**Supplementary Table 1A** Food-level analysis for input into principal components analysis (PCA) for dietary patterns derivation among women of reproductive age (18-54 y old) in Ghana

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Food** | **Description of local food** | **Consumed in past 24 h (N)** | **Percent of total (%)**  | **Reason to exclude from PCA** |
| *Cereals and grains* |  |  |  |  |
| Cereal, koko or porridge | Koko is a spiced millet porridge  | 550 | 31.5 |  |
| Bread |  | 938 | 53.7 |  |
| Rice |  | 1048 | 59.7 |  |
| *Roots and tubers* |  |  |  |  |
| Starchy vegetables (e.g. maize, yams, potatoes, cassava and plantains) |  | 1456 | 83.3 |  |
| *Legumes and pulses* |  |  |  |  |
| Cooked beans (e.g. black-eyed peas, beans and koose) | Koose is a spicy bean fritter | 447 | 25.6 |  |
| *Nuts and seeds* |  |  |  |  |
| Agushie  | Seed of cucurbitaceous plants (e.g. squash, watermelon) dried and ground for use in West African dishes | 154 | 8.8 | Excluded due to low proportion of respondents consuming the item. |
| Ground nuts  |  | 251 | 14.4 |  |
| Nuts (e.g. cashews, seeds or other nuts) |  | 150 | 8.6 | Excluded due to low proportion of respondents consuming the item. |
| *Dairy* |  |  |  |  |
| Yogurt  |  | 95 | 5.5 | Excluded due to low proportion of respondents consuming the item. |
| *Meat* |  |  |  |  |
| Red meat (e.g. beef, pork, goat, grasscutter or bush meat) |  | 560 | 32.1 |  |
| *Poultry*  |  |  |  |  |
| Chicken |  | 336 | 19.3 |  |
| *Fish* |  |  |  |  |
| Fish |  | 1314 | 75.3 |  |
| *Eggs* |  |  |  |  |
| Eggs  |  | 445 | 25.5 |  |
| *Dark green leafy vegetables* |  |  |  |  |
| Dark leafy vegetables (e.g. kontomire, aleefu, ayoyo, kale and cassava leaves) | Konotmire is an indigenous leaf, often called purple taro or purple elephant’s earAleefu is an indigenous amaranth leafAyoyo is an indigenous green leaf, often called West African sorrel | 356 | 20.4 |  |
| *Other fruits* |  |  |  |  |
| Fruit (e.g. pawpaw, apple, mango, orange or pineapple) |  | 619 | 35.4 |  |
| 100% fruit juice (e.g. orange and grapefruit juice) |  | 162 | 9.3 | Excluded due to low proportion of respondents consuming the item. |
| *Other vegetables*  |  |  |  |  |
| Fresh vegetables or salad (e.g. lettuce, carrots and tomatoes)  |  | 436 | 25.0 |  |
| *Oils and fats* |  |  |  |  |
| Butter or margarine (on breads or on foods) |  | 183 | 10.5 |  |
| *Savoury and fried snacks* |  |  |  |  |
| Fried chicken, fish or vegetables |  | 471 | 30.0 |  |
| Fast food snacks |  | 174 | 9.9 | Excluded due to low proportion of respondents consuming the item. |
| *Sugar-sweetened beverages* |  |  |  |  |
| Sweetened drinks (e.g. regular soda, tea with sugar, or fruit flavoured drinks) |  | 826 | 47.3 |  |

**Supplementary Table 1B** Food-level analysis for input into principal components analysis (PCA) for dietary patterns derivation among women of reproductive age (19-48 y old) in Malawi

