Food consumption patterns in the adult population of the Basque Country (EINUT-I)

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Abstract

Objective: Dietary surveys are a valuable tool in nutrition surveillance programmes to monitor the nutritional status of a group or population of a country. The objective of this study was to assess the food consumption pattern in the adult population of the Basque Country (Spain).

Design: A cross-sectional nutritional survey was carried out in 1990. Dietary habits were assessed by means of '24-h recall' during 3 non-consecutive days and a food frequency questionnaire.

Setting: Population survey in the Basque Country (Spain).

Subjects: Random sample of the adult population (25–60 years) in the Basque Country (n = 2348).

Results: Results draw a food pattern characterized by a high consumption of meat, 163 ± 3.04 g day^{-1} (mean ± SEM), supplied mainly by poultry, butchery products, veal and fish (88 ± 2.68 g day^{-1}). The average consumption of milk and dairy products was 359 ± 5.19 g day^{-1}, although 39% of the sample did consume less than 2 portions from this group of foods daily. Olive oil was the most widely used fat for cooking (45%), followed by sunflower seed oil (30%). Cereals supplied 21.5% of the average energy intake and the consumption of vegetables and garden products was 159 ± 3.13 g day^{-1}. Only 29% of the group usually had 2 or more portions of vegetables per day. Women consumed higher amounts of chocolate, cookies, sweets and coffee ($P < 0.01$) than men. Younger adults consumed more meat ($P < 0.01$), while the older community consumed more fish, vegetables and fruit ($P < 0.01$). More highly educated people consumed more dairy products, vegetables and butter ($P < 0.01$). Conversely, less educated people consumed higher amounts of olive oil, pulses and bread ($P < 0.01$).

Conclusions: The dietary pattern observed in the Basque Country, although in keeping with its traditions, is in harmony with the actual dietary trends in Mediterranean countries. In order to satisfy the dietary guidelines suggested by the Spanish Society of Community Nutrition, it would be desirable to gradually increase the consumption of vegetables, fresh garden produce, fruit and cereals. At the same time, it would be advisable to decrease the consumption of animal products (whole fat dairy products, meat, added fats) so the proportion of energy intake from fat can be reduced by 5% (3% from saturated fatty acids).

Keywords
Food habits
Cross-sectional surveys
Population dietary pattern

The main causes of mortality in developed countries, such as cardiovascular diseases and cancer, are closely related to diet, alcohol consumption, smoking and lack of physical exercise, although the genetic basis they act upon, as well as the individual susceptibility to certain processes, cannot be ignored[1,2].

Nutritional surveillance is one of the main objectives of Community Nutrition in order to monitor the nutritional status of the population or selected groups[3]. This procedure makes it possible to identify groups nutritionally at risk, in order to establish priorities for intervention, predict trends and evaluate the effectiveness of nutritional interventions.[3] Food consumption studies are essential for developing food policies within a region or a country. Understanding the food likes and dislikes of the population will help to optimize community interventions[4].

Different methods and strategies have been described to assess food consumption and nutrient intake at population, group or individual level[5,6]. The choice of these methods will depend in each case upon the objectives of the study, level of information

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required, characteristics of the sample and the individuals who will take part, and the budget and resources available for the survey[5,6].

In Spain the National Institute of Statistics has carried out several household budgetary surveys since the 1960s[7-9]. Such surveys consider the assessment of the food available for the household members during a specified period of time. The Ministery of Agriculture, Fisheries and Food has also carried out several surveys and has developed a system for monitoring a panel of consumers[10]. Both data sets refer to food availability, but they do not provide food consumption data.

A limited number of nutritional surveys have been carried out in Spain to assess the nutritional status of the population in a region on a random sample, considering food consumption at individual level, anthropometric measurements and biochemical markers. The first such study was EINUT-I carried out in the Basque Country[11]. A few years later, population nutritional surveys were carried out in the Regions of Madrid[12] and Cataluña[13] using similar procedures to EINUT-I. No nutritional survey has been carried out on a national sample.

