**Supplemental Table 1** The 41 food groups used in the present study for dietary pattern analysis

|  |  |
| --- | --- |
| Food group | Food items† |
| Rice | Well-milled rice, rice with barley (70% rice and 30% barley), rice with germ, half-milled rice, 70%-milled rice, brown rice |
| Sweetened bun | Japanese sweetened bun, pancakes, doughnut |
| Japanese, Chinese and instant noodles | Japanese noodle (buckwheat/Japanese wheat noodle), Chinese noodles, instant noodles |
| Pasta | pasta, spaghetti |
| Potatoes | White potatoes, French fries, sweet potatoes, taro, konnyaku |
| Nuts | Peanuts, other types of nuts |
| Pulses | Tofu (soybean curd), tofu products such as atsuage (deep-fried tofu cutlet), ganmodoki (deep-fried tofu burger), aburaage (deep-fried tofu pouch), natto (fermented soybeans), cooked beans, soy milk |
| Sugar | Sugar for coffee and tea, sugar for cooking, jam, marmalade |
| Confectioneries | Japanese sweets with or without azuki-beans, cakes, hard cookies, soft cookies, chocolates, candies, caramels, chewing gums, jellies, ice cream |
| Savory snacks | | Potato chips, senbei and arare (rice snacks), crackers, salted snacks |
| Fatty spreads | | Butter, margarine |
| Vegetable oil | | Vegetable oils |
| Fruits | | Oranges, grapefruits, bananas, apples, strawberries, grapes, peaches, pears, kiwifruits, persimmons, melons, water melon, raisins, canned fruits |
| Green and yellow vegetables | | Carrots, pumpkins, tomatoes, green pepper, broccoli, green leafy vegetables such as spinach |
| Other vegetables | | Cabbage, lettuces, cucumber, Chinese cabbage, bean sprouts, Japanese radish, onion, cauliflower, eggplant, burdock, lotus root |
| Pickled vegetables | | Salted pickles, umeboshi (salted Japanese plum) |
| Mushrooms | | Shiitake mushroom, shimeji mushroom, enoki mushroom |
| Seaweeds | | Wakame seaweed, purple laver, brown algae |
| Alcoholic beverages | | Beer, sake (rice wine), shochu (distilled spirits), chuhai (shochu highball), whisky, wine |
| Fruit and vegetable juice | | Vegetable juice, 100% fruit juice, sweetened fruit drinks (50% fruit), tomato juice |
| Soft drinks | | Cola, non-fruit juices, soft drinks without sugar such as sports beverages, lactic acid bacteria beverages |
| Japanese and Chinese tea | | Green tea, oolong tea, barley tea |
| Tea | | Black tea |
| Coffee and cocoa | | Coffee, cocoa |
| Milk and yogurt | | Whole milk, low-fat milk, yogurt, coffee cream |
| Cheese | | Cheese, cottage cheese |
| Fish | | Fish with white meat (sea bream, flatfish, cod, and others), fish with a blue back (mackerel, sardine, herring, and others), fish with red meat (tuna, salmon, skipjack) |
| Shellfish | | Shrimp, squid, octopus, oysters, other shellfish |
| Sea products | | *Kabayaki* (dipped and broiled in soy-based sauce) eel, dried fish, small fish with bones, canned tuna, fish paste products |
| Salty sea products | | Fish eggs, boiled fish in soy-sauce, salted guts |
| Chicken | | Chicken, liver |
| Beef and pork | | Beef, pork, ground beef/pork |
| Processed meat | | Ham, sausage, bacon, salami |
| Eggs | | Eggs |
| Miso soup | | *Miso* (fermented soybean paste) soup |
| Other soup | | Corn soup, Chinese soup |
| Noodle soup | | Noodle soup |
| Salt | | Table salt, salt and salt from seasonings used during cooking |
| Japanese seasonings | | Soy-sauce, *miso* as seasoning |
| Western seasonings | | Non-oil dressings, salad dressings with oil, mayonnaise, tomato ketchup, curry or stew roux |

†Foods listed were from a self-administered diet history questionnaire.