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Food** | **Description of local food** | **Consumed in past 7 d (N)** | **Percent of total (%)** | **Reason to exclude from PCA** |
| *Cereals and grains* |  |  |  |  |
| White bread |  | 82 | 59.4 |  |
| African bread |  | 14 | 10.1 |  |
| Doughnut, fritters, wheat dough deep fried |  | 60 | 43.5 |  |
| Green maize |  | 17 | 12.3 |  |
| Nsima, mgaiwa | Whole grain stiff maize porridge | 28 | 20.3 |  |
| Nsima, ufawoyera | Refined stiff maize porridge | 81 | 58.7 |  |
| Nsima, gramil | Partially refined maize thick porridge | 34 | 64.2 |  |
| Nsima, madeya  | Maize husk flour stiff porridge  | 1 | 1.9 | Excluded due to low proportion of respondents consuming the item. |
| Rice |  | 78 | 56.5 |  |
| Phala, mgaiwa | Whole grain regular (e.g., watery) maize porridge | 34 | 24.6 |  |
| Phala, ufawoyera | Refined regular maize porridge | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Rice phala | Rice porridge  | 41 | 29.7 |  |
| Likuni phala | Micronutrient-fortified packaged maize and soy porridge | 3 | 5.7 | Excluded due to low proportion of respondents consuming the item. |
| Spaghetti/pasta/macaroni |  | 12 | 8.7 | Excluded due to low proportion of respondents consuming the item. |
| Breakfast cereals, like cornflakes or other packaged cereals |  | 6 | 4.3 | Excluded due to low proportion of respondents consuming the item. |
| Maize grits |  | 1 | 1.9 | Excluded due to low proportion of respondents consuming the item. |
| Sweet beer, thobwa | Home-made grain fermented drink usually made from white maize and millet or sorghum  | 57 | 41.3 |  |
| *Roots and tubers* |  |  |  |  |
| Irish potato |  | 66 | 47.8 |  |
| Cassava |  | 38 | 27.5 |  |
| Cocoyam |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Plantain |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| *Legumes and pulses* |  |  |  |  |
| Green beans, stewed in relish |  | 15 | 10.9 |  |
| Fresh pea/bean relish, plain |  | 3 | 2.2 | Excluded due to low proportion of respondents consuming the item. |
| Fresh pea/bean relish with groundnut flour |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Fresh pea/bean relish with oil |  | 15 | 10.9 |  |
| Fresh pea/bean relish with groundnut flour and oil |  | 3 | 2.2 | Excluded due to low proportion of respondents consuming the item. |
| Dried pea/bean relish, plain |  | 19 | 13.8 |  |
| Dried pea/bean relish with groundnut flour |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Dried pea/bean relish with oil |  | 97 | 70.3 |  |
| Dried pea/bean relish with groundnut flour and oil |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Soya pieces |  | 52 | 37.7 |  |
| Soya phala | Regular soy porridge  | 67 | 48.6 |  |
| *Nuts and seeds* |  |  |  |  |
| Soup made with groundnuts |  | 4 | 2.9 | Excluded due to low proportion of respondents consuming the item. |
| Fresh, boiled groundnuts |  | 11 | 8.0 | Excluded due to low proportion of respondents consuming the item. |
| Dried, roasted groundnuts |  | 62 | 44.9 |  |
| Peanut butter |  | 16 | 11.6 |  |
| Sibusiso | Locally produced soya-groundnut high energy food supplement | 0 | 0.0 | Excluded because nobody consumed the item. |
| Cashew nut |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Pumpkin seeds, sunflower seeds |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Raw groundnuts |  | 2 | 3.8 | Excluded due to low proportion of respondents consuming the item. |
| *Dairy* |  |  |  |  |
| Yoggie, yoghurt | Yoggie is a usually sweetened liquid yogurt  | 22 | 16.1 |  |
| Cheese |  | 3 | 2.2 | Excluded due to low proportion of respondents consuming the item. |
| Fresh milk |  | 34 | 24.6 |  |
| Milk powder |  | 36 | 26.1 |  |
| *Meat*  |  |  |  |  |
| Roasted beef, beef liver, beef offal |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Fried beef, beef liver, beef offal |  | 10 | 7.2 | Excluded due to low proportion of respondents consuming the item. |
| Stewed beef, beef liver, beef offal in relish |  | 32 | 23.2 |  |
| Roasted pork |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Fried pork |  | 5 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| Stewed pork in relish |  | 5 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| Roasted goat, goat offal |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Fried goat, goat offal |  | 12 | 8.7 | Excluded due to low proportion of respondents consuming the item. |
| Stewed goat in relish |  | 40 | 29.0 |  |
| Roasted sheep |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Fried sheep |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Stewed sheep in relish |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Sausage |  | 6 | 4.4 | Excluded due to low proportion of respondents consuming the item. |
| Roasted mice, rats |  | 8 | 5.8 | Excluded due to low proportion of respondents consuming the item. |
| Roasted guinea pig |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| *Poultry* |  |  |  |  |
| Roasted chicken, chicken liver, chicken gizzard, dove, pigeon, guinea fowl, duck |  | 10 | 7.2 | Excluded due to low proportion of respondents consuming the item. |
| Fried chicken, chicken liver, chicken gizzard, dove, pigeon, guinea fowl, duck |  | 33 | 23.9 |  |
| Stewed chicken, chicken liver, chicken gizzard, dove, pigeon, guinea fowl, duck |  | 47 | 34.3 |  |
| *Fish* |  |  |  |  |
| Roasted medium or large fresh fish |  | 15 | 10.9 |  |
| Fried medium or large fresh fish |  | 21 | 15.2 |  |
| Stewed medium or large fresh fish in relish |  | 20 | 14.6 |  |
| Fried medium or large dried fish |  | 8 | 5.8 | Excluded due to low proportion of respondents consuming the item. |
| Stewed medium or large dried fish in relish |  | 32 | 23.2 |  |
| Roasted small fresh fish |  | 11 | 8.0 | Excluded due to low proportion of respondents consuming the item. |
| Fried small fresh fish |  | 21 | 15.2 |  |
| Stewed small fresh fish in relish |  | 18 | 13.0 |  |
| Fried small dried fish |  | 29 | 21.2 |  |
| Stewed small dried fish in relish |  | 40 | 29.0 |  |
| Insects |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| *Eggs* |  |  |  |  |
| Egg |  | 91 | 65.9 |  |
| *Dark green leafy vegetables* |  |  |  |  |
| Green leafy vegetable relish, plain |  | 81 | 58.7 |  |
| Green leafy vegetable relish with groundnut powder |  | 97 | 70.3 |  |
| Green leafy vegetable relish with oil |  | 96 | 69.6 |  |
| Green leafy vegetable relish with groundnut powder and oil |  | 3 | 2.2 | Excluded due to low proportion of respondents consuming the item. |
| Pumpkin leaves |  | 18 | 34.0 |  |
| *Vitamin A-rich vegetables* |  |  |  |  |
| Carrot, raw |  | 20 | 14.5 |  |
| Carrot, stewed in relish |  | 13 | 9.5 | Excluded due to low proportion of respondents consuming the item. |
| Sweet potato |  | 81 | 58.7 |  |
| *Vitamin A-rich fruits* |  |  |  |  |
| Papaya, pawpaw |  | 20 | 14.5 |  |
| Mango |  | 17 | 12.3 |  |
| *Other fruits* |  |  |  |  |
| Apple |  | 17 | 12.3 |  |
| Avocado |  | 7 | 5.1 | Excluded due to low proportion of respondents consuming the item. |
| Banana |  | 78 | 56.9 |  |
| Baobab |  | 17 | 12.3 |  |
| Tamarind |  | 6 | 4.3 | Excluded due to low proportion of respondents consuming the item. |
| Coconut |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Custard apple |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Guava |  | 18 | 13.0 |  |
| Lemon, lime, orange, tangerine |  | 54 | 39.1 |  |
| Masau | Small, sour fruit | 10 | 7.2 | Excluded due to low proportion of respondents consuming the item. |
| Loquat |  | 5 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| Passion fruit |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Pineapple |  | 2 | 1.4 | Excluded due to low proportion of respondents consuming the item. |
| Watermelon |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Flacourtina Indica | Fruit native to tropical Africa | 0 | 0.0 | Excluded because nobody consumed the item. |
| *Other vegetables*  |  |  |  |  |
| Cabbage salad |  | 34 | 24.6 |  |
| Boiled cabbage |  | 30 | 21.7 |  |
| Cucumber |  | 10 | 7.2 | Excluded due to low proportion of respondents consuming the item. |
| Eggplant, stewed in relish |  | 19 | 13.8 |  |
| Green pepper, stewed in relish |  | 36 | 26.1 |  |
| Tomato, stewed in relish |  | 136 | 98.6 | Excluded due to high proportion of respondents consuming the item. |
| Mushroom, stewed in relish |  | 2 | 1.4 | Excluded due to low proportion of respondents consuming the item. |
| Pumpkin, boiled |  | 10 | 7.2 | Excluded due to low proportion of respondents consuming the item. |
| Okra relish |  | 47 | 34.1 |  |
| Onions |  | 44 | 83.0 |  |
| Hibiscus |  | 1 | 1.9 | Excluded due to low proportion of respondents consuming the item. |
| Potato leaves |  | 5 | 9.4 |  |
| Gourd |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Chew okra |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Red pepper |  | 5 | 9.4 | Excluded due to low proportion of respondents consuming the item. |
| *Oils and fats* |  |  |  |  |
| Butter, margarine |  | 34 | 24.6 |  |
| Cooking oil |  | 131 | 94.9 | Excluded due to high proportion of respondents consuming the item. |
| *Savoury and fried snacks* |  |  |  |  |
| Chips (French fries) |  | 53 | 38.7 | Excluded due to high proportion of respondents consuming the item. |
| Kamba puffs | Highly processed snack food made of maize | 26 | 19.0 |  |
| Potato chips (crisps) |  | 4 | 2.9 | Excluded due to low proportion of respondents consuming the item. |
| Samosa |  | 15 | 10.9 |  |
| Maize popcorn |  | 44 | 31.9 |  |
| Jigs | Highly processed snack food made of maize | 17 | 12.9 |  |
| Zigege | Local type of fritter | 13 | 24.5 |  |
| Raja/ royco | Raja is curry powderRoyco is bouillon cubes | 13 | 24.5 |  |
| *Sweets* |  |  |  |  |
| Biscuits |  | 21 | 15.2 |  |
| Custard |  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Freezies | Frozen popsicles  | 30 | 21.7 |  |
| Jam |  | 4 | 2.9 | Excluded due to low proportion of respondents consuming the item. |
| Brown sugar, white sugar |  | 130 | 94.2 | Excluded due to high proportion of respondents consuming the item. |
| Sugarcane |  | 51 | 37.0 |  |
| Candies/sweets/lollipop |  | 18 | 13.0 |  |
| Chocolate |  | 2 | 1.4 | Excluded due to low proportion of respondents consuming the item. |
| Honey |  | 6 | 4.3 | Excluded due to low proportion of respondents consuming the item. |
| African cake |  | 14 | 10.1 |  |
| Other cakes and pastries |  | 5 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| Ice cream |  | 4 | 2.9 | Excluded due to low proportion of respondents consuming the item. |
| *Sugar-sweetened beverages* |  |  |  |  |
| Fruit juice |  | 17 | 12.3 |  |
| Sobo | Locally produced soft drink | 22 | 15.9 |  |
| Soft drinks (Coca Cola, Fanta, Sprite) |  | 33 | 23.9 |  |
| Frozy | Locally produced soft drink | 10 | 18.9 |  |
| *Other beverages* |  |  |  |  |
| Traditional beer |  | 2 | 1.4 | Excluded due to low proportion of respondents consuming the item. |
| Chibuku | Commercial sorghum beer  | 0 | 0.0 | Excluded because nobody consumed the item. |
| Bottled/canned beer |  | 1 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| Mahewu | Sweetened non-alcoholic grain drink | 12 | 8.7 | Excluded due to low proportion of respondents consuming the item. |
| Coffee |  | 7 | 5.1 | Excluded due to low proportion of respondents consuming the item. |
| Brewed tea |  | 119 | 86.2 |  |
| Water |  | 126 | 91.3 | Excluded because item does not contribute to energy and macronutrient intake. |

**Supplementary Table 1C** Food-level analysis for input into principal components analysis (PCA) for dietary patterns derivation among older women (≥55 y old) in Ghana

