Key Foods Approach

This method utilizes existing nutrient profiles and nationally representative food consumption survey data on consumed foods and recipes. The data needed are the mean amounts (in g/day/person) of foods consumed (from food consumption surveys) together with their food composition, based on basic nutrition knowledge (= a rough estimation) and/or data from FCT/FCDB (e.g. nutrient values from same or similar foods from the national or other FCT/FCDB). The mean daily food consumption (in g/day/person) of each food is multiplied by its nutrient content for the nutrient of interest. For example, for iron, the nutrient intake is calculated per food which is then sorted and ranked from highest to lowest intake per food. Those foods contributing up to a cumulative total of 75% of the iron intake are defined as the Key Foods for iron. For each other nutrient, the key foods are determined using the same procedure. Special emphasis is put on nutrients of public health interest.

All key foods should be included in the FCT/FCDB and if chemical analyses are necessary, they should be analysed for the nutrient for which they are key foods. One food can be a key food for several nutrients.

For more information see the example given below and the original paper by Haytowitz et al. (2002).

Source:
Haytowitz DB, Pehrsson PR, Holden JM (2002) The Identification of Key Foods for Food Composition Research. Journal of Food Composition and Analysis, 15(2):183-194.

Selection of foods using the Key Foods Approach

Let's say you find a list of foods (Table 1), which derived from a food consumption survey for a population (this is just an example – it is easy to see that it is not really complete). For each food item, the mean food intake as g/d/person is given, as well as its contents of energy and some selected nutrients (per 100 g edible portion).

Table 1: List of foods derived from a food consumption survey with their corresponding nutrient values

Code	Food item	Mean food intake g/d/person	Energy kJ/100g	Protein g/100g	Cholesterol mg/100g	Fat g/100g	Available carbohydrates g/100g	Iron mg/100g	VitA mcg/100g
1	Cooked maize porridge	661	371	2.1	0	0.6	19.6	0.2	0
2	Brown bread	91	930	8.6	0	2.0	44.1	1.5	0
3	White bread	45	1000	8.5	0	1.8	49.3	1.2	0
4	Full-cream liquid milk	38	257	3.3	14	3.3	4.7	0.1	31
5	Beer	32	172	0.3	0	0.0	3.7	0.0	0
6	Boiled white rice	22	539	2.7	0	0.3	27.5	0.2	0
7	Chicken meat – drumstick, thigh, breast	21	1001	27.3	88	13.6	0.0	1.3	16
8	Beef steak – fillet, sirloin/rump	17	1113	26.0	86	17.2	0.0	3.3	0
9	Grapes, fresh	15	300	0.7	0	0.1	14.7	0.3	3
10	Apple, fresh	11	267	0.2	0	0.1	13.0	0.3	3
11	Mutton	10	1321	25.2	100	23.1	0.0	1.8	0
12	Fat cakes	9	1537	7.2	87	17.7	42.4	1.2	14
13	Peach, fresh	8	305	0.3	0	0.1	14.4	0.4	3
14	Fish – fresh, fried	7	976	25.4	50	14.0	0.0	1.1	33
15	Beef offal	6	697	15.7	319	11.2	0.2	1.2	0
16	Cookies or cakes	4	1541	5.8	70	9.2	70.0	1.9	0
17	Spirits	4	1044	0.0	0	0.0	0.0	0.0	0

We now want to find out which are the most important foods and nutrient contributors. We select **protein** as an example. The following columns are needed for the further calculations (Table2): code, food item, mean food intake and protein content.

Table 2: Selected columns

Code	Food item	Mean food intake g/d/person	Protein g/100g
1	Cooked maize porridge	661	2.1
2	Brown bread	91	8.6
3	White bread	45	8.5
4	Full-cream liquid milk	38	3.3
5	Beer	32	0.3
6	Boiled white rice	22	2.7
7	Chicken meat – drumstick, thigh, breast	21	27.3
8	Beef steak – fillet, sirloin/rump	17	26.0
9	Grapes, fresh	15	0.7
10	Apple, fresh	11	0.2
11	Mutton	10	25.2
12	Fat cakes	9	7.2
13	Peach, fresh	8	0.3
14	Fish – fresh, fried	7	25.4
15	Beef offal	6	15.7
16	Cookies or cakes	4	5.8
17	Spirits	4	0.0

To calculate which food items contribute the most to the protein intake, we need to multiply for each food the mean food intake (g/d/person) by the protein content (g/100 g) and divide this by 100 to obtain the mean protein intake (g/d/person). Example: 661 x 2.1/100 = 13.88. Results for all foods are listed in the column 'protein intake as g/d/person' in Table3.