The objective of this study was to assess the food consumption patterns in the adult population of the Basque Country, an autonomous region located in the north eastern Cantabric coast of Spain.

Subjects and methods

A cross-sectional nutritional survey was carried out over a random sample of the adult population of the Basque Country (CAPV), aged between 25 and 60 years. The sample was drawn from the voting census for 1986, previously adjusted to 1988, by means of a simple random sampling method. The sampling units were distributed according to region, health plan region and primary health care sector, and proportionally to the population density in each of them. The health plan region was considered the primary sampling unit for the nominal free-living individuals selected. The required sample size was estimated at 3200 individuals, which would allow estimations with a sampling error below 5% at a confidence level of 95%.

The personnel responsible for data collection were trained in the methodology to be used before field work started. After completion of each training module, inter-observer variability and accuracy of portion size measurements were estimated[14]. Field work was completed between 1988 and 1990. Data were collected by means of three interviews with each participant. The first interview took place in a primary health care centre and during this interview the following data were collected: (a) personal data and indicators of socioeconomic level: education, occupation, family and household information[15]; (b) clinical history and drug intake; (c) assessment of food consumption by means of 24-h recall[6,16]; (d) consumption of alcohol[17]; (e) clinical examination for signs relevant to nutritional assessment[18]; (f) anthropometric measurements[19]; (g) physical activity[20]; and (h) biochemical and haematological indicators of nutritional status[18,21]. In a second interview held at the participant's home another 24-h recall and a food frequency questionnaire[16] were completed, as well as questions about food preferences. An additional 24-h recall was completed at the participant's home on a different day. A photograph album was used as a reference aid to estimate portion sizes[22]. Photographs reflected different portion sizes of food preparations and raw foods commonly used in the Basque Country. The food frequency questionnaire consisted of 75 items grouped in 12 food groups: (a) meat, poultry and meat products; (b) fish and fish products; (c) eggs; (d) pulses; (e) cereals and bread; (f) milk and dairy products; (g) fats and oils; (h) vegetables; (i) fruit; (j) sugar, cakes and preserves; (k) beverages; and (l) nuts. For each item participants were asked if they had consumed that item at least once per month during the past 12 months, and whenever the answer was 'yes' further enquiries were made to estimate how many times it had been consumed on average either daily, weekly or monthly. The average portion size consumed for each item was also estimated.

The fifth edition of the *McCance and Widdowson's Composition of Foods* was used to estimate the intake of energy and nutrients[23]. In order to estimate the nutrient intake from local foods not included in the above-mentioned tables, the database was completed with the Spanish food composition tables by Moreiras *et al.* (1993)[24], together with the French tables published by INSERM–ISTA (1985)[25] for the fatty acid content, and by those of the Italian Institute of Nutrition[26] in order to assess complex carbohydrates and sugars. The quality of the diet was assessed by comparison with the Spanish Recommended Daily Intake Values for this age group, by the Department of Nutrition at Madrid Complutense University (1994)[27]. The population intake of energy and nutrients was estimated from the three 24-h recalls, as well as the average consumption by food group. The percentage of consumers for each food group was estimated from the food frequency questionnaire. The number of portions consumed of each food group was estimated and the average portion size consumed was used in the dietary assessment.

Food preferences were assessed by means of five multiple choice questions about the respondent's favourite beverage including alcoholic and non-alcoholic drinks, tea and coffee; favourite fruits; favourite vegetables; and favourite meal. For each question, participants were asked to choose from a list their three favourite foodstuffs and rank them in