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Food** | **Description of local food** | **Consumed in past 24 h (N)** | **Percent of total (%)** | **Reason to exclude from PCA** |
| *Cereals and grains* |  |  |  |  |
| Cereal, koko or porridge | Koko is a spiced millet porridge  | 211 | 37.9 |  |
| Bread |  | 329 | 59.0 |  |
| Rice |  | 256 | 45.9 |  |
| *Roots and tubers* |  |  |  |  |
| Starchy vegetables (e.g. maize, yams, potatoes, cassava and plantains) |  | 497 | 89.1 |  |
| *Legumes and pulses* |  |  |  |  |
| Cooked beans (e.g. black-eyed peas, beans and koose) | Koose is a spicy bean fritter | 82 | 14.7 |  |
| *Nuts and seeds* |  |  |  |  |
| Agushie | Seed of cucurbitaceous plants (e.g. squash, watermelon) dried and ground for use in West African dishes | 38 | 6.8 | Excluded due to low proportion of respondents consuming the item. |
| Ground nuts  |  | 55 | 9.9 | Excluded due to low proportion of respondents consuming the item. |
| Nuts (e.g. cashews, seeds or other nuts) |  | 33 | 5.9 | Excluded due to low proportion of respondents consuming the item. |
| *Dairy* |  |  |  |  |
| Yogurt  |  | 4 | 0.7 | Excluded due to low proportion of respondents consuming the item. |
| *Meat* |  |  |  |  |
| Red meat (e.g. beef, pork, goat, grasscutter or bush meat) |  | 102 | 18.3 |  |
| *Poultry* |  |  |  |  |
| Chicken |  | 60 | 10.8 |  |
| *Fish* |  |  |  |  |
| Fish |  | 477 | 85.5 |  |
| *Eggs* |  |  |  |  |
| Eggs  |  | 66 | 11.8 |  |
| *Dark green leafy vegetables* |  |  |  |  |
| Dark leafy vegetables (e.g. kontomire, aleefu, ayoyo, kale and cassava leaves) | Konotmire is an indigenous leaf, often called purple taro or purple elephant’s earAleefu is an indigenous amaranth leafAyoyo is an indigenous green leaf, often called West African sorrel | 120 | 21.5 |  |
| *Other fruits* |  |  |  |  |
| Fruit (e.g. pawpaw, apple, mango, orange or pineapple) |  | 171 | 30.7 |  |
| 100% fruit juice (e.g. orange and grapefruit juice) |  | 31 | 5.6 | Excluded due to low proportion of respondents consuming the item. |
| *Other vegetables* |  |  |  |  |
| Fresh vegetables or salad (e.g. lettuce, carrots and tomatoes)  |  | 121 | 21.7 |  |
| *Oils and fats* |  |  |  |  |
| Butter or margarine (on breads or on foods) |  | 21 | 3.8 | Excluded due to low proportion of respondents consuming the item. |
| *Savoury and fried snacks* |  |  |  |  |
| Fried chicken, fish or vegetables |  | 127 | 22.8 |  |
| Fast food snacks |  | 32 | 5.8 | Excluded due to low proportion of respondents consuming the item. |
| *Sugar-sweetened beverages* |  |  |  |  |
| Sweetened drinks (e.g. regular soda, tea with sugar, or fruit flavoured drinks) |  | 249 | 44.6 |  |

**Supplementary Table 1D** Food-level analysis for input into principal components analysis (PCA) for dietary patterns derivation among older women (≥50 y old) in Tanzania

