 82 | 359 | ± | 296 | 759 | ± | 298 | 10.2 | ± | 5.8 |
| 35 - <40 | 163 | 62 | ± | 66 | 403 | ± | 364 | 816 | ± | 349 | 9.2 | ± | 4.0 |
| 40 - <45 | 106 | 60 | ± | 64 | 348 | ± | 260 | 759 | ± | 390 | 11.2 | ± | 7.8 |
| 45 - <55 | 69 | 69 | ± | 87 | 484 | ± | 447 | 832 | ± | 327 | 10.6 | ± | 6.2 |
| ≥55 | 19 | 93 | ± | 72 | 398 | ± | 391 | 985 | ± | 326 | 11.3 | ± | 8.0 |
| P, trend‡ |  | 0.28 | 0.14 | 0.22 | 0.15 |
| Height quartile (mothers/fathers medians, cm) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (148.9/159.0) | 130 | 56 | ± | 37 | 374 | ± | 345 | 859 | ± | 348 | 11.1 | ± | 8.1 |
| Q2 (153.1/165.0) | 132 | 72 | ± | 96 | 423 | ± | 426 | 810 | ± | 358 | 9.8 | ± | 4.9 |
| Q3 (157.0/169.7) | 133 | 63 | ± | 66 | 366 | ± | 273 | 773 | ± | 348 | 9.7 | ± | 4.8 |
| Q4 (162.7/176.4) | 129 | 67 | ± | 75 | 396 | ± | 319 | 757 | ± | 337 | 10.1 | ± | 5.6 |
| P, trend |  | 0.72 | 0.22 | 0.01 | 0.65 |
| Body mass index (kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <25 | 129 | 63 | ± | 61 | 373 | ± | 314 | 759 | ± | 361 | 10.3 | ± | 6.1 |
| 25-<30 | 216 | 73 | ± | 89 | 365 | ± | 313 | 809 | ± | 349 | 10.3 | ± | 5.6 |
| ≥30 | 179 | 55 | ± | 53 | 431 | ± | 399 | 817 | ± | 340 | 9.9 | ± | 6.5 |
| P, trend |  | 0.02 | 0.14 | 0.20 | 0.40 |
| Education level |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Incomplete elementary | 73 | 66 | ± | 96 | 415 | ± | 366 | 781 | ± | 307 | 10.6 | ± | 7.3 |
| Complete elementary | 74 | 55 | ± | 32 | 375 | ± | 378 | 840 | ± | 293 | 11.3 | ± | 7.8 |
| Incomplete secondary | 154 | 69 | ± | 84 | 407 | ± | 362 | 807 | ± | 374 | 10.1 | ± | 5.4 |
| Complete secondary | 80 | 70 | ± | 85 | 418 | ± | 408 | 813 | ± | 422 | 8.9 | ± | 4.2 |
| Post secondary | 131 | 63 | ± | 48 | 357 | ± | 256 | 760 | ± | 323 | 9.8 | ± | 5.2 |
| P, trend |  | 0.20 | 0.84 | 0.42 | 0.15 |
| Smoking status |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Never | 331 | 61 | ± | 62 | 393 | ± | 334 | 801 | ± | 373 | 9.3 | ± | 4.7 |
| Past | 144 | 69 | ± | 68 | 368 | ± | 345 | 793 | ± | 307 | 11.3 | ± | 7.4 |
| Current | 47 | 74 | ± | 128 | 437 | ± | 425 | 817 | ± | 298 | 12.8 | ± | 8.3 |
| P |  | 0.49 | 0.67 | 0.92 | <0.0001 |
| Home ownership |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Yes  | 367 | 69 | ± | 82 | 399 | ± | 360 | 827 | ± | 333 | 9.9 | ± | 5.6 |