Table 1 Characteristics of the sample

Characteristics	Total (n = 2348)		Men (n = 1143)		Women (n = 1205)	
	n	%	n	%	n	%
Age (years)						
25–34	719	30.6	336	29.4	383	31.8
35–44	706	30.1	333	29.1	373	31.0
45–54	609	25.9	296	25.9	313	25.9
55–60	314	13.4	178	15.6	136	11.3
Level of education						
no education	10	0.4	–	–	10	0.8
primary incomplete	277	11.8	134	11.7	143	11.8
primary complete	907	38.6	405	35.5	502	41.7
secondary school	342	14.6	147	12.9	195	16.2
further education	320	13.6	190	16.6	130	10.8
high school	153	6.5	87	7.6	66	5.5
university (3 years)	180	7.7	85	7.4	95	7.9
university (≥5 years)	159	6.8	95	8.3	64	5.3

descending order of preference. If their favourite food was not included in the list they could add and rank it. One more multiple choice question was included regarding food dislikes. Participants ranked their three most disliked foods in descending order.

Statistical analysis was performed by SPSS/PC+[28] and SIGMA[29]. The analysis was performed after poststratification by age, sex and level of education over the weighted sample[30]. Student t-test for groups and ANOVA were performed to compare the group means. Comparison of proportions was tested with the chi^2 test.

The Mann–Whitney and Kruskall–Wallis nonparametric tests were used for comparison of two or more groups, respectively[31], whenever the variables did not follow a Gaussian distribution, even after logarithmic transformation, as tested by the Kolmogorov–Smirnov test. Statistical significance was considered for $P < 0.05$.

Results

At the end of the study 2348 individuals had completed the survey, of which 1143 were male (48.7%) and 1205 were female (51.3%). The response rate was 73.4%. No significant deviations in the composition of the sample from the theoretical one were observed. Average estimations are referred to a group with a mean age of 41.33 ± 10.18 years. Table 1 shows the distribution of the sample.

The estimated mean energy intake was 2485 ± 18 kcal per person per day (mean ± SE). Of daily calories 16% were supplied by protein, 37% by fat and 47% by carbohydrates (alcohol excluded). Of calories 11% in men and 3% in women were provided by alcohol[11].

Table 2 shows the average consumption by food group, in males and females. Table 3 shows the proportion of consumers and the average frequency of consumption by food group. The prevailing food consumption pattern was characterized by a high consumption of meat, which provided 14.7% of the total energy intake, with a higher percentage among males (16%). Within the meat group, poultry (95%), butchery products (86%) and veal (74%) were the most widely consumed items. A high consumption of fish was observed: the varieties most highly consumed were hake (75%), fresh anchovies (72%), cod (63%), small hake (60%) and plaice (54%). Overall, meat plus

Table 2 Mean consumption by food group (g person^{-1} day^{-1}) in men and women. Adult population of the Basque Country (25–60 years)

Food groups	Total (n = 2348)		Men (n = 1143)		Women (n = 1205)	
	Mean (SEM)	P50	Mean (SEM)	P50	Mean (SEM)	P50
Meat	163 (3.04)	140	202 (5.20)	180	126 (2.90)	115
Fish	88 (2.68)	61	105 (4.38)	70	72 (3.10)	51
Eggs	41 (0.98)	25	48 (1.54)	45	33 (1.19)	20
Dairy products	350 (5.19)	309	345 (8.29)	304	354 (6.35)	313
Oil	39 (0.30)	38	40 (0.44)	38	38 (0.41)	38
Vegetables	159 (3.13)	130	164 (4.85)	130	154 (4.00)	130
Potatoes	90 (2.45)	50	111 (3.95)	76	70 (2.85)	50
Fruit	345 (7.35)	280	351 (10.68)	275	340 (10.12)	300
Legumes	21 (0.82)	17	28 (1.36)	20	15 (0.92)	8
Cereals	52 (1.33)	35	57 (2.19)	35	48 (1.54)	35
Bread	121 (1.78)	110	157 (2.73)	150	87 (1.84)	78
Sugar	27 (0.59)	20	28 (0.88)	20	25 (0.78)	20

P50, 50th percentile (median).

