**Supplementary Table 4** Food group intake in Japanese children and adolescents (n = 2,849) according to free sugars intake: the 2016 National Health and Nutrition Survey, Japan (excluding energy misreporters)ab

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | <2.5%Ec | | 2.5 to <5%Ec | | 5 to <10%Ec | | ≥10%Ec | | Pd |
| n (%) | 588 | (20.6) | 835 | (29.3) | 979 | (34.4) | 447 | (15.7) |  |
| Food groups (g/1000 kcal) |  |  |  |  |  |  |  |  |  |
| Rice and grains |  |  |  |  |  |  |  |  |  |
| Absolute intake | 355.1 | 6.2 | 337.6 | 5.2 | 303.9 | 4.8†‡ | 265.5 | 7.1§||¶ | <0.001 |
| Intake per 1000 kcal | 196.2 | 2.8\* | 181.9 | 2.3 | 159.6 | 2.1†‡ | 138.3 | 3.2§||¶ | <0.001 |
| Bread |  |  |  |  |  |  |  |  |  |
| Absolute intake | 32.7 | 1.8 | 33.7 | 1.5 | 33.5 | 1.4 | 31.0 | 2.1 | 0.455 |
| Intake per 1000 kcal | 19.7 | 1.0 | 19.1 | 0.8 | 18.9 | 0.8 | 16.6 | 1.1 | 0.038 |
| Noodles |  |  |  |  |  |  |  |  |  |
| Absolute intake | 43.8 | 3.2 | 35.7 | 2.7 | 43.3 | 2.5 | 46.1 | 3.7 | 0.172 |
| Intake per 1000 kcal | 28.0 | 1.9 | 21.5 | 1.6 | 24.4 | 1.5 | 27.1 | 2.2 | 0.617 |
| Other grain products |  |  |  |  |  |  |  |  |  |
| Absolute intake | 13.0 | 1.1 | 13.5 | 0.9 | 14.2 | 0.9 | 15.0 | 1.3 | 0.200 |
| Intake per 1000 kcal | 6.9 | 0.6 | 7.3 | 0.5 | 7.7 | 0.4 | 8.0 | 0.7 | 0.185 |
| Potatoes |  |  |  |  |  |  |  |  |  |
| Absolute intake | 51.0 | 2.4 | 57.5 | 2.0 | 50.9 | 1.9 | 42.7 | 2.8|| | 0.001 |
| Intake per 1000 kcal | 29.3 | 1.3 | 31.1 | 1.1 | 27.9 | 1.0 | 22.1 | 1.4|| | <0.001 |
| Sugars and jams |  |  |  |  |  |  |  |  |  |
| Absolute intake | 2.2 | 0.3\* | 6.1 | 0.3 | 7.8 | 0.2†‡ | 8.9 | 0.4§|| | <0.001 |
| Intake per 1000 kcal | 1.3 | 0.2\* | 3.3 | 0.1 | 4.3 | 0.1†‡ | 5.0 | 0.2§|| | <0.001 |
| Pulses and nuts |  |  |  |  |  |  |  |  |  |
| Absolute intake | 39.5 | 2.0\* | 49.6 | 1.7 | 40.9 | 1.6‡ | 33.9 | 2.3|| | <0.001 |
| Intake per 1000 kcal | 23.5 | 1.1 | 28.0 | 0.9 | 22.4 | 0.9‡ | 18.8 | 1.3|| | <0.001 |
| Vegetablesd |  |  |  |  |  |  |  |  |  |
| Absolute intake | 229.1 | 4.7 | 242.9 | 3.9 | 225.6 | 3.6 | 189.7 | 5.3§||¶ | <0.001 |
| Intake per 1000 kcal | 133.1 | 2.4 | 134.7 | 2.0 | 123.2 | 1.9‡ | 103.0 | 2.7§||¶ | <0.001 |
| Fruits |  |  |  |  |  |  |  |  |  |
| Absolute intake | 59.1 | 3.2 | 58.1 | 2.7 | 58.4 | 2.5 | 58.3 | 3.7 | 0.926 |
| Intake per 1000 kcal | 37.4 | 1.9 | 35.1 | 1.6 | 33.9 | 1.5 | 34.9 | 2.2 | 0.389 |
| Fish and shellfish |  |  |  |  |  |  |  |  |  |
| Absolute intake | 38.2 | 1.9 | 43.0 | 1.6 | 43.3 | 1.5 | 38.3 | 2.2 | 0.760 |
| Intake per 1000 kcal | 22.2 | 1.0 | 23.6 | 0.9 | 23.8 | 0.8 | 20.9 | 1.2 | 0.335 |
| Meats |  |  |  |  |  |  |  |  |  |
| Absolute intake | 110.7 | 2.7 | 109.4 | 2.3 | 101.2 | 2.1 | 91.9 | 3.1§|| | <0.001 |
