**Supplementary table S1 The number and percentage of missing data**

|  |  |
| --- | --- |
| **Variables** | **Missing [n (%)]** |
| Education level | 3 (0.05%) |
| PIR | 680 (11.38%) |
| ALT | 369 (6.17%) |
| ALP | 369 (6.17%) |
| AST | 394 (6.59%) |
| BUN | 369 (6.17%) |
| GGT | 369 (6.17%) |
| LDH | 498 (8.33%) |
| Uric acid | 369 (6.17%) |
| Total bilirubin | 367 (6.14%) |
| Platelet | 202 (3.38%) |
| Physical activity | 1413 (23.64%) |
| Copper supplement | 4764 (79.72%) |
| Zinc supplement | 4451 (74.48%) |
| Iron supplement | 5090 (85.17%) |
| Selenium supplement | 4790 (80.15%) |

Abbreviation: PIR, Poverty-to-income ratio; ALT, alanine aminotransferase; ALP, alkaline phosphatase; AST, aspartate aminotransferase; BUN, blood urea nitrogen; GGT, gamma-glutamyl transaminase; LDH, lactate dehydrogenase.

**Supplementary table S2 Sensitivity analysis for the multiple imputation**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Before imputation** | **After imputation** | **Statistics** | ***P*** |
| Education level, n (%) |  |  | χ2 = 1.55 | 0.818 |
|  Less than 9th grade | 339 (2.69) | 339 (2.69) |  |  |
|  9-11th grade-includes 12th grade with no diploma | 595 (6.40) | 595 (6.40) |  |  |
|  High school graduate/GED or equivalent | 1407 (26.58) | 1408 (26.58) |  |  |
|  Some college or AA degree | 2052 (30.65) | 2053 (30.65) |  |  |
|  College graduate or above | 1580 (33.69) | 1581 (33.69) |  |  |
| ALT, U/L, Mean (S.E) | 22.82 (0.34) | 22.83 (0.34) | t = -0.22 | 0.831 |
| ALP, IU/L, Mean (S.E) | 74.74 (0.62) | 74.81 (0.61) | t = -0.68 | 0.504 |
| AST, U/L, Mean (S.E) | 22.04 (0.29) | 22.08 (0.28) | t = -1.14 | 0.264 |
| BUN, mg/dL, Mean (S.E) | 14.92 (0.16) | 14.91 (0.16) | t = 0.19 | 0.854 |
| GGT, IU/L, Mean (S.E) | 29.16 (0.60) | 29.27 (0.60) | t = -0.87 | 0.391 |
| LDH, IU/L, Mean (S.E) | 155.16 (1.26) | 155.37 (1.19) | t = -1.32 | 0.197 |
| Uric acid, mg/dL, Mean (S.E) | 5.37 (0.03) | 5.37 (0.03) | t = 0.14 | 0.888 |
| Total bilirubin, mg/dL, Mean (S.E) | 0.47 (0.01) | 0.48 (0.01) | t = -0.87 | 0.391 |
| Platelet, 1000 cells/uL, Mean (S.E) | 245.88 (1.99) | 245.53 (1.90) | t = 1.79 | 0.086 |

Abbreviation: GED, General Educational Development; AA, associate of arts; ALT, alanine aminotransferase; ALP, alkaline phosphatase; AST, aspartate aminotransferase; BUN, blood urea nitrogen; GGT, gamma-glutamyl transaminase; LDH, lactate dehydrogenase.