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Table 3 Food consumption pattern in the Basque Country as frequency of consumption and percentage of usual consumers ($n = 2348$)

Men ($n = 1143$)					Women ($n = 1205$)			
Consumers (%)	Food group	Servings day^{-1}		RDS	Consumers (%)	Food group	Servings day^{-1}	
99.4	Meat	1.5			99.7	Meat	1.5	
99.2	Fish	0.6			98.6	Fish	0.6	
98.2	Eggs	0.7	(2.8)[1]	2	98.3	Eggs	0.6	(2.8)[1]
88	Milk	1.73			94.6	Milk	1.77	
81	Dairy Produce	1.17	(2.9)[2]	> 2	83	Dairy Produce	1.14	(2.9)[2]
90	Raw vegetables	0.63		> 1	92.8	Raw vegetables	0.7	
93	Cooked vegetables	0.34		> 1	96	Cooked vegetables	0.4	
92	Fruit	2.3		> 2	98	Fruit	2.3	
97	Cereals and starch	3.84		> 4	93	Cereals and starch	3.4	
97	Legumes	0.4		0.43	93	Legumes	0.4	

RDS, recommended daily servings (frequency of consumption).
[1] Sum of meat + fish + eggs.
[2] All dairy products: milk + dairy produce.

fish plus eggs supplied 2.8 portions day^{-1} to the average food pattern.

Yoghurt and cheese were the dairy products consumed in higher amounts. However, 39% of the group had less than 2 servings of milk and/or dairy products per day. This food group supplied 11.3% of daily energy intake on average, with a slightly higher intake among women (13.3%). Foods from animal origin supplied 67% of the saturated fatty acids (SFA) of the average diet. The main sources of fat in the diet[32] were edible fats (43%), meat (23%) and dairy products (14%). The latter two groups provided 30% and 27% of SFA, respectively. Olive oil was the most widely used added fat (45%), followed by sunflower seed oil (30%) and a combination of olive oil and sunflower seed oil (20%). Edible fats supplied 16.6% of the total energy intake, with a higher proportion among the female group (19.6%). The consumption of butter (1.08 ± 0.11 g day^{-1}) and margarine (2.53 ± 0.17 g day^{-1}) was low, with 13% and 24% consumers, respectively.

Daily baked fresh bread was the main food item within the cereal group. This food group supplied 21.5% of daily energy intake. Of women 15% consumed whole grain bread. Only 29% of the sample had 2 or more servings of vegetables (potatoes excluded) daily. Overall, the vegetable group, including pulses and potatoes, supplied 7% of energy intake in the average diet. Of the sample 55% had less than 2 servings of fruit per day. Oranges (86%), apples 80%, pears (50%) and bananas (45%) were the varieties most widely consumed. Fruits, including nuts, provided 7.2% of the daily energy intake on average, with a higher proportion among the female subgroup (8.2%). Sugar and sweets supplied 7.2% of the daily energy intake, which again was slightly higher for women (8.3%).

Alcoholic beverages, soft drinks and pre-packed juices together supplied on average 8.5% of caloric intake. Of men 58% and 16% of women had daily alcohol intakes above 5% of their total energy intake. This fact was particularly observed among men aged 35–54 years. Red wine was the most widely consumed alcoholic beverage, with 69.4% consumers among males and 39% in the female subgroup. Average consumption for male consumers was 484 ml day^{-1}