|  |  |  |  |
| --- | --- | --- | --- |
| **Food** | **Consumed in the past 7 d (N)** | **Percent of total (%)** | **Reason to exclude from PCA** |
| *Cereals and grains* |  |  |  |
| Oat porridge or oatmeal | 1 | 0.4 | Excluded due to low proportion of respondents consuming the item. |
| Wheat porridge | 6 | 2.4 | Excluded due to low proportion of respondents consuming the item. |
| Millet meal porridge | 39 | 15.5 |  |
| Corn porridge | 50 | 19.9 |  |
| Cassava porridge | 8 | 3.2 | Excluded due to low proportion of respondents consuming the item. |
| Rice porridge | 26 | 10.4 |  |
| Sorghum ugali (stiff porridge) | 10 | 4.0 | Excluded due to low proportion of respondents consuming the item. |
| Rice ugali | 24 | 9.6 | Excluded due to low proportion of respondents consuming the item. |
| Millet porridge or ugali | 4 | 1.6 | Excluded due to low proportion of respondents consuming the item. |
| Mixed grain porridge | 47 | 18.7 |  |
| Grain from factory | 10 | 4.0 | Excluded due to low proportion of respondents consuming the item. |
| Maize (roasted or boiled, on the cob) | 70 | 27.9 |  |
| Maize meal, cooked (ugali) | 229 | 91.2 | Excluded due to high proportion of respondents consuming the item. |
| Corn/sugar derived from corn juice | 11 | 4.4 | Excluded due to low proportion of respondents consuming the item. |
| Maize cooked with beans  | 56 | 22.3 |  |
| Maize cooked with beans and rice | 6 | 2.4 | Excluded due to low proportion of respondents consuming the item. |
| Rice, mixed in pilau, fried | 97 | 38.7 |  |
| Plain rice, boiled | 122 | 48.6 |  |
| Pasta, cooked (spaghetti, macaroni) | 75 | 29.9 |  |
| Flat bread (Chapati) | 169 | 67.3 |  |
| Pancakes  | 41 | 16.3 |  |
| *Roots and tubers* |  |  |  |
| Potato, boiled or baked | 75 | 29.9 |  |
| Cassava, boiled | 67 | 26.7 |  |
| Cassava stiff porridge  | 30 | 12.0 |  |
| Cassava (in a mixed dish) | 35 | 13.9 |  |
| Sweet potato (alone) | 68 | 27.1 |  |
| Sweet potato (in a mixed dish) | 39 | 15.5 |  |
| Taro (alone) | 30 | 12.0 |  |
| Taro (in a mixed dish) | 22 | 8.8 | Excluded due to low proportion of respondents consuming the item. |
| Yam (boiled, alone) | 24 | 9.6 | Excluded due to low proportion of respondents consuming the item. |
| Yam (fried) | 22 | 8.8 | Excluded due to low proportion of respondents consuming the item. |
| Yam (in a mixed dish) | 8 | 3.2 | Excluded due to low proportion of respondents consuming the item. |
| Pounded yam or other root vegetable | 43 | 17.1 |  |
| Plantain (boiled or steamed)  | 74 | 29.5 |  |
| Plantain (roasted)  | 55 | 21.9 |  |
| Plantain (fried, or chips)  | 62 | 24.7 |  |
| Plantain (in a mixed dish) | 99 | 39.4 |  |
| *Legumes and pulses* |  |  |  |
| Beans/legumes, alone | 105 | 41.8 |  |
| Beans in mixed dish | 150 | 59.8 |  |
| Bean soup | 42 | 16.7 |  |
| Bean cakes | 55 | 21.9 |  |
| Soya drink | 46 | 18.3 |  |
| *Nuts and seeds* |  |  |  |
| Bambara nuts | 42 | 16.7 |  |
| Groundnuts (alone) | 100 | 39.8 |  |
| Groundnuts (added to food) | 71 | 28.3 |  |
| Cashew nuts | 25 | 9.9 | Excluded due to low proportion of respondents consuming the item. |
| *Dairy* |  |  |  |
| Powdered cow’s milk, whole or full cream | 31 | 12.4 |  |
| Powdered cow’s milk, fat free or non-fat | 10 | 4.0 | Excluded due to low proportion of respondents consuming the item. |
| Cow’s milk; full cream, whole, or direct from the cow | 95 | 37.9 |  |
| Cow’s milk; low fat or 2% | 3 | 1.2 | Excluded due to low proportion of respondents consuming the item. |
| Cow’s milk; fat-free, or non-fat | 4 | 1.6 | Excluded due to low proportion of respondents consuming the item. |
| Non-dairy creamer (Cremora) | 6 | 2.4 | Excluded due to low proportion of respondents consuming the item. |
| Yogurt, plain | 54 | 21.5 |  |
| Yogurt, artificially sweetened | 31 | 12.4 |  |
| Yogurt, sweetened | 33 | 13.2 |  |
| Cheese, soft but not in liquid | 22 | 8.8 | Excluded due to low proportion of respondents consuming the item. |
| Cheese, in liquid | 9 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| Other types of cheese | 9 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| *Meat* |  |  |  |
| Beef (not minced) | 182 | 72.5 |  |
| Beef mince | 10 | 4.0 | Excluded due to low proportion of respondents consuming the item. |
| Goat | 22 | 8.8 | Excluded due to low proportion of respondents consuming the item. |
| Pork | 21 | 8.4 | Excluded due to low proportion of respondents consuming the item. |
| Lamb/mutton | 5 | 2.0 | Excluded due to low proportion of respondents consuming the item. |
| Sausage | 23 | 9.2 | Excluded due to low proportion of respondents consuming the item. |
| Bacon | 2 | 0.8 | Excluded due to low proportion of respondents consuming the item. |
| Processed meat (bologna) | 4 | 1.6 | Excluded due to low proportion of respondents consuming the item. |
| Processed meat (Vienna sausages) | 4 | 1.6 | Excluded due to low proportion of respondents consuming the item. |
| Ham | 8 | 3.2 | Excluded due to low proportion of respondents consuming the item. |
| Canned beef | 3 | 1.2 | Excluded due to low proportion of respondents consuming the item. |
| *Organ meat* |  |  |  |
| Offal/tripe | 1 | 0.4 | Excluded due to low proportion of respondents consuming the item. |
| Liver | 63 | 25.1 |  |
| *Poultry* |  |  |  |
| Chicken | 123 | 49.0 |  |
| *Fish* |  |  |  |
| Dried fish | 112 | 44.6 |  |
| Anchovies/Sardines | 157 | 62.6 |  |
| Canned tuna in saltwater | 3 | 1.2 | Excluded due to low proportion of respondents consuming the item. |
| Canned tuna in oil | 3 | 1.2 | Excluded due to low proportion of respondents consuming the item. |
| Fish curry/stew | 177 | 70.5 |  |
| Fish, fresh | 43 | 17.1 |  |
| *Eggs* |  |  |  |
| Eggs | 100 | 39.8 |  |
| *Dark green leafy vegetables* |  |  |  |
| Spinach, cooked | 145 | 57.8 |  |
| Amaranth leaves, cooked | 166 | 66.1 |  |
| Pumpkin leaves, cooked | 171 | 68.1 |  |
| Cow pea leaves, cooked | 127 | 50.6 |  |
| Cassava leaves | 146 | 58.2 |  |
| Other green leafy vegetables, cooked | 173 | 68.9 |  |
| *Vitamin A-rich vegetables* |  |  |  |
| Carrot (fresh, not in salad) | 105 | 41.8 |  |
| Carrot (fresh, as in salad) | 0 | 0.0 | Excluded because nobody consumed the item. |
| *Vitamin A-rich fruits* |  |  |  |
| Mango | 61 | 24.3 |  |
| Papaya | 68 | 27.1 |  |
| Passion fruit (fruit only, not juice) | 29 | 11.6 |  |
| Sweet melon | 41 | 16.3 |  |
| *Other fruits* |  |  |  |
| Ripe banana | 157 | 62.6 |  |
| Tamarind | 10 | 4.0 | Excluded due to low proportion of respondents consuming the item. |
| Plum | 12 | 4.9 | Excluded due to low proportion of respondents consuming the item. |
| Tangerine | 17 | 6.8 | Excluded due to low proportion of respondents consuming the item. |
| Lemon or lime | 36 | 14.3 |  |
| Jackfruit | 17 | 6.8 | Excluded due to low proportion of respondents consuming the item. |
| Baobab | 29 | 11.6 |  |
| Watermelon | 121 | 48.2 |  |
| Guava | 26 | 10.4 |  |
| Peaches | 7 | 2.8 | Excluded due to low proportion of respondents consuming the item. |
| Avocado | 131 | 52.2 |  |
| Pineapple (fruit only, not juice) | 26 | 10.4 |  |
| Orange (fruit only, not juice) | 110 | 43.8 |  |
| Orange juice | 38 | 15.1 |  |
| Other fruit juice | 125 | 49.8 |  |
| Apple | 24 | 9.6 | Excluded due to low proportion of respondents consuming the item. |
| Grapes | 25 | 9.9 | Excluded due to low proportion of respondents consuming the item. |
| Apricot | 7 | 2.8 | Excluded due to low proportion of respondents consuming the item. |
| Pear | 50 | 19.9 |  |
| Local berries | 12 | 4.8 | Excluded due to low proportion of respondents consuming the item. |
| Berries (strawberries, raspberries) | 9 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| Fruit canned in syrup | 5 | 2.0 | Excluded due to low proportion of respondents consuming the item. |
| Raisins, and other dried fruit | 9 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| *Other vegetables* |  |  |  |
| Cucumber | 116 | 46.2 |  |
| Lettuce | 38 | 15.1 |  |
| Cabbage | 121 | 48.2 |  |
| Pumpkin, or butternut, cooked | 20 | 8.0 | Excluded due to low proportion of respondents consuming the item. |
| Okra (alone) | 131 | 52.2 |  |
| Okra (in a mixed dish) | 162 | 64.5 |  |
| Green peas (alone) | 73 | 29.1 |  |
| Green peas (in a mixed dish) | 89 | 35.5 |  |
| Bitter tomato (alone) | 95 | 37.9 |  |
| Bitter tomato (in a mixed dish) | 154 | 61.4 |  |
| Tomato (fresh, not in salad) | 40 | 16.0 |  |
| Tomato (fresh, as in salad) | 112 | 44.6 |  |
| Tomato, cooked | 130 | 51.8 |  |
| Green pepper (fresh, not in salad) | 16 | 6.4 | Excluded due to low proportion of respondents consuming the item. |
| Green pepper (fresh, as in salad) | 127 | 50.6 |  |
| Zucchini, cooked | 11 | 4.4 | Excluded due to low proportion of respondents consuming the item. |
| Green beans, cooked | 35 | 13.9 |  |
| Beetroot, cooked | 16 | 6.4 | Excluded due to low proportion of respondents consuming the item. |
| Broccoli, cooked | 10 | 4.0 | Excluded due to low proportion of respondents consuming the item. |
| Cauliflower, cooked | 13 | 5.2 | Excluded due to low proportion of respondents consuming the item. |
| Eggplant (alone), cooked | 68 | 27.1 |  |
| Eggplant (in a mixed dish), cooked | 82 | 32.7 |  |
| Mushrooms, cooked | 16 | 6.4 | Excluded due to low proportion of respondents consuming the item. |
| Onions (cooked) | 64 | 25.5 |  |
| Chinese cabbage, cooked | 10 | 4.0 | Excluded due to low proportion of respondents consuming the item. |
| Other cabbage, cooked | 23 | 9.2 | Excluded due to low proportion of respondents consuming the item. |
| *Oils and fats* |  |  |  |
| Ghee | 10 | 4.0 | Excluded due to low proportion of respondents consuming the item. |
| Butter | 29 | 11.6 |  |
| Margarine | 14 | 5.6 | Excluded due to low proportion of respondents consuming the item. |
| Animal fat | 36 | 14.3 |  |
| Peanut butter | 28 | 11.2 |  |
| Coconut milk | 42 | 16.7 |  |
| *Savoury and fried snacks* |  |  |  |
| Potato, crisps, Cassava crisps, French fries | 78 | 31.1 |  |
| Small pieces of roasted corn (crisps) | 26 | 10.4 |  |
| Pie, pastry with meat filling (meat samosa) | 61 | 24.3 |  |
| Pie, pastry with vegetable filling (vegetable samosa) | 43 | 17.1 |  |
| *Sweets* |  |  |  |
| Bread, bread rolls, buns | 152 | 60.6 |  |
| Scones, muffins | 104 | 41.4 |  |
| Donut, fried dough, samosa  | 167 | 66.5 |  |
| Rice cakes  | 35 | 13.9 |  |
| Cookies (biscuits) | 23 | 9.2 | Excluded due to low proportion of respondents consuming the item. |
| Cake | 28 | 11.2 |  |
| Sugar added to foods (include in tea & coffee) | 113 | 45.0 |  |
| Honey or jam | 62 | 24.7 |  |
| Chocolate bar | 11 | 4.4 | Excluded due to low proportion of respondents consuming the item. |
| Other sweets or candy | 23 | 9.2 | Excluded due to low proportion of respondents consuming the item. |
| Ice cream | 26 | 10.4 |  |
| Squash or syrup mixed with water (with sugar) | 7 | 2.8 | Excluded due to low proportion of respondents consuming the item. |
| Squash or syrup mixed with water (with artificial sweetener) | 6 | 2.4 | Excluded due to low proportion of respondents consuming the item. |
| *Sugar-sweetened beverages* |  |  |  |
| Soda (Coke, Fanta, etc.) | 134 | 53.4 |  |
| Diet soda | 14 | 5.58 | Excluded due to low proportion of respondents consuming the item. |
| *Other beverages* |  |  |  |
| Fermented mealie pap drink | 4 | 1.6 | Excluded due to low proportion of respondents consuming the item. |
| Tea with milk | 109 | 43.4 |  |
| Tea without milk | 222 | 88.5 |  |
| Coffee with milk | 15 | 6.0 | Excluded due to low proportion of respondents consuming the item. |
| Coffee without milk | 25 | 9.9 | Excluded due to low proportion of respondents consuming the item. |
| Beer, commercially prepared | 24 | 9.6 | Excluded due to low proportion of respondents consuming the item. |
| Beer, homemade or locally brewed | 9 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| Wine, commercially prepared | 9 | 3.6 | Excluded due to low proportion of respondents consuming the item. |
| Wine, homemade or locally brewed | 5 | 2.0 | Excluded due to low proportion of respondents consuming the item. |
| Distilled alcoholic beverages, commercially prepared (examples: whisky, rum, vodka, gin) | 7 | 2.8 | Excluded due to low proportion of respondents consuming the item. |
| Distilled alcoholic beverages, homemade or locally brewed | 2 | 0.8 | Excluded due to low proportion of respondents consuming the item. |
| *Condiments* |  |  |  |
| Mayonnaise or salad dressing | 13 | 5.2 | Excluded due to low proportion of respondents consuming the item. |