| Intake per 1000 kcal | 60.2 | 1.2 | 57.8 | 1.0 | 52.1 | 1.0†‡ | 45.9 | 1.4§|| | <0.001 |
| Eggs |  |  |  |  |  |  |  |  |  |
| Absolute intake | 33.9 | 1.3 | 34.3 | 1.1 | 31.5 | 1.0 | 31.1 | 1.5 | 0.046 |
| Intake per 1000 kcal | 19.3 | 0.7 | 18.9 | 0.6 | 17.0 | 0.6 | 16.5 | 0.8 | 0.002 |
| Dairy products |  |  |  |  |  |  |  |  |  |
| Absolute intake | 215.0 | 6.8 | 222.9 | 5.6 | 213.8 | 5.2 | 161.4 | 7.7§||¶ | <0.001 |
| Intake per 1000 kcal | 127.0 | 3.7 | 126.7 | 3.1 | 119.2 | 2.9 | 90.1 | 4.2§||¶ | <0.001 |
| Fat and oil |  |  |  |  |  |  |  |  |  |
| Absolute intake | 13.8 | 0.4 | 13.1 | 0.3 | 12.1 | 0.3 | 11.0 | 0.5§ | <0.001 |
| Intake per 1000 kcal | 7.7 | 0.2 | 7.0 | 0.2 | 6.5 | 0.2† | 5.9 | 0.2§|| | <0.001 |
| Confectioneries |  |  |  |  |  |  |  |  |  |
| Absolute intake | 7.7 | 2.1\* | 28.1 | 1.8 | 62.4 | 1.6†‡ | 92.8 | 2.4§||¶ | <0.001 |
| Intake per 1000 kcal | 5.7 | 1.1\* | 15.2 | 0.9 | 33.8 | 0.9†‡ | 52.5 | 1.3§||¶ | <0.001 |
| Fruit and vegetable juices |  |  |  |  |  |  |  |  |  |
| Absolute intake | 8.2 | 3.3 | 12.0 | 2.7 | 33.5 | 2.5†‡ | 49.5 | 3.8§|| | <0.001 |
| Intake per 1000 kcal | 5.7 | 1.8 | 6.9 | 1.5 | 18.1 | 1.4†‡ | 31.1 | 2.1§||¶ | <0.001 |
| Unsweetened tea and coffee |  |  |  |  |  |  |  |  |  |
| Absolute intake | 249.4 | 11.8 | 262.6 | 9.8 | 268.6 | 9.1 | 237.6 | 13.5 | 0.472 |
| Intake per 1000 kcal | 153.6 | 6.9 | 146.6 | 5.8 | 148.8 | 5.3 | 137.3 | 7.9 | 0.173 |
| Soft drinksef |  |  |  |  |  |  |  |  |  |
| Absolute intake | 0 | 6.4 | 22.4 | 5.3 | 74.7 | 4.9‡ | 267.2 | 7.3||¶ | - |
| Intake per 1000 kcal | 0 | 3.1 | 11.2 | 2.6 | 38.1 | 2.4‡ | 140.4 | 3.5||¶ | - |
| Seasonings |  |  |  |  |  |  |  |  |  |
| Absolute intake | 66.8 | 2.8 | 68.6 | 2.3 | 71.1 | 2.2 | 58.9 | 3.2 | 0.073 |
| Intake per 1000 kcal | 40.7 | 1.7 | 39.7 | 1.4 | 38.4 | 1.3 | 32.2 | 2.0 | <0.001 |

%E, percent of energy intake

a All values are adjusted means and standard errors unless otherwise indicated

b In total, 70 participants were excluded as energy misreporters

c Tukey-Kramer test was conducted with adjustment for sex, age and weight status (underweight; normal; or overweight and obese). P <0.001 for difference between: <2.5%E and 2.5 to <5%E\*, 5 to <10%E and <2.5%E†, 5 to <10%E and 2.5 to <5%E‡, ≥10%E and <2.5%E§, ≥10%E and 2.5 to <5%E||, and ≥10%E and 5 to <10%E¶

d A linear regression was conducted using the median value of each category of free sugars intake (1.5, 3.7, 6.8, and 12.7%E) as a continuous variable with adjustment for same variables used in Tukey-Kramer test

e Including mushrooms and seaweeds

f Including soda, sports drinks, fruit drinks, milk beverages, and pre-sweetened coffee

g A negative adjusted mean is presented as zero