**Supplemental Table 2** Factor-loading matrix for dietary patterns identified among Japanese men (n = 353) and women (n = 349) †

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Men | | | |  | Women | | | |
| **Food group** | Fish and  vegetable | Meat,  vegetable  and oil | Noodle | Bread and  confectionaries |  | Fish and  vegetable | Meat  and oil | Noodle | Bread and  confectionaries |
| Fish | 0.57 | 0.20 | -0.03 | -0.10 |  | 0.49 | -0.01 | -0.05 | -0.10 |
| Sea products | 0.54 | 0.25 | 0.04 | -0.02 |  | 0.44 | -0.03 | -0.03 | -0.04 |
| Green and yellow  vegetables | 0.53 | 0.43 | -0.08 | 0.07 |  | 0.63 | -0.02 | -0.06 | -0.01 |
| Fruits | 0.51 | 0.04 | -0.08 | 0.30 |  | 0.38 | -0.35 | -0.09 | 0.04 |
| Pickled vegetables | 0.47 | -0.06 | -0.04 | 0.05 |  | 0.28 | -0.21 | 0.01 | -0.16 |
| Other vegetables | 0.43 | 0.50 | -0.12 | 0.01 |  | 0.72 | -0.03 | 0.02 | 0.00 |
| Salty sea products | 0.40 | -0.01 | 0.15 | 0.09 |  | 0.17 | -0.15 | 0.07 | -0.02 |
| Potatoes | 0.36 | 0.45 | -0.15 | 0.23 |  | 0.49 | 0.12 | -0.02 | 0.01 |
| Shellfish | 0.36 | 0.15 | 0.12 | -0.07 |  | 0.24 | 0.14 | 0.12 | -0.03 |
| Pulses | 0.36 | 0.23 | -0.15 | -0.02 |  | 0.32 | -0.26 | -0.01 | -0.20 |
| Seaweeds | 0.34 | 0.29 | -0.08 | 0.07 |  | 0.35 | -0.16 | -0.05 | -0.12 |
| Salt | 0.32 | 0.51 | 0.04 | 0.00 |  | 0.51 | 0.16 | -0.05 | -0.09 |
| Nuts | 0.29 | -0.08 | -0.08 | 0.10 |  | 0.09 | -0.16 | 0.08 | 0.03 |
| Mushrooms | 0.29 | 0.40 | -0.08 | 0.13 |  | 0.42 | 0.10 | 0.06 | -0.03 |
| Miso soup | 0.29 | -0.02 | 0.04 | -0.10 |  | 0.25 | -0.16 | 0.09 | -0.28 |
| Sugar | 0.26 | 0.15 | -0.07 | 0.22 |  | 0.19 | -0.08 | -0.04 | 0.09 |
| Japanese seasonings | 0.25 | 0.20 | 0.08 | -0.13 |  | 0.29 | 0.05 | 0.08 | -0.14 |
| Milk and yogurt | 0.22 | 0.02 | 0.02 | 0.14 |  | 0.07 | -0.18 | -0.07 | 0.09 |
| Eggs | 0.20 | 0.41 | 0.03 | -0.07 |  | 0.18 | 0.11 | -0.12 | -0.05 |
| Vegetable oil | 0.18 | 0.73 | 0.07 | -0.07 |  | 0.45 | 0.61 | 0.00 | 0.05 |
| Fatty spreads | 0.16 | 0.09 | 0.02 | 0.36 |  | 0.03 | -0.07 | -0.13 | 0.35 |
| Japanese and  Chinese tea | 0.14 | 0.22 | -0.07 | 0.14 |  | 0.28 | 0.02 | -0.11 | 0.02 |
| Alcoholic beverages | 0.12 | -0.05 | 0.04 | -0.37 |  | -0.18 | -0.02 | 0.11 | -0.15 |
| Coffee and cocoa | 0.08 | 0.05 | -0.04 | 0.00 |  | -0.07 | -0.15 | -0.11 | -0.04 |
| Bread | 0.06 | -0.10 | 0.00 | 0.61 |  | -0.19 | -0.03 | -0.01 | 0.58 |
| Cheese | 0.05 | 0.36 | 0.01 | 0.10 |  | 0.00 | 0.05 | 0.14 | 0.12 |
| Tea | 0.04 | 0.12 | 0.03 | 0.21 |  | 0.04 | 0.04 | 0.09 | 0.29 |
| Savory snacks | 0.03 | -0.04 | 0.05 | 0.36 |  | -0.05 | -0.04 | 0.10 | 0.23 |
| Confectioneries | 0.02 | 0.09 | 0.03 | 0.51 |  | -0.08 | 0.08 | 0.05 | 0.41 |
| Other Soup | 0.01 | 0.07 | 0.19 | 0.13 |  | 0.01 | 0.05 | 0.15 | 0.22 |
| Processed meat | 0.01 | 0.40 | 0.06 | 0.10 |  | 0.10 | 0.35 | 0.11 | 0.08 |
| Fruit and vegetable juice | 0.00 | 0.16 | 0.10 | 0.17 |  | 0.07 | -0.04 | 0.08 | 0.10 |
| Western seasonings | -0.01 | 0.26 | 0.17 | 0.15 |  | 0.32 | 0.08 | 0.15 | 0.12 |
| Japanese, Chinese and instant noodles | -0.02 | -0.13 | 0.95 | -0.09 |  | -0.03 | -0.04 | 0.92 | 0.03 |
| Noodle soup | -0.02 | -0.10 | 0.96 | -0.09 |  | -0.10 | -0.05 | 0.95 | 0.01 |
| Sweetened bun | -0.06 | -0.11 | -0.02 | 0.63 |  | -0.19 | 0.03 | 0.01 | 0.53 |
| Beef and pork | -0.08 | 0.61 | 0.02 | -0.01 |  | 0.06 | 0.67 | -0.05 | 0.01 |
| Chicken | -0.12 | 0.50 | 0.06 | -0.07 |  | 0.09 | 0.59 | -0.09 | 0.03 |
| Rice | -0.17 | -0.16 | -0.23 | -0.10 |  | -0.04 | 0.03 | -0.21 | -0.51 |
| Soft drink | -0.20 | 0.05 | 0.15 | 0.16 |  | -0.02 | 0.00 | 0.17 | 0.14 |
| Pasta | -0.21 | 0.26 | 0.37 | 0.06 |  | -0.07 | 0.05 | 0.51 | 0.12 |
| Percentage of variance (%) | 7.5 | 8.2 | 5.6 | 4.8 |  | 8.1 | 4.4 | 5.7 | 4.1 |