| No | 157 | 53 | ± | 38 | 369 | ± | 308 | 735 | ± | 376 | 10.7 | ± | 6.8 |
| P |  | 0.05 | 0.47 | 0.03 | 0.20 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Number of household assets§ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-4 | 96 | 47 | ± | 36 | 355 | ± | 317 | 773 | ± | 294 | 11.2 | ± | 8.6 |
| 5-7 | 196 | 67 | ± | 68 | 368 | ± | 328 | 820 | ± | 379 | 10.1 | ± | 5.9 |
| 8-9 | 102 | 63 | ± | 85 | 415 | ± | 418 | 694 | ± | 336 | 10.0 | ± | 5.5 |
| 10-12 | 130 | 74 | ± | 83 | 429 | ± | 326 | 872 | ± | 331 | 9.6 | ± | 3.9 |
| P, trend |  | 0.03 | 0.003 | 0.27 | 0.43 |
| Household income |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lower <25% | 100 | 52 | ± | 38 | 357 | ± | 322 | 769 | ± | 378 | 10.8 | ± | 5.5 |
| Medium 25-75% | 233 | 58 | ± | 54 | 389 | ± | 348 | 805 | ± | 354 | 10.0 | ± | 6.5 |
| Higher >75% | 179 | 81 | ± | 100 | 417 | ± | 361 | 807 | ± | 336 | 9.9 | ± | 5.7 |
| P, trend |  | 0.002 | 0.03 | 0.54 | 0.15 |
| Food security |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No insecurity | 173 | 69 | ± | 77 | 432 | ± | 379 | 883 | ± | 333 | 9.8 | ± | 4.2 |
| Mild insecurity | 138 | 59 | ± | 41 | 352 | ± | 298 | 789 | ± | 369 | 10.1 | ± | 5.4 |
| Moderate insecurity | 124 | 71 | ± | 96 | 372 | ± | 334 | 754 | ± | 323 | 9.9 | ± | 5.0 |
| Severe insecurity | 87 | 55 | ± | 59 | 398 | ± | 359 | 706 | ± | 350 | 11.3 | ± | 10.0 |
| P, trend |  | 0.22 | 0.23 | 0.0005 | 0.64 |
| Country of origin |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Guatemala | 60 | 51 | ± | 38 | 324 | ± | 255 | 883 | ± | 285 | 10.9 | ± | 6.7 |
| El Salvador | 58 | 85 | ± | 85 | 395 | ± | 457 | 753 | ± | 285 | 8.6 | ± | 4.5 |
| Dominican Republic | 60 | 65 | ± | 59 | 318 | ± | 162 | 344 | ± | 198 | 12.0 | ± | 8.5 |
| Honduras | 59 | 68 | ± | 67 | 315 | ± | 310 | 953 | ± | 262 | 10.9 | ± | 4.5 |
| Nicaragua | 62 | 71 | ± | 114 | 369 | ± | 274 | 754 | ± | 241 | 10.6 | ± | 8.5 |
| Panama | 52 | 51 | ± | 32 | 387 | ± | 248 | 509 | ± | 249 | 10.3 | ± | 3.9 |
| Costa Rica | 54 | 50 | ± | 28 | 403 | ± | 277 | 949 | ± | 178 | 11.4 | ± | 3.4 |
| Mexico | 62 | 58 | ± | 43 | 627 | ± | 536 | 1167 | ± | 250 | 7.8 | ± | 4.3 |
| Belize | 57 | 78 | ± | 106 | 366 | ± | 322 | 856 | ± | 356 | 8.9 | ± | 5.5 |
| P |   | 0.76 | <0.0001 | <0.0001 | 0.03 |

