

Trends in food availability in Portugal – the DAFNE III project

Rodrigues SSP and de Almeida MDV

Faculty of Food and Nutrition Sciences of Porto University - Portugal

Introduction

The use of household budget survey (HBS) data for nutritional purposes is advantageous. This information, which is regularly collected and updated, allows a cost-effective assessment of trends in food habits and the identification of population sub-groups whose dietary habits are not favourable to health. In the case of Portugal, the use of HBS data for nutritional purposes is particularly important. The only Portuguese National Dietary Survey was held in 1980 and its results are thus out of date. Apart from regional dietary surveys of limited scope, undertaken in the context of scientific investigation, Portugal has no data on the dietary habits of the general population. Food Balance Sheets, collected yearly by the National Statistics Institute (INE), have been used for nutrition education and policy purposes. However, Food Balance Sheets are of limited use as they only provide crude data on food availability at the country level. The participation of Portugal in the DAFNE project contributes to a better knowledge of food habits both at the national level and by important socio-economic variables. Furthermore, integration into a European database under the rules of a standard protocol, will improve the comparability of the Portuguese dietary habits with those of other European countries.

Portuguese HBS are carried out by INE every 5 years. Data for the 2000/01 HBS is still being processed, thus the two most recent HBS with complete information are those of 1989/90 and 1994/95. Although the quantities of food purchased by each household have always been recorded in the Portuguese HBS, these data have never been analysed for purposes other than economic ones.

Methodology

Data from the 12,403 households of the 1989/90 and 10,554 households of the 1994/95 Portuguese HBS were analysed. DAFNE rules and procedures were applied to data collected by INE in the context of the 1989/90 and 1994/95 Portuguese HBS. All household members were asked to record their purchases on a daily basis for a period of 7 days (1989-90) or 14 days (1994-95), and due caution was taken to capture seasonal variability in food consumption. Details about DAFNE project and the Portuguese HBS can be found elsewhere ¹⁻³.

The overall mean availability (quantity per person per day) was estimated for the main DAFNE food/beverages groups: **Cereal and cereal products (g), Potatoes (g), Pulses (g), Vegetables (g), Fruits (g), Nuts (g), Meat (g), Fish and seafood (g), Eggs (pieces), Added lipids (g), Milk products (g), Sugar and sugar products (g), Alcoholic beverages (ml), Non-alcoholic beverages (ml), Fruit and Vegetable juices (ml)**. Data were also analysed by selected socio-demographic variables, the DAFNE comparable groups on **Locality** (Three groups: a) Rural, b) Semi-urban and c) Urban), **Education** (Five groups: a) Illiterate/elementary education not completed, b) Elementary education completed, c) Secondary education not completed, d) Secondary education completed and e) College or University completed), **Occupation** (Four groups: a) Manual, b) Non Manual, c) Retired and d) Others [students, housewives, unemployed invalid persons]) and **Household Composition** (Classified under: a) One-adult, b) Two-adult, c) One adult and children (lone parent), d) Two adult and children, e) Adult and elderly, f) Adult, elderly and children, g) One-elderly and, h) Two-elderly households).

Results

General sample characteristics

The total number of individuals included in 1989/90 and 1994/95 HBS was 40,047 and 32,124, respectively. The mean number of household members was 3.1 in 1989/90 and 3.0 in 1994/95 (varying from 1 to 14). In both surveys, women slightly outnumbered men (in 1989/90, 52.5% women and 47.5% men; in 1994/95, 52% women and 48% men). Adults represented 55% and 60%, children (less than 19 years old) 30.5% and 21%, elderly (more than 64 years old) 14.5% and 19%, respectively for 1989/90 and 1994/95.

Pattern of food/beverages expenditures

For the 1989/90 and 1994/95 samples respectively, the average total expenditures for food and beverages represented 39% and 31% of the total household expenses, of which 77% and 72% were expenses for home consumption and 24% and 28% for consumption outside the household.

Food/beverage availability

With the exception of meat, fish and seafood, milk and milk products, nuts and non-alcoholic beverages, the average *per capita* availability for Portugal decreased between 1989/90 and 1994/95 (Table 1).

Table 1: Overall mean food availability in Portugal, by year (quantity/person/day).

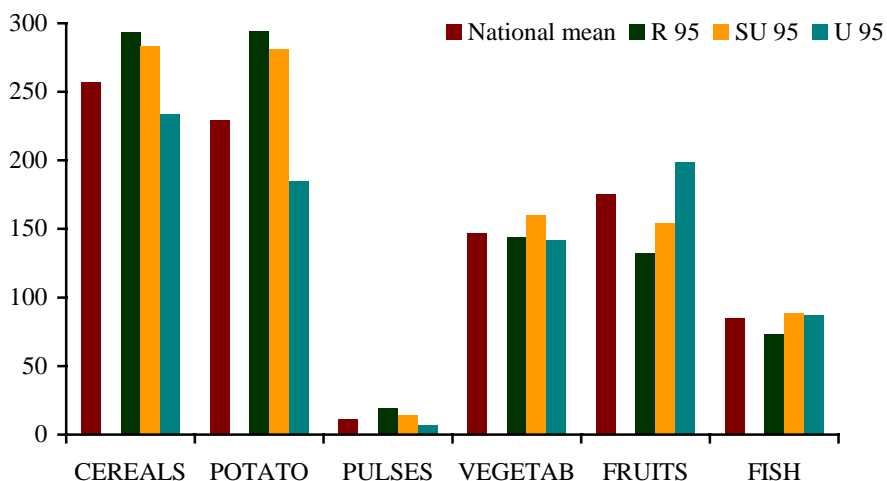
Food Groups	1989/90	1994/95
Cereals and cereal products (g)	291	257
Potato and other starchy roots (g)	323	229
Pulses (g)	14	11
Vegetables (fresh and processed) (g)	150	147
Fruits (fresh and processed) (g)	211	175
Nuts (g)	2.3	2.4
Meat and meat products (g)	143	163
Fish and seafood (g)	74	85
Eggs (pieces)	0.3	0.2
Total added lipids (g)	63	56
Milk and milk products (g)	252	261
Sugar products (g)	43	34
Non-alcoholic beverages (ml)	97	129
Fruit and vegetable juices (ml)	2.2	1.6
Alcoholic beverages (ml)	190	139