Table 4 Mean consumption by food group (g person^{-1} day^{-1}) in men by age

	25–34 years (n=336)		35–44 years (n=333)		45–54 years (n=296)		55–60 years (n=178)	
Food groups	Mean (SEM)	P50	Mean (SEM)	P50	Mean (SEM)	P50	Mean (SEM)	P50
Meat	209 (8.92)*	182	224 (9.26)	190	190 (8.56)	170	154 (9.54)	150
Fish	98 (7.55)	25	101 (7.37)	30	113 (9.56)	30	118 (11.86)*	40
Eggs	54 (3.00)	50	49 (2.90)	50	44 (2.98)	25	43 (3.24)	40
Dairy products	425 (18.05)	370	324 (14.14)	283	300 (14.28)	268	314 (17.80)	257
Oil	38 (0.92)	43	38 (0.75)	43	41 (0.83)	43	41 (1.06)	43
Vegetables	152 (9.47)	120	172 (8.55)	140	167 (9.52)	130	164 (11.88)	125
Potatoes	114 (8.00)	70	106 (6.67)	80	119 (7.99)	80	99 (9.08)	60
Fruit	255 (16.95)	150	336 (19.71)	280	427 (22.37)	350	437 (27.21)*	390
Legumes	27 (2.50)	17	25 (2.67)	12	32 (2.60)	25	28 (3.18)	21
Cereals	242 (4.08)	229	205 (3.12)	205	199 (3.39)	190	189 (4.85)	170
Sugar	31 (1.65)	25	29 (1.61)	20	25 (1.73)	20	23 (2.18)	20

* $P < 0.001$. Results of comparison of the groups by non-parametric Kruskal–Wallis test.

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Table 5 Mean consumption by food group (g person^{-1} day^{-1}) in women by age

	25–34 years (n=383)		35–44 years (n=373)		45–54 years (n=313)		55–60 years (n=136)	
Food groups	Mean (SEM)	P50	Mean (SEM)	P50	Mean (SEM)	P50	Mean (SEM)	P50
Meat	140 (5.19)*	135	128 (5.58)	120	114 (5.25)	100	104 (7.70)	90
Fish	74 (5.79)	55	65 (5.25)	41	80 (6.00)	61	70 (9.68)	49
Eggs	34 (2.02)	20	34 (2.07)	20	31 (2.10)	16	30 (3.20)	16
Dairy products	375 (11.67)	336	337 (11.68)	283	340 (10.93)	309	370 (17.38)	340
Oil	36 (0.66)	43	39 (0.79)	43	40 (0.84)	43	39 (1.16)	38
Vegetables	150 (6.69)	135	164 (7.62)	145	140 (7.49)	110	167 (12.85)	140
Potatoes	72 (5.19)	50	68 (5.24)	41	63 (4.75)	38	83 (9.86)	66
Fruit	247 (12.87)	200	346 (24.08)	270	408 (15.78)	390	435 (27.81)*	400
Legumes	14 (1.50)	9	16 (1.61)	11	17 (2.02)	12	15 (2.76)	10
Cereals	146 (2.94)	134	132 (2.87)	120	128 (2.80)	120	134 (3.62)	125
Sugar	26 (1.44)	20	27 (1.48)	20	23 (1.36)	20	23 (2.09)	20

* $P < 0.001$. Results of the comparison of the groups by the non-parametric Kruskal–Wallis test.

and for female consumers 169.4 ml day^{-1}. Of the men 60% consumed beer, with an average of 266 ml day^{-1}. Among the women, there were 25.5% consumers, who on average had 67.7 ml day^{-1}. Mean consumption of coffee was significantly higher among women ($P < 0.01$).

The food consumption pattern showed significant differences between the sexes. Women had significantly higher consumption of chocolate ($P < 0.01$), cookies ($P < 0.01$); buns and pastries ($P < 0.001$); sweets ($P < 0.01$), fruit juice ($P < 0.05$); and coffee ($P < 0.001$) compared to the male subgroup.

Tables 4 and 5 show mean consumption by food group in men and women by age group. Younger males and females had higher intakes of sausages, butchery products, pork and overall meat ($P < 0.01$). Younger people consumed more beer ($P < 0.01$) and soft drinks ($P < 0.01$). Men aged 35–44 years had the highest consumption of red wine ($P < 0.001$) and spirits ($P < 0.001$). Older people, conversely, consumed more fish ($P < 0.01$); vegetables ($P < 0.001$); and fruit ($P < 0.001$). Men and women over 45 years of age consumed more oil compared to younger people ($P < 0.001$). Consumption of coffee was higher among women aged 35–54 years ($P < 0.001$), compared to other subgroups.