**Supplemental Table 2A** Socio-economic and demographic characteristics by PCA-derived dietary pattern quantiles among women of reproductive age (18-54 y old) in Ghana

|  |  |
| --- | --- |
|  | Protein dietary pattern |
|  | Q1 | Q2 | Q3 | Q4 | Q5 |  |
|   | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | p-trenda |
| Age group |  |  |  |  |  |  |  |  |  |  |  |
| 18-24 years | 34.1 |  | 35.1 |  | 33.7 |  | 43.3 |  | 43.5 |  | <0.001 |
| 25-34 years | 29.6 |  | 27.0 |  | 33.3 |  | 24.7 |  | 28.7 |  |  |
| 35-54 years  | 36.3 |  | 37.9 |  | 33.0 |  | 32.0 |  | 27.9 |  |  |
| Has primary education or higher  | 87.8 |  | 89.0 |  | 87.8 |  | 87.8 |  | 92.5 |  | 0.12 |
| Married or lives with partner  | 54.2 |  | 55.7 |  | 60.5 |  | 54.0 |  | 54.3 |  | 0.86 |
| Number of assets owned by household (0-10) | 5.2 | 1.9 | 5.1 | 1.9 | 5.1 | 2.0 | 5.3 | 1.8 | 5.3 | 1.8 | 0.33 |

|  |  |
| --- | --- |
|  | Healthy dietary pattern |
|  | Q1 | Q2 | Q3 | Q4 | Q5 |  |
|   | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | p-trenda |
| Age group |  |  |  |  |  |  |  |  |  |  |  |
| 18-24 years | 37.0 |  | 37.5 |  | 36.5 |  | 40.5 |  | 38.2 |  | 0.46 |
| 25-34 years | 26.2 |  | 32.3 |  | 28.4 |  | 25.7 |  | 29.5 |  |  |
| 35-54 years  | 36.7 |  | 30.2 |  | 35.1 |  | 33.8 |  | 32.3 |  |  |
| Has primary education or higher  | 88.5 |  | 88.0 |  | 88.4 |  | 89.9 |  | 90.3 |  | 0.31 |
| Married or lives with partner  | 57.5 |  | 52.0 |  | 57.0 |  | 54.1 |  | 57.4 |  | 0.81 |
| Number of assets owned by household (0-10) | 5.0 | 2.0 | 5.2 | 1.8 | 5.3 | 1.8 | 5.2 | 1.9 | 5.3 | 1.9 | 0.07 |

PCA, principal components analysis; Q, quintile.

a Non-parametric test for linear trend across ordered quintiles. Considered significant at p<0.05.

**Supplemental Table 2B** Socio-economic and demographic characteristics by PCA-derived dietary patterns quantiles among women of reproductive age (19-48 y old) in Malawi

|  |  |
| --- | --- |
|  | Protein dietary pattern |
|   | Q1 | Q2 | Q3 | Q4 | p-trenda |
|  | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD |  |
| Age group |  |  |  |  |  |  |  |  |  |
| 18-24 years | 31.4 |  | 35.3 |  | 38.2 |  | 14.7 |  | 0.22 |
| 25-34 years | 54.3 |  | 58.8 |  | 47.1 |  | 70.6 |  |  |
| 35-54 years  | 14.3 |  | 5.9 |  | 14.7 |  | 14.7 |  |  |
| Has primary education or higher  | 37.1 |  | 71.4 |  | 55.9 |  | 70.6 |  | 0.02 |
| Number of assets owned by household (0-12) | 3.6 | 2.5 | 4.9 | 3.0 | 6.2 | 2.6 | 6.5 | 2.7 | <0.001 |

|  |  |
| --- | --- |
|  | Healthy dietary pattern |
|   | Q1 | Q2 | Q3 | Q4 | p-trenda |
|  | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD |  |
| Age group |  |  |  |  |  |  |  |  |  |
| 18-24 years | 20.0 |  | 21.2 |  | 37.1 |  | 41.2 |  | 0.04 |
| 25-34 years | 65.7 |  | 63.6 |  | 54.3 |  | 47.1 |  |  |
| 35-54 years  | 14.3 |  | 15.2 |  | 8.6 |  | 11.8 |  |  |
| Has primary education or higher  | 48.6 |  | 55.9 |  | 65.7 |  | 64.7 |  | 0.12 |
| Number of assets owned by household (0-12) | 4.6 | 3.2 | 5.6 | 3.2 | 5.6 | 2.8 | 5.5 | 2.6 | 0.25 |

PCA, principal components analysis; Q, quartile.

a Non-parametric test for linear trend across ordered quartiles. Considered significant at p<0.05.