†Absolute values >0.25 are underlined.

**Supplemental Table 3** Food group intake, sodium intake from each food group and its contribution as a sodium source among the highest quintiles of each dietary pattern in Japanese men†

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Food group** | Fish and vegetable (n = 70) | | |  | Meat, vegetable and oil (n = 70) | | |  | Noodle (n = 70) | | |  | Breads and confectionaries (n = 70) | | |
| Food group  (g/d) | Sodium (mg/d) | |  | Food group  (g/d) | Sodium (mg/d) | |  | Food group  (g/d) | Sodium (mg/d) | |  | Food group  (g/d) | Sodium (mg/d) | |
| Bread | 37.6 | 196 | (3.9) |  | 29.1 | 152 | (3.0) |  | 39.7 | 199 | (4.1) |  | 65.6 | 336 | (7.9) |
| Noodles‡ | 83.5 | 67 | (1.3) |  | 69.7 | 66 | (1.3) |  | 191.3 | 165 | (3.6) |  | 99.6 | 90 | (2.1) |
| Confectioneries and snacks§ | 57.0 | 130 | (2.5) |  | 58.9 | 110 | (2.2) |  | 66.1 | 144 | (2.8) |  | 111.8 | 233 | (5.5) |
| Vegetables|| | 251.9 | 371 | (7.2) |  | 241.0 | 156 | (3.0) |  | 144.3 | 164 | (3.1) |  | 170.0 | 183 | (3.9) |
| Seaweeds | 18.1 | 99 | (1.7) |  | 13.0 | 71 | (1.4) |  | 9.9 | 54 | (1.0) |  | 9.9 | 55 | (1.2) |
| Dairy products¶ | 106.0 | 98 | (1.8) |  | 110.6 | 121 | (2.3) |  | 97.5 | 95 | (1.7) |  | 97.8 | 95 | (2.1) |
| Seafood†† | 122.1 | 517 | (9.8) |  | 92.4 | 337 | (6.6) |  | 73.9 | 314 | (5.8) |  | 70.3 | 314 | (6.6) |
| Meat‡‡ | 75.0 | 138 | (2.5) |  | 133.8 | 234 | (4.6) |  | 93.7 | 151 | (2.8) |  | 79.7 | 146 | (3.3) |
| Eggs | 47.9 | 67 | (1.2) |  | 55.8 | 78 | (1.6) |  | 38.6 | 54 | (1.0) |  | 33.3 | 47 | (1.0) |
| Miso soup | 157.6 | 398 | (7.6) |  | 117.4 | 297 | (5.9) |  | 106.1 | 268 | (5.4) |  | 104.8 | 265 | (5.9) |
| Noodle soup | 116.4 | 455 | (8.8) |  | 86.8 | 339 | (6.8) |  | 265.4 | 1038 | (21.9) |  | 126.5 | 495 | (11.3) |
| Salt | 4.7 | 1828 | (33.3) |  | 5.4 | 2112 | (40.8) |  | 3.9 | 1527 | (28.5) |  | 3.7 | 1454 | (31.3) |
| Japanese seasonings | 13.0 | 712 | (13.0) |  | 12.5 | 687 | (13.4) |  | 12.8 | 687 | (12.5) |  | 8.6 | 476 | (10.6) |
| Western seasonings | 12.5 | 196 | (3.4) |  | 17.2 | 265 | (5.0) |  | 14.7 | 206 | (3.7) |  | 17.8 | 251 | (5.3) |

†Value expressed as energy adjusted mean (by residual method) and contribution (%) (only sodium intake). The subjects of each of the highest quintiles differed by dietary pattern. Food groups whose contributions were higher than 1% are shown. ‡Noodles included Japanese, Chinese and instant noodles and pasta. §Confectioneries and snacks including sweetened bun, confectionaries and savory snacks. ||Vegetable included green and yellow, other and pickled vegetables. ¶Dairy products included milk, yogurt and cheese. ††Seafood included fish, shellfish, sea products and salty sea products. ‡‡Meat included chicken, beef and pork and processed meat.