Significant differences could be observed depending on the level of education, adjusted for age. Higher educated people consumed more breakfast cereals ($P < 0.01$); dairy products ($P < 0.001$); garden vegetables ($P < 0.001$); chocolate ($P < 0.01$); cakes, cookies and buns ($P < 0.01$); butter ($P < 0.01$); beer ($P < 0.01$) and mayonnaise ($P < 0.01$). Lower educated people consumed more oil ($P < 0.001$); fish ($P < 0.05$); pulses ($P < 0.001$); bread ($P < 0.01$) and fruit ($P < 0.001$). Women with a job had higher intakes of vegetables ($P < 0.05$); buns ($P < 0.001$); and alcoholic beverages compared to other female groups ($P < 0.01$). Conversely, women who remained in the house had higher consumption of pulses ($P < 0.01$). Consumption of alcoholic beverages in the male subgroup was significantly higher among those with a stable job as employees ($P < 0.01$).

Overall, meat was ranked the highest as the favourite food both in males and females, followed by fish, potatoes and rice. The foodlikes profile showed differences between men and women. Men scored higher for meat, potatoes and pulses, while women rated higher scores for fish, rice, sweets, fruit, pasta and milk. The favourite beverage for men was red wine, followed by water, beer and coffee. For the female subgroup the favourite drinks were water and coffee, followed by red wine and soft drinks. Of the sample 35% did not like one or more food items and avoided them in their diets. Some vegetables scored the highest among dislikes, followed by milk, beans and lentils.

Discussion

The high participation rate in this epidemiological survey was due to the wide institutional support, careful planning and detailed field work. The distribution of the sample after data collection did not show significant deviations from the theoretical sample. The results of this study show that the food consumption pattern obtained from the Spanish Household Budgetary Surveys[7–9], despite the limitations, reflected quite accurately the prevailing food consumption patterns in the Basque Country (Fig. 1). The dietary assessment methods used in the EINUT survey have made better estimates for alcohol consumption possible[32]. In the Basque Country alcoholic drinks are usually consumed outdoors, and are therefore underestimated in household surveys.

In post-industrial western societies, food habits are highly influenced by the diverse abundance on offer, higher family incomes and sedentary lifestyles[33]. In the Basque Country the most important changes took place between the 1960s and 1990[34]. As in other Mediterranean countries, these changes have been characterized by a decrease in the consumption of bread, potatoes, pulses and milk. At the same time, an increase in the consumption of meat, fish, sugar, buns, refined food stuffs and dairy products has been observed.

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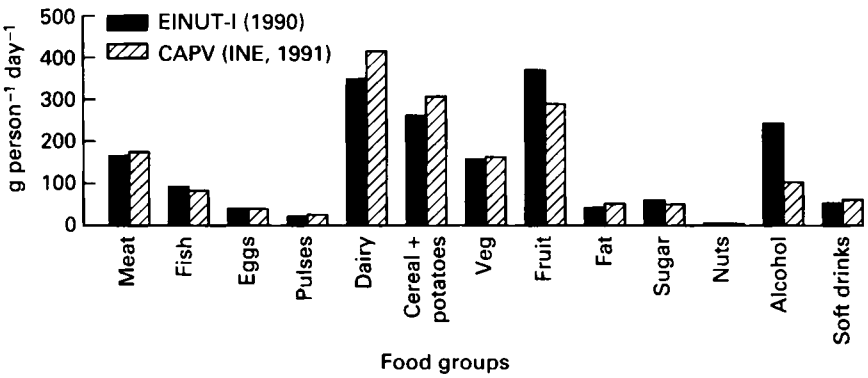

Fig. 1 Food consumption pattern in the Basque Country. Comparison of data from the Household Budgetary Survey (1991) and EINUT-I survey (1990). INE, National Institute of Statistics Household Budgetary Survey[9]; EINUT-I, Nutritional Survey of the Basque Country[11].