Table 3: Calculation of the protein intake as g/d/person

Code	Food item	Mean food intake g/d/person	Protein g/100g	Protein intake g/d/person
1	Cooked maize porridge	661	2.1	13.88
2	Brown bread	91	8.6	**7.83**
7	Chicken meat – drumstick, thigh, breast	21	27.3	5.73
8	Beef steak – fillet, sirloin/rump	17	26.0	4.42
3	White bread	45	8.5	3.83
11	Mutton	10	25.2	2.52
14	Fish – fresh, fried	7	25.4	1.78
4	Full-cream liquid milk	38	3.3	1.25
15	Beef offal	6	15.7	0.94
12	Fat cakes	9	7.2	0.65
6	Boiled white rice	22	2.7	0.59
16	Cookies or cakes	4	5.8	0.23
9	Grapes, fresh	15	0.7	0.11
5	Beer	32	0.3	0.10
13	Peach, fresh	8	0.3	0.02
10	Apple, fresh	11	0.2	0.02
17	Spirits	4	0.0	0

The next step is to calculate the total protein intake by summing up the protein intakes of all foods. Thereafter, it is necessary to sort the protein intakes of all foods (g/d/person) in descending order so that we get the most important foods (regarding the protein intake) on the top of the table (see Table 4). We now calculate the % protein intake from the single foods (dividing 'protein intake as g/d/person' by the total protein intake as g/d/person and multiplying by 100).

Sort in descending order

Table 4: Calculation of % protein intake from food

Code	Food item	Mean food intake g/d/person	Protein g/100g	Protein intake g/d/person	% protein intake from food
1	Cooked maize porridge	661	2.1	13.88	31.6
2	Brown bread	91	8.6	7.83	**17.8**
7	Chicken meat – drumstick, thigh, breast	21	27.3	5.73	13.1
8	Beef steak – fillet, sirloin/rump	17	26.0	4.42	10.1
3	White bread	45	8.5	3.83	8.7
11	Mutton	10	25.2	2.52	5.7
14	Fish – fresh, fried	7	25.4	1.78	4.1
4	Full-cream liquid milk	38	3.3	1.25	2.9
15	Beef offal	6	15.7	0.94	2.1
12	Fat cakes	9	7.2	0.65	1.5
6	Boiled white rice	22	2.7	0.59	1.4
16	Cookies or cakes	4	5.8	0.23	0.5
9	Grapes, fresh	15	0.7	0.11	0.2
5	Beer	32	0.3	0.10	0.2
13	Peach, fresh	8	0.3	0.02	0.1
10	Apple, fresh	11	0.2	0.02	0.1
17	Spirits	4	0.0	0	0.0
	Total protein intake			**43.9**	

Protein intake (%) from brown bread:

7.83 ÷ 43.9 x 100 = 17.8%

Sum of protein intake (g/d/p) from individual foods = total

Now, we calculate the cumulative % of protein intake, that is, we add to each '% protein intake from food' the % of the next food, so that in the last line of this table, we end up with a 'cumulative % intake' of 100%.

Table 5: Key Foods for protein

Code	Food item	Mean food intake g/d/person	Protein g/100g	Protein intake g/d/person	% protein intake from food	Cumulative % intake
1	Cooked maize porridge	661	2.1	13.88	31.6	31.6
2	Brown bread	91	8.6	7.83	17.8	49.4
7	Chicken meat – drumstick, thigh, breast	21	27.3	5.73	13.1	62.5
8	Beef steak – fillet, sirloin/rump	17	26.0	4.42	10.1	72.6
3	White bread	45	8.5	3.83	8.7	81.3
11	Mutton	10	25.2	2.52	5.7	87.0
14	Fish – fresh, fried	7	25.4	1.78	4.1	91.1
4	Full-cream liquid milk	38	3.3	1.25	2.9	93.9
15	Beef offal	6	15.7	0.94	2.1	96.1
12	Fat cakes	9	7.2	0.65	1.5	97.5
6	Boiled white rice	22	2.7	0.59	1.4	98.9
16	Cookies or cakes	4	5.8	0.23	0.5	99.4
9	Grapes, fresh	15	0.7	0.11	0.2	99.7
5	Beer	32	0.3	0.01	0.2	99.9
13	Peach, fresh	8	0.3	0.02	0.1	99.9
10	Apple, fresh	11	0.2	0.02	0.1	100.0
17	Spirits	4	0.0	0	0.0	100.0
	Total protein intake			**43.9**		

Key Foods

Threshold 75%

As Key Foods are defined as those that contribute to 75% of nutrient intake, we just need to go down the column 'cumulative % intake' until we pass the threshold of 75% - in our case we need to go until 81.3% (see Table 5). All the foods until this threshold are **Key Foods for protein:** (1) *Cooked maize porridge*, (2*) Brown bread*, (7) *Chicken meat – drumstick, thigh, breast*, (8) *Beef steak – fillet, sirloin/rump* and (3) *White bread*.