**Supplemental Table 2C** Socio-economic and demographic characteristics by PCA-derived dietary pattern quantiles among older women (≥55 y old) in Ghana

|  |  |
| --- | --- |
|  | Cereal dietary pattern |
|   | Q1 | Q2 | Q3 | Q4 | p-trenda |
|  | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD |  |
| Has primary education or higher  | 43.8 |  | 55.1 |  | 54.7 |  | 61.3 |  | 0.01 |
| Married or lives with partner | 25.9 |  | 26.8 |  | 26.2 |  | 24.8 |  | 0.83 |
| Number of assets owned by household (0-12) | 4.4 | 2.5 | 4.9 | 2.5 | 4.7 | 2.4 | 5.1 | 2.3 | 0.06 |

|  |  |
| --- | --- |
|  | Protein dietary pattern |
|   | Q1 | Q2 | Q3 | Q4 | p-trenda |
|  | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD |  |
| Has primary education or higher  | 40.9 |  | 53.7 |  | 56.7 |  | 63.8 |  | <0.001 |
| Married or lives with partner | 23.6 |  | 23.8 |  | 26.3 |  | 30.7 |  | 0.16 |
| Number of assets owned by household (0-12) | 5.1 | 2.3 | 4.5 | 2.4 | 5.3 | 2.4 | 4.4 | 2.4 | 0.01 |

|  |  |
| --- | --- |
|  | Healthy dietary pattern |
|   | Q1 | Q2 | Q3 | Q4 | p-trenda |
|  | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD |  |
| Has primary education or higher  | 47.7 |  | 51.7 |  | 63.1 |  | 54.1 |  | 0.07 |
| Married or lives with partner | 24.4 |  | 27.3 |  | 31.1 |  | 22.5 |  | 0.99 |
| Number of assets owned by household (0-12) | 4.4 | 2.4 | 4.2 | 2.9 | 5.3 | 2.3 | 5.1 | 2.2 | <0.001 |

PCA, principal components analysis; Q, quartile.

a Non-parametric test for linear trend across ordered quartiles. Considered significant at p<0.05.

**Supplemental Table 2D** Socio-economic and demographic characteristics by PCA-derived dietary pattern quantiles among older women (≥50 y old) in Tanzania

|  |  |
| --- | --- |
|  | Protein dietary pattern |
|   | Q1 | Q2 | Q3 | Q4 | p-trenda |
|  | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD |  |
| Age group |  |  |  |  |  |  |  |  |  |
| 50-54 years | 45.7 |  | 35.3 |  | 38.2 |  | 41.2 |  | 0.77 |
| ≥55 years | 54.3 |  | 64.7 |  | 61.8 |  | 58.8 |  |  |
| Married or lives with partner | 54.3 |  | 38.2 |  | 50.0 |  | 41.2 |  | 0.46 |
| Number of assets owned by household (0-12) | 5.8 | 3.5 | 7.9 | 4.1 | 9.1 | 4.0 | 9.2 | 4.1 | <0.001 |

|  |  |
| --- | --- |
|  | Healthy dietary pattern |
|   | Q1 | Q2 | Q3 | Q4 | p-trenda |
|  | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD | Mean or percentage (%) | SD |  |
| Age group |  |  |  |  |  |  |  |  |  |
| 50-54 years | 34.3 |  | 41.2 |  | 35.3 |  | 50.0 |  | 0.27 |
| ≥55 years | 65.7 |  | 58.8 |  | 64.7 |  | 50.0 |  |  |
| Married or lives with partner | 51.4 |  | 41.2 |  | 29.4 |  | 61.8 |  | 0.46 |
| Number of assets owned by household (0-12) | 7.5 | 4.0 | 6.7 | 4.1 | 8.2 | 4.2 | 9.6 | 3.8 | 0.02 |

PCA, principal components analysis; Q, quartile.

a Non-parametric test for linear trend across ordered quartiles. Considered significant at p<0.05.

**Supplemental Table 3A** Association between principal components analysis derived dietary patterns and body mass index (BMI), overweight and obesity among women of reproductive age (18-54 y) in Ghana

**Panel A** Protein dietary patterna

|  |  |
| --- | --- |
|  | Protein dietary pattern |
|  | Q2 | Q3 | Q4 | Q5 |
|  | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value |
| BMI (kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.04 | -0.06, 2.13 | 0.06 | -0.35 | -1.41, 0.72 | 0.52 | -0.40 | -1.38, 0.58 | 0.42 | -0.51 | -1.52, 0.51 | 0.33 |
| Adjusted | 0.92 | -0.12, 1.96 | 0.08 | -0.44 | -1.45, 0.56 | 0.39 | -0.07 | -1.00, 0.86 | 0.88 | -0.18 | -1.15, 0.79 | 0.72 |
| Overweight (BMI≥25 kg/m2 and BMI<30 kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.88 | 1.25, 2.84 | <0.01 | 1.07 | 0.71, 1.61 | 0.75 | 1.50 | 1.03, 2.19 | 0.04 | 1.09 | 0.73, 1.61 | 0.68 |
| Adjusted | 1.87 | 1.23, 2.83 | <0.01 | 1.06 | 0.70, 1.60 | 0.80 | 1.67 | 1.12, 2.48 | 0.01 | 1.13 | 0.76, 1.69 | 0.55 |
| Obesity (BMI≥30 kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.79 | 1.22, 2.63 | <0.01 | 1.00 | 0.68, 1.45 | 0.99 | 0.90 | 0.63, 1.30 | 0.58 | 0.94 | 0.65, 1.35 | 0.72 |
| Adjusted | 1.79 | 1.19, 2.70 | <0.01 | 0.95 | 0.64, 1.41 | 0.79 | 1.03 | 0.69, 1.52 | 0.90 | 1.04 | 0.71, 1.53 | 0.85 |
| Overweight or obesity (BMI≥25 kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.83 | 1.29, 2.58 | <0.01 | 1.03 | 0.74, 1.43 | 0.88 | 1.14 | 0.83, 1.56 | 0.43 | 1.00 | 0.72, 1.37 | 0.98 |
| Adjusted | 1.82 | 1.27, 2.60 | <0.01 | 0.98 | 0.69, 1.40 | 0.92 | 1.32 | 0.94, 1.85 | 0.11 | 1.11 | 0.79, 1.56 | 0.53 |

PCA, principal components analysis; BMI, body mass index; Q, quintile.

a Estimates from a multinomial logistic model controlling for age, education, marital status and wealth. For each dietary pattern comparisons were to quintile 1 (Q1).

**Panel B** Healthy dietary patterna

|  |  |
| --- | --- |
|  | Healthy dietary pattern |
|  | Q2 | Q3 | Q4 | Q5 |
|  | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value |
| BMI (kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |
| Unadjusted | -0.30 | -1.31, 0.72 | 0.56 | 0.66 | -0.47, 1.79 | 0.25 | -0.06 | -1.07, 0.95 | 0.91 | 1.00 | -0.09, 2.09 | 0.07 |
| Adjusted | -0.18 | -1.13, 0.78 | 0.72 | 0.50 | -0.57, 1.57 | 0.36 | -0.05 | -1.00, 0.91 | 0.93 | 0.93 | -0.09, 1.95 | 0.08 |
| Overweight (BMI≥25 kg/m2 and BMI<30 kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.31 | 0.89, 1.93 | 0.17 | 1.33 | 0.87, 2.02 | 0.18 | 1.33 | 0.90, 1.97 | 0.15 | 1.02 | 0.67, 1.55 | 0.93 |
| Adjusted | 1.30 | 0.88, 1.93 | 0.19 | 1.29 | 0.84, 1.98 | 0.25 | 1.31 | 0.88, 1.96 | 0.19 | 1.02 | 0.67, 1.55 | 0.93 |
| Obesity (BMI≥30 kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.03 | 0.71, 1.50 | 0.86 | 1.37 | 0.92, 2.06 | 0.12 | 1.20 | 0.83, 1.74 | 0.34 | 1.49 | 1.02, 2.19 | 0.04 |
| Adjusted | 1.07 | 0.72, 1.59 | 0.74 | 1.30 | 0.85, 1.99 | 0.23 | 1.19 | 0.80, 1.77 | 0.39 | 1.48 | 0.99, 2.22 | 0.06 |
| Overweight or obesity (BMI≥25 kg/m2) |  |  |  |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.15 | 0.83, 1.60 | 0.40 | 1.35 | 0.95, 1.93 | 0.09 | 1.26 | 0.90, 1.75 | 0.18 | 1.28 | 0.91, 1.81 | 0.15 |
| Adjusted | 1.14 | 0.81, 1.60 | 0.45 | 1.33 | 0.92, 1.93 | 0.13 | 1.24 | 0.88, 1.75 | 0.22 | 1.23 | 0.86, 1.75 | 0.25 |

BMI, body mass index; Q, quintile.

a Estimates from a multinomial logistic model controlling for age, education, marital status and wealth. For each dietary pattern comparisons were to quintile 1 (Q1).