Data from household budgetary surveys carried out in Spain between 1961 and 1991[7–9,35], show the changing trends in the average food profile. Although the different Spanish regions show a pattern similar to that of other Mediterranean countries, there are differences regarding specific foods[36]. Northern Spanish regions show higher consumption of potatoes, pulses, fish, milk and dairy products, eggs, oil and alcoholic drinks, particularly red wine. Southern and eastern areas show higher consumption of meat, cereals and vegetables compared to the north. Mortality rates due to coronary heart disease (CHD) in Spain are among the lowest in the world, although there are significant differences within the country. Mortality rates due to CHD are higher in the south-east of the country, Balearic Islands and Canary Islands compared to the north. Spanish epidemiological studies suggest that the higher consumption of red wine and fish in the north could partly explain this paradox[37].

In Table 6 the present food consumption patterns in the Basque adult population is compared to that observed in population surveys carried out using the same dietary assessment methods in the Spanish regions of Cataluña[13] and Madrid[12], the Dietary Survey of British Adults[38] and the Dietary Survey of The Netherlands[39]. The latter two surveys reflect cross-sectional data on dietary intake. Consumption of cereals and potatoes is lower in the Spanish studies than in Northern European countries. The consumption of fish in all Spanish studies is considerably higher than in Northern European countries, with an intake close to that observed in countries such as Japan, which has a very high consumption of fish[40]. The consumption of red wine in Spain is also higher, particularly in the Basque Country, as is the consumption of fruit—well above the observed levels in the UK or The Netherlands. The consumption of vegetables and garden produce is higher in the Spanish studies, particularly in Cataluña. Many epidemiological surveys support the protective role of fruit and vegetables against chronic and degenerative processes[41]. These food groups are important sources of antioxidant nutrients (carotenoids, vitamin C, fibre) and non-nutrient substances (flavonoids, terpens)[42]. Therefore, in the Basque Country it would be desirable to increase the consumption of vegetables from the estimated 1 serving day^{-1} to reach 2

Table 6 Comparison of the average food consumption pattern in different population surveys (g person $^{-1}$day^{-1})

Food groups	CAPV[1]	Cataluña[2]	Madrid[3]	UK[4]	The Netherlands[5]
Meat	162	172	145	150	111
Fish	89	76	89	27	10
Eggs	41	30	22	23	14
Milk	294	170	286	234	–
Dairy products	57	63	71	29	401
Legumes	22	22	36	34	7
Cereals	174	168	171	235	223
Potatoes	90	72	82	126	118
Vegetables	159	224	177	102	128
Fruit	346	288	290	73	114
Oil and added fat	45	30	40	19	51
Sugar	27	20	20	18	42
Alcoholic beverage	244	–	172	302	157

1 Nutritional Survey of the Basque Country (Spain), 1990[11].
2 Nutritional Survey of Cataluña (Spain), 1992–93[13].
3 Nutritional Survey of the Region of Madrid (Spain), 1992–93[12].
4 Dietary and Nutritional Survey of British Adults, 1990[38].
5 Zo eet Nederland, 1992[39].

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or more servings day^{-1}, provided the intake of fruit remains or increases above the estimated values.

In conclusion, the dietary patterns observed in the Basque Country are in harmony with the actual dietary trends in Mediterranean countries. Dietary patterns reflect the traditional flavour, organoleptic and cultural quality, according to the social and cultural value of food in the Basque society[34]. In order to satisfy the dietary guidelines suggested by the Spanish Society of Community Nutrition[43], it would be desirable to gradually increase the consumption of vegetables, fresh garden produce, fruit and cereals. At the same time, it would be advisable to decrease the consumption of animal products (whole fat dairy products, meat, added fats) so the proportion of energy intake from fat can be reduced by 5% (3% from SFA).

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