**Footnotes to Supplemental Table 4**

PLP, pyridoxal phosphate; Hcys, homocysteine

\* N may be less than 524 due to missing values.

† χ2 score statistic from linear regression models with each vitamin or Hcys as the outcome and indicator variables for each level of the characteristic as predictors.

‡ From linear regression models with each vitamin or Hcys as the outcome and a variable representing ordinal categories of each characteristic introduced as a continuous predictor. Robust estimates of the variance were specified in all models.

§ From a list that included car, bicycle, refrigerator/freezer, gas stove, electric stove, blender, microwave, washing machine, color TV, sound set, computer, and internet.

**Supplemental Table 5. Mean (± SD) concentrations of plasma vitamins B6 and B12, and erythrocyte folate according to food groups intake among adults from Mesoamerica**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Food group | N\*  | Plasma PLP(nmol/L) | Plasma vitamin B12 (pmol/L) | Erythrocyte folate (nmol/L) |
| Dairy† |  |  |  |  |  |  |  |  |  |  |
| ≤ 2 servings per day | 56 | 73 | ± | 98 | 373 | ± | 244 | 779 | ± | 361 |
| 3-4 servings per day | 155 | 60 | ± | 48 | 406 | ± | 354 | 846 | ± | 345 |
| 5 servings per day | 153 | 64 | ± | 75 | 377 | ± | 308 | 828 | ± | 341 |
| > 5 servings per day | 149 | 63 | ± | 70 | 400 | ± | 411 | 742 | ± | 345 |
| P, trend‡ |  | 0.52 | 0.31 | 0.14 |
| Meat§ |  |  |  |  |  |  |  |  |  |  |
| ≤ 1 serving per week | 51 | 60 | ± | 48 | 290 | ± | 238 | 769 | ± | 276 |
| 2-4 servings per week | 133 | 54 | ± | 41 | 375 | ± | 394 | 858 | ± | 325 |
| 5-6 servings per day | 156 | 79 | ± | 107 | 459 | ± | 385 | 831 | ± | 359 |
| > 6 serving per day | 173 | 57 | ± | 43 | 376 | ± | 291 | 745 | ± | 366 |
| P, trend |  | 0.94 | 0.003 | 0.10 |
| Fish|| |  |  |  |  |  |  |  |  |  |  |
| ≤ 3 servings per month | 84 | 66 | ± | 90 | 361 | ± | 349 | 846 | ± | 349 |
| One serving per week | 151 | 60 | ± | 56 | 361 | ± | 313 | 788 | ± | 346 |
| 2-4 servings per week | 173 | 67 | ± | 75 | 411 | ± | 370 | 859 | ± | 341 |
| > 4 servings per week | 105 | 62 | ± | 58 | 433 | ± | 358 | 697 | ± | 338 |
| P, trend |  | 0.75 | 0.009 | 0.07 |
| Green leafy vegetables¶ |  |  |  |  |  |  |  |  |  |  |
| ≤ 2 serving per day | 149 | 62 | ± | 54 | 311 | ± | 161 | 703 | ± | 367 |
| 3 servings per day | 86 | 55 | ± | 41 | 406 | ± | 345 | 886 | ± | 344 |
| 4 serving per day | 121 | 63 | ± | 61 | 431 | ± | 384 | 844 | ± | 331 |
| > 4 servings per day | 157 | 70 | ± | 96 | 432 | ± | 431 | 819 | ± | 323 |
| P-trend |  | 0.98 | 0.06 | 0.02 |
| Fortified foods\*\* |  |  |  |  |  |  |  |  |  |  |
| ≤ 3 servings per day | 125 | 58 | ± | 75 | 366 | ± | 271 | 715 | ± | 312 |
| 4-5 servings per day | 122 | 73 | ± | 93 | 429 | ± | 354 | 851 | ± | 355 |
| 6-7 servings per day | 124 | 59 | ± | 53 | 436 | ± | 406 | 791 | ± | 397 |
| > 7 servings per day | 142 | 64 | ± | 52 | 346 | ± | 346 | 850 | ± | 309 |
| P, trend |   | 0.36 | 0.03 | 0.01 |

**Footnotes to Supplemental Table 5**

PLP, pyridoxal phosphate

\* N may be less than 524 due to missing values on specific items of the FFQ.

† Portion sizes: milk, one glass; American cheese, one slice; fresh cheese, one piece; cream cheese, one tablespoon; and cream, one tablespoon.

‡ From linear regression models with each vitamin as the outcome and a variable representing ordinal categories of each food group as a continuous predictor.