**Supplemental Table 3B** Association between principal components analysis derived dietary patterns and body mass index (BMI), overweight and obesity among women of reproductive age (19-48 y) in Malawi

**Panel A** Proteindietary patterna

|  |  |
| --- | --- |
|  | Protein dietary pattern |
|  | Q2 | Q3 | Q4 |
|  | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value |
| BMI (kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.76 | -1.74, 3.26 | 0.55 | 1.69 | -0.87, 4.24 | 0.20 | 0.32 | -2.21, 2.86 | 0.80 |
| Adjusted | 0.45 | -1.99, 2.89 | 0.72 | 0.21 | -2.30, 2.72 | 0.87 | -1.85 | -4.40, 0.71 | 0.16 |
| Overweight (BMI≥25 kg/m2 and BMI<30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.02 | 0.29, 3.59 | 0.97 | 6.06 | 1.42, 25.88 | 0.02 | 3.17 | 0.89, 11.30 | 0.08 |
| Adjusted | 0.95 | 0.25, 3.62 | 0.94 | 5.04 | 1.07, 23.76 | 0.04 | 1.62 | 0.40, 6.48 | 0.50 |
| Obesity (BMI≥30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.34 | 0.40, 4.49 | 0.63 | 3.77 | 0.85, 16.78 | 0.08 | 1.53 | 0.40, 5.90 | 0.53 |
| Adjusted | 0.87 | 0.20, 3.67 | 0.85 | 1.53 | 0.27, 8.53 | 0.63 | 0.27 | 0.05, 1.46 | 0.13 |
| Overweight or obesity (BMI≥25 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.20 | 0.42, 3.43 | 0.74 | 4.88 | 1.29, 18.54 | 0.02 | 2.31 | 0.74, 7.22 | 0.15 |
| Adjusted | 0.97 | 0.30, 3.16 | 0.97 | 3.36 | 0.78, 14.51 | 0.10 | 0.89 | 0.25, 3.19 | 0.86 |

PCA, principal components analysis; BMI, body mass index; Q, quartile.

a Estimates from a multinomial logistic model controlling for age, education, and wealth. For each dietary pattern comparisons were to quartile 1 (Q1).

**Panel B** Healthy dietary patterna

|  |  |
| --- | --- |
|  | Healthy dietary pattern |
|  | Q2 | Q3 | Q4 |
|  | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value |
| BMI (kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | -0.43 | -2.88, 2.01 | 0.73 | -0.45 | -2.95, 2.05 | 0.72 | 0.80 | -1.77, 3.37 | 0.54 |
| Adjusted | -0.61 | -2.90, 1.69 | 0.60 | 0.10 | -2.25, 2.46 | 0.93 | 1.42 | -0.99, 3.84 | 0.25 |
| Overweight (BMI≥25 kg/m2 and BMI<30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.33 | 0.09, 1.17 | 0.09 | 0.40 | 0.11, 1.43 | 0.16 | 0.51 | 0.13, 2.07 | 0.35 |
| Adjusted | 0.36 | 0.10, 1.32 | 0.12 | 0.51 | 0.14, 1.89 | 0.31 | 0.66 | 0.16, 2.75 | 0.57 |
| Obesity (BMI≥30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.82 | 0.22, 2.99 | 0.76 | 0.65 | 0.16, 2.60 | 0.55 | 1.13 | 0.26, 4.86 | 0.87 |
| Adjusted | 0.84 | 0.20, 3.58 | 0.81 | 1.06 | 0.23, 4.93 | 0.94 | 2.04 | 0.40, 10.38 | 0.39 |
| Overweight or obesity (BMI≥25 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.50 | 0.16, 1.54 | 0.23 | 0.49 | 0.15, 1.58 | 0.23 | 0.73 | 0.20, 2.62 | 0.62 |
| Adjusted | 0.48 | 0.14, 1.62 | 0.24 | 0.61 | 0.18, 2.12 | 0.44 | 0.94 | 0.24, 3.64 | 0.93 |

BMI, body mass index; Q, quartile.

a Estimates from a multinomial logistic model controlling for age, education, and wealth. For each dietary pattern comparisons were to quartile 1 (Q1).

**Supplemental Table 3C** Association between principal components analysis derived dietary patterns and body mass index (BMI), overweight and obesity among older women (≥55 y) in Ghana

**Panel A** Cereal dietary patterna

|  |  |
| --- | --- |
|  | Cereal dietary pattern |
|  | Q2 | Q3 | Q4 |
|  | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value |
| BMI (kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.60 | -1.66, 2.85 | 0.60 | 0.08 | -1.69, 1.85 | 0.93 | -0.78 | -2.70, 1.14 | 0..43 |
| Adjusted | 0.45 | -1.86, 2.77 | 0.70 | -0.03 | -1.79, 1.72 | 0.97 | -1.08 | -3.00, 0.83 | 0.27 |
| Overweight (BMI≥25 kg/m2 and BMI<30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.02 | 0.44, 2.36 | 0.97 | 0.93 | 0.47, 1.83 | 0.83 | 0.79 | 0.37, 1.70 | 0.55 |
| Adjusted | 0.88 | 0.37, 2.11 | 0.78 | 0.84 | 0.41, 1.70 | 0.63 | 0.70 | 0.31, 1.53 | 0.36 |
| Obesity (BMI≥30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.28 | 0.58, 2.84 | 0.54 | 1.11 | 0.59, 2.11 | 0.74 | 0.89 | 0.44, 1.78 | 0.74 |
| Adjusted | 1.13 | 0.49, 2.59 | 0.77 | 1.01 | 0.52, 1.95 | 0.98 | 0.72 | 0.35, 1.49 | 0.38 |
| Overweight or obesity (BMI≥25 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.17 | 0.56, 2.42 | 0.68 | 1.03 | 0.58, 1.84 | 0.92 | 0.84 | 0.44, 1.61 | 0.60 |
| Adjusted | 1.03 | 0.48, 2.20 | 0.95 | 0.93 | 0.51, 1.71 | 0.83 | 0.71 | 0.36, 1.39 | 0.32 |

PCA, principal components analysis; BMI, body mass index; Q, quartile.

a Estimates from a multinomial logistic model controlling for age, education, and wealth. For each dietary pattern comparisons were to quartile 1 (Q1).

**Panel B** Protein dietary patterna

|  |  |
| --- | --- |
|  | Protein dietary pattern |
|  | Q2 | Q3 | Q4 |
|  | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value |
| BMI (kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 2.97 | 0.73, 5.20 | <0.01 | 2.97 | 1.09, 4.86 | <0.01 | 1.86 | 0.11, 3.60 | 0.04 |
| Adjusted | 2.76 | 0.54, 4.99 | 0.02 | 2.83 | 0.95, 4.71 | <0.01 | 1.38 | -0.39, 3.15 | 0.13 |
| Overweight (BMI≥25 kg/m2 and BMI<30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.57 | 0.66, 3.77 | 0.31 | 1.89 | 0.91, 3.91 | 0.09 | 1.84 | 0.90, 3.79 | 0.10 |
| Adjusted | 1.62 | 0.66, 3.97 | 0.29 | 1.82 | 0.87, 3.81 | 0.11 | 1.68 | 0.79, 3.54 | 0.18 |
| Obesity (BMI≥30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 2.46 | 1.11, 5.44 | 0.03 | 2.39 | 1.22, 4.68 | 0.01 | 1.71 | 0.87, 3.37 | 0.12 |
| Adjusted | 2.32 | 1.02, 5.30 | 0.05 | 2.29 | 1.17, 4.48 | 0.02 | 1.46 | 0.73, 2.94 | 0.29 |
| Overweight or obesity (BMI≥25 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 2.08 | 0.99, 4.34 | 0.75 | 2.17 | 1.17, 4.02 | 0.80 | 1.77 | 0.96, 3.27 | 0.15 |
| Adjusted | 2.02 | 0.94, 4.34 | 0.07 | 2.08 | 1.12, 3.86 | 0.02 | 1.55 | 0.82, 2.93 | 0.18 |

BMI, body mass index; Q, quartile.

a Estimates from a multinomial logistic model controlling for age, education, and wealth. For each dietary pattern comparisons were to quartile 1 (Q1).