**Supplemental Table 4** Food group intake, sodium intake from each food group and its contribution as a sodium source among the highest quintiles of each dietary pattern in Japanese women†

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Food group** | Fish and vegetable (n = 70) | | |  | Meat and oil (n = 70) | | |  | Noodle (n = 70) | | |  | Breads and confectionaries (n = 70) | | |
| Food group  (g/d) | Sodium  (mg/d) | |  | Food group  (g/d) | Sodium  (mg/d) | |  | Food group  (g/d) | Sodium  (mg/d) | |  | Food group  (g/d) | Sodium  (mg/d) | |
| Bread | 29.9 | 143 | (3.0) |  | 34.2 | 168 | (4.5) |  | 29.8 | 150 | (3.6) |  | 57.1 | 290 | (8.1) |
| Noodles‡ | 59.9 | 54 | (1.1) |  | 53.0 | 51 | (1.3) |  | 119.7 | 108 | (2.7) |  | 67.4 | 64 | (1.8) |
| Confectioneries and snacks§ | 62.1 | 123 | (2.6) |  | 76.0 | 147 | (3.9) |  | 69.8 | 142 | (3.4) |  | 105.0 | 204 | (5.8) |
| Vegetables|| | 327.0 | 319 | (5.8) |  | 203.9 | 170 | (3.7) |  | 222.1 | 269 | (5.2) |  | 198.0 | 151 | (3.8) |
| Seaweeds | 16.7 | 92 | (1.9) |  | 9.0 | 49 | (1.2) |  | 11.2 | 62 | (1.4) |  | 9.1 | 50 | (1.3) |
| Dairy products¶ | 105.5 | 89 | (1.8) |  | 79.3 | 83 | (2.2) |  | 104.1 | 107 | (2.5) |  | 128.3 | 112 | (2.9) |
| Seafood†† | 80.5 | 330 | (6.6) |  | 58.9 | 225 | (5.4) |  | 62.2 | 263 | (5.5) |  | 54.8 | 227 | (5.9) |
| Meat‡‡ | 65.1 | 107 | (2.2) |  | 112.3 | 164 | (4.1) |  | 67.3 | 116 | (2.6) |  | 65.8 | 107 | (2.9) |
| Eggs | 34.7 | 49 | (1.0) |  | 34.6 | 48 | (1.3) |  | 23.4 | 33 | (0.8) |  | 28.6 | 40 | (1.1) |
| Miso soup | 134.5 | 340 | (6.6) |  | 92.2 | 233 | (5.4) |  | 121.4 | 307 | (6.7) |  | 76.0 | 192 | (5.0) |
| Noodle soup | 65.0 | 254 | (5.2) |  | 59.4 | 232 | (6.1) |  | 145.2 | 568 | (13.9) |  | 73.3 | 286 | (7.7) |
| Salt | 5.5 | 2141 | (42.6) |  | 4.5 | 1766 | (43.3) |  | 3.9 | 1523 | (33.2) |  | 3.8 | 1487 | (37.0) |
| Japanese seasonings | 11.4 | 608 | (11.7) |  | 7.9 | 435 | (10.8) |  | 10.2 | 547 | (11.2) |  | 6.3 | 347 | (8.9) |
| Western seasonings | 18.9 | 312 | (5.8) |  | 12.8 | 195 | (4.7) |  | 16.8 | 247 | (5.1) |  | 14.7 | 210 | (5.2) |

†Value expressed as energy adjusted mean (by residual method) and contribution (%) (only sodium intake). The subjects of each of the highest quintiles differed by dietary pattern. Food groups whose contributions were higher than 1% are shown. ‡Noodles included Japanese, Chinese and instant noodles and pasta. §Confectioneries and snacks including sweetened bun, confectionaries and savory snacks. ||Vegetable included green and yellow, other and pickled vegetables. ¶Dairy products included milk, yogurt and cheese. ††Seafood included fish, shellfish, sea products and salty sea products. ‡‡Meat included chicken, beef and pork and processed meat.