§ Includes beef or pork as main or side dishes (one serving), ham (one slice), and hamburger (one unit).

|| Includes canned tuna or sardines (one serving) and fish (one serving).

¶ Includes herbs and green leaves (1/2 cup), broccoli (1/2 cup), and spinach (1/2 cup).

\*\* Includes white and sweet bread (one unit), flour and corn tortillas (one unit) and breakfast cereal (one cup).

**Supplemental Table 6. Metabolic syndrome components according to plasma vitamin B6 and B12, erythrocyte folate, and plasma homocysteine concentrations among adults from Mesoamerica**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Biomarker quartile (median) | Abdominal obesity\* |  | High fasting blood glucose† |  | High blood pressure‡ |  | Low serum HDL-cholesterol§ |  | High serum triglycerides|| |
| % | Adjusted PR¶(95% CI) |  | % | Adjusted PR\*\*(95% CI) |  | % | Adjusted PR\*\*(95% CI) |  | % | Adjusted PR\*\*(95% CI) |  | % | Adjusted PR\*\*(95% CI) |
| Plasma PLP(nmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (24) | 63.6 | Reference |  | 10.0 | Reference |  | 25.5 | Reference |  | 84.6 | Reference |  | 50.9 | Reference |
| Q2 (36) | 52.1 | 0.81 | 0.64, 1.02 |  | 11.8 | 1.44 | 0.59, 3.52 |  | 22.7 | 0.85 | 0.49, 1.48 |  | 84.9 | 0.97 | 0.87, 1.09 |  | 53.8 | 1.08  | 0.83, 1.40 |
| Q3 (53) | 40.1 | 0.71 | 0.55, 0.91 |  | 8.5 | 0.87 | 0.34, 2.23 |  | 21.3 | 0.80 | 0.50, 1.29 |  | 81.0 | 0.97 | 0.87, 1.08 |  | 52.1 | 1.04 | 0.82, 1.32 |
| Q4 (89) | 36.2 | 0.71 | 0.54, 0.95 |  | 6.4 | 0.60 | 0.22, 1.63 |  | 17.7 | 0.65 | 0.41, 1.04 |  | 75.2 | 0.92 | 0.81, 1.04 |  | 50.4 | 0.96 | 0.74, 1.25 |
| P, trend†† | <0.0001 | 0.04 |  | 0.18 | 0.12 |  | 0.14 | 0.08 |  | 0.03 | 0.21 |  | 0.75 | 0.54 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Plasma vitamin B12 (pmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (155) | 41.5 | Reference |  | 3.1 | Reference |  | 20.0 | Reference |  | 83.9 | Reference |  | 48.5 | Reference |
| Q2 (232) | 50.0 | 1.10 | 0.85, 1.43 |  | 10.8 | 4.29 | 1.40, 13.12 |  | 21.7 | 1.14 | 0.68, 1.90 |  | 77.7 | 0.88 | 0.77, 1.01 |  | 53.9 | 1.16 | 0.90, 1.49 |
| Q3 (345) | 51.5 | 1.15 | 0.87, 1.52 |  | 9.2 | 2.52 | 0.75, 8.44 |  | 21.5 | 1.11 | 0.64, 1.92 |  | 81.5 | 0.94 | 0.82, 1.06 |  | 48.5 | 1.01 | 0.77, 1.32 |
| Q4 (619) | 44.6 | 0.97 | 0.74, 1.29 |  | 13.1 | 5.08 | 1.89, 13.67 |  | 26.2 | 1.74 | 0.99, 3.05 |  | 83.1 | 0.94 | 0.83, 1.07 |  | 55.4 | 1.22 | 0.93, 1.60 |
| P, trend | 0.98 | 0.56 |  | 0.01 | 0.03 |  | 0.21 | 0.03 |  | 0.73 | 0.82 |  | 0.36 | 0.21 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Erythrocyte folate (nmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (413) | 44.6 | Reference |  | 6.2 | Reference |  | 23.9 | Reference |  | 76.9 | Reference |  | 41.5 | Reference |
| Q2 (699) | 43.9 | 1.09 | 0.81, 1.46 |  | 6.2 | 1.30 | 0.38, 4.42 |  | 24.8 | 0.89 | 0.49, 1.60 |  | 79.2 | 1.13 | 0.97, 1.31 |  | 43.9 | 0.91 | 0.68, 1.22 |
| Q3 (891) | 50.0 | 1.24 | 0.89, 1.73 |  | 11.5 | 2.48 | 0.64, 9.57 |  | 20.0 | 0.74 | 0.38, 1.44 |  | 80.0 | 1.07 | 0.93, 1.24 |  | 60.8 | 1.27 | 0.93, 1.73 |
| Q4 (1218) | 50.0 | 1.25 | 0.88, 1.80 |  | 12.1 | 2.83 | 0.75, 10.68 |  | 20.5 | 1.09 | 0.53, 2.25 |  | 88.6 | 1.19 | 1.01, 1.39 |  | 59.9 | 1.25 | 0.90, 1.74 |
| P, trend | 0.27 | 0.20 |  | 0.05 | 0.08 |  | 0.41 | 0.63 |  | 0.01 | 0.06 |  | 0.0002 | 0.06 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Plasma Hcys (µmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Q1 (5.2) | 59.7 | Reference |  | 13.2 | Reference |  | 17.1 | Reference |  | 84.5 | Reference |  | 49.6 | Reference |
| Q2 (7.8) | 52.7 | 1.11 | 0.88, 1.40 |  | 6.1 | 0.33 | 0.12, 0.90 |  | 20.0 | 0.70 | 0.39, 1.27 |  | 77.1 | 0.95 | 0.83, 1.08 |  | 44.3 | 0.77 | 0.58, 1.02 |
| Q3 (10.2) | 38.5 | 1.01 | 0.77, 1.34 |  | 8.5 | 0.57 | 0.19, 1.71 |  | 26.9 | 0.85 | 0.47, 1.52 |  | 80.8 | 1.01 | 0.88, 1.14 |  | 54.6 | 0.86 | 0.66, 1.11 |
| Q4 (15.2) | 36.9 | 1.27 | 0.95, 1.69 |  | 8.5 | 0.72 | 0.28, 1.85 |  | 25.4 | 0.56 | 0.28, 1.14 |  | 83.9 | 1.06 | 0.92, 1.20 |  | 57.7 | 0.83 | 0.63, 1.10 |
| P, trend | 0.0002 | 0.18 |  | 0.43 | 0.85 |  | 0.08 | 0.12 |  | 0.76 | 0.24 |  | 0.08 | 0.48 |