**Panel C** Healthy dietary patterna

|  |  |
| --- | --- |
|  | Healthy dietary pattern |
|  | Q2 | Q3 | Q4 |
|  | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value |
| BMI (kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | -0.26 | -2.38, 1.86 | 0.81 | 0.46 | -1.15, 2.08 | 0.57 | 1.44 | -0.25, 3.14 | 0.10 |
| Adjusted | -0.56 | -2.65, 1.53 | 0.60 | 0.23 | -1.38, 1.84 | 0.78 | 1.15 | -0.55, 2.84 | 0.19 |
| Overweight (BMI≥25 kg/m2 and BMI<30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.92 | 0.43, 2.00 | 0.84 | 1.17 | 0.59, 2.33 | 0.66 | 1.44 | 0.72, 2.90 | 0.31 |
| Adjusted | 0.90 | 0.41, 1.99 | 0.79 | 1.03 | 0.50, 2.10 | 0.93 | 1.30 | 0.64, 2.64 | 0.48 |
| Obesity (BMI≥30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.88 | 0.43, 1.83 | 0.74 | 1.03 | 0.55, 1.92 | 0.94 | 1.63 | 0.86, 3.10 | 0.13 |
| Adjusted | 0.78 | 0.37, 1.65 | 0.52 | 0.92 | 0.48, 1.77 | 0.81 | 1.43 | 0.75, 2.72 | 0.28 |
| Overweight or obesity (BMI≥25 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.90 | 0.47, 1.73 | 0.75 | 1.08 | 0.60, 1.93 | 0.80 | 1.55 | 0.86, 2.82 | 0.15 |
| Adjusted | 0.83 | 0.42, 1.63 | 0.59 | 0.96 | 0.53, 1.76 | 0.90 | 1.37 | 0.75, 2.51 | 0.30 |

BMI, body mass index; Q, quartile.

a Estimates from a multinomial logistic model controlling for age, education, and wealth. For each dietary pattern comparisons were to quartile 1 (Q1).

**Supplementary Table 3D** Association between principal components analysis derived dietary patterns and body mass index (BMI), overweight and obesity among older women (≥50 y) in Tanzania

**Panel A** Protein dietary patterna

|  |  |
| --- | --- |
|  | Protein dietary pattern |
|  | Q2 | Q3 | Q4 |
|  | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value |
| BMI (kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.34 | -3.30, 3.98 | 0.86 | 1.42 | -2.24, 5.07 | 0.45 | 1.27 | -2.58, 5.11 | 0.52 |
| Adjusted | -0.70 | -4.57, 3.16 | 0.72 | 0.27 | -3.65, 4.20 | 0.89 | 0.81 | -3.29, 4.90 | 0.70 |
| Overweight (BMI≥25 kg/m2 and BMI<30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.09 | 0.30, 4.06 | 0.89 | 1.73 | 0.44, 6.82 | 0.44 | 2.03 | 0.43, 9.64 | 0.37 |
| Adjusted | 0.54 | 0.12, 2.40 | 0.42 | 0.99 | 0.19, 5.13 | 0.99 | 1.62 | 0.27, 9.80 | 0.60 |
| Obesity (BMI≥30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.96 | 0.28, 3.22 | 0.95 | 1.40 | 0.39, 5.07 | 0.60 | 2.59 | 0.64, 10.59 | 0.18 |
| Adjusted | 0.50 | 0.13, 1.95 | 0.32 | 0.76 | 0.16, 3.62 | 0.74 | 2.17 | 0.42, 11.32 | 0.36 |
| Overweight or obesity (BMI≥25 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 1.01 | 0.33, 3.07 | 0.98 | 1.53 | 0.47, 5.01 | 0.48 | 2.40 | 0.63, 9.08 | 0.20 |
| Adjusted | 0.51 | 0.14, 1.79 | 0.29 | 0.84 | 0.19, 3.61 | 0.81 | 1.92 | 0.40, 9.28 | 0.42 |

PCA, principal components analysis; BMI, body mass index; Q, quartile.

a Estimates from a multinomial logistic model controlling for age, marital status, and wealth. For each dietary pattern comparisons were to quartile 1 (Q1).

**Panel B** Traditional dietary patterna

|  |  |
| --- | --- |
|  | Traditional dietary pattern |
|  | Q2 | Q3 | Q4 |
|  | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value | β or OR | 95% CI  | *P* value |
| BMI (kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.58 | -3.02, 4.17 | 0.75 | 3.62 | -0.06, 7.30 | 0.05 | 1.28 | -2.53, 5.09 | 0.51 |
| Adjusted | 1.00 | -2.71, 4.72 | 0.60 | 3.60 | -0.15, 7.35 | 0.06 | 0.75 | -3.21, 4.70 | 0.71 |
| Overweight (BMI≥25 kg/m2 and BMI<30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.59 | 0.15, 2.24 | 0.44 | 0.74 | 0.17, 3.14 | 0.68 | 0.40 | 0.09, 1.72 | 0.22 |
| Adjusted | 0.70 | 0.15, 3.24 | 0.65 | 0.56 | 0.11, 2.93 | 0.50 | 0.18 | 0.03, 1.01 | 0.05 |
| Obesity (BMI≥30 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.76 | 0.21, 2.75 | 0.68 | 1.36 | 0.35, 5.28 | 0.66 | 0.69 | 0.18, 2.65 | 0.59 |
| Adjusted | 0.85 | 0.20, 3.67 | 0.83 | 1.05 | 0.22, 4.97 | 0.95 | 0.31 | 0.06, 1.54 | 0.15 |
| Overweight or obesity (BMI≥25 kg/m2) |  |  |  |  |  |  |  |  |  |
| Unadjusted | 0.68 | 0.21, 2.19 | 0.52 | 1.06 | 0.30, 3.76 | 0.93 | 0.55 | 0.16, 1.91 | 0.35 |
| Adjusted | 0.77 | 0.20, 3.02 | 0.71 | 0.82 | 0.19, 3.55 | 0.79 | 0.25 | 0.05, 1.14 | 0.07 |

BMI, body mass index; Q, quartile.

a Estimates from a multinomial logistic model controlling for age, marital status, and wealth. For each dietary pattern comparisons were to quartile 1 (Q1).

**Supplementary Figure 1A** Food groups retained in the dietary pattern scores for women of reproductive age (18-54 y old) in Ghana

****

DGLV, dark green leafy vegetables. Fried foods included fried chicken, fish or vegetables, including plantains, yams, potatoes and cassava.

**Supplementary Figure 1B** Food groups retained in the dietary pattern scores for women of reproductive age (19-48 y old) in Malawi



Vit A veg, vitamin A-rich vegetables; Vit A, vitamin A-rich; SSB, sugar sweetened beverages. Processed foods included chips, Kamba puffs, samosas, maize popcorn, Jigs, Zigega, and Raja/Royco.

**Supplementary Figure 1C** Food groups retained in the dietary pattern scores for older women (≥55 y old) in Ghana



DGLV, dark green leafy vegetables; SSB, sugar sweetened beverages. Fried foods included fried chicken, fish or vegetables, including plantains, yams, potatoes and cassava.

**Supplementary Figure 1D** Food groups retained in the dietary pattern scores for older women (≥50 y old) in Tanzania



DGLV, dark green leafy vegetables; Vit A, vitamin A; SSB, sugar sweetened beverages. Fried foods included vegetable samosas, crisps, Cassava chips and French fries.

**Supplementary Figure 2A** Scree plot of eigenvalues after principal components analysis deriving dietary patterns among women of reproductive age (18-54 y old) in Ghana



**Supplementary Figure 2B** Scree plot of eigenvalues after principal components analysis deriving dietary patterns among women of reproductive age (19-48 y old) in Malawi



**Supplementary Figure 2C** Scree plot of eigenvalues after principal components analysis deriving dietary patterns among older women of (≥55 y old) in Ghana



**Supplementary Figure 2D** Scree plot of eigenvalues after principal components analysis deriving dietary patterns among older (≥50 y old) in Tanzania

****