**Footnotes to Supplemental Table 6**

PR, prevalence ratio; PLP, pyridoxal phosphate; Hcys, homocysteine

\* Waist circumference >102 cm in men and >88 cm in women.

† Fasting blood glucose ≥100 mg/dL

‡ Systolic blood pressure ≥130 mm Hg or diastolic blood pressure ≥85 mm Hg or receiving antihypertensive medication.

§ HDL-cholesterol <40 mg/dL in men and <50 mg/dL in women or receiving treatment for low HDL-cholesterol.

|| Triglycerides ≥150 mg/dL or receiving treatment for hyperlipidemia.

¶ From Poisson regression models adjusted for age, sex, smoking and education level, household food security, number of household assets, country of origin, log-transformed total energy intake, and intake of meat, fish, and green leafy vegetables. Estimates for the vitamins were adjusted for each other but not for Hcys; Hcys estimates were adjusted for all vitamins.

\*\* From Poisson regression models adjusted for age, sex, BMI category, smoking, and education level, household food security, number of household assets, country of origin, log-transformed total energy intake, and consumption of meat, fish, and green leafy vegetables. Estimates for the vitamins were adjusted for each other but not for Hcys; Hcys estimates were adjusted for all vitamins.

†† From Poisson regression models with each metabolic syndrome component as the outcome and a variable representing medians of ordinal categories of the predictor introduced as a continuous covariate. Robust variances were specified in all models to account for clustering by family membership.