Source: the DAFNE databank

As there are few differences between the two surveys in what concerns analysis by socio-economic variables and due to space constraints, only results from the 1994/95 will be presented. Figures will focus on selected food groups associated with the Mediterranean diet - cereals, potato, pulses, vegetables and fruits - and with the particular geographical situation of Portugal - fish and seafood.

In analyses by locality, urban households tend to have higher availability of milk and milk products, **fruits** and **fish and seafood**. With respect to the remaining food groups, availability is higher either in rural areas, which is the case of lipids, **cereals**, **potatoes** and **pulses**, or in semi-urban zones, as in the case of meat, **vegetables** and alcoholic beverages. (Figure 1)

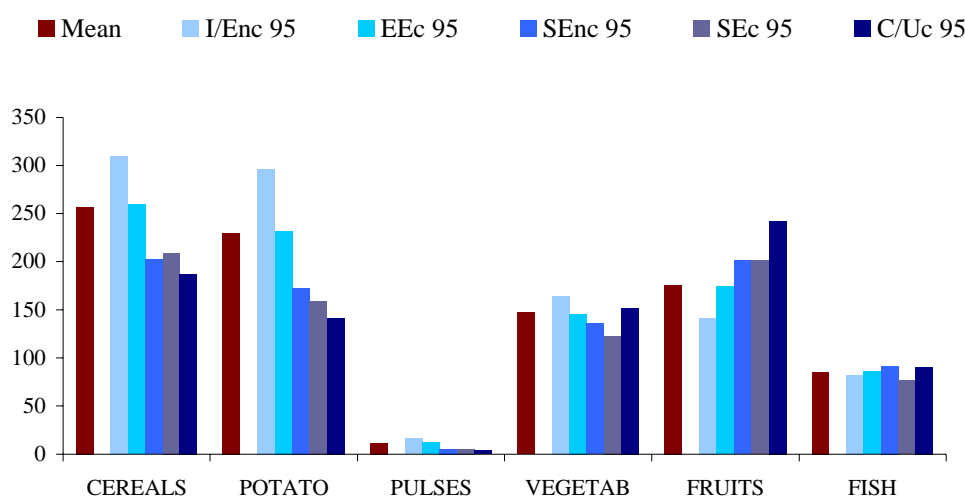
Figure 1 - Average food availability in 1995, by Locality (g/person/day)



Legend: R - Rural, SU - Semi-urban, U - Urban.

The level of education of the household head may also be a factor affecting food availability. Higher availability of **cereals**, **potatoes**, **pulses**, **vegetables**, lipids, sugar and sugary products and alcoholic beverages is recorded in households of lower education. The contrary applies to the availability of nuts, **fruits**, milk and milk products and non-alcoholic beverages, which is higher among the more educated households. (Figure 2)

**Figure 2 - Average food availability in 1995 by education of the household head
(g/person/day)**

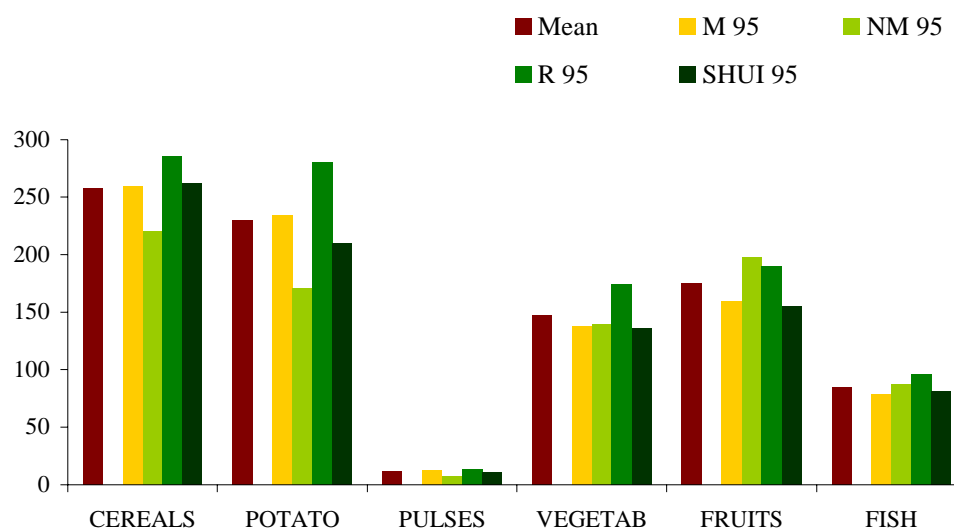


Legend: I/EEnc - Illiterate/elementary education not completed, EEc - Elementary education completed, SEnc - Secondary education not completed, SEc - Secondary education completed, C/Uc - College/University completed.

In what concerns the occupation of the household head, manual workers have higher availability than non manual for **cereals**, **potatoes**, **pulses**, alcoholic beverages and sugar products, while very similar values were found for **vegetables**, meat and added lipids. Comparing with manual and non-manual, the retired group generally presents higher availability, with the exception of meat, milk products, nuts, **fruits**, non-alcoholic beverages and juices. (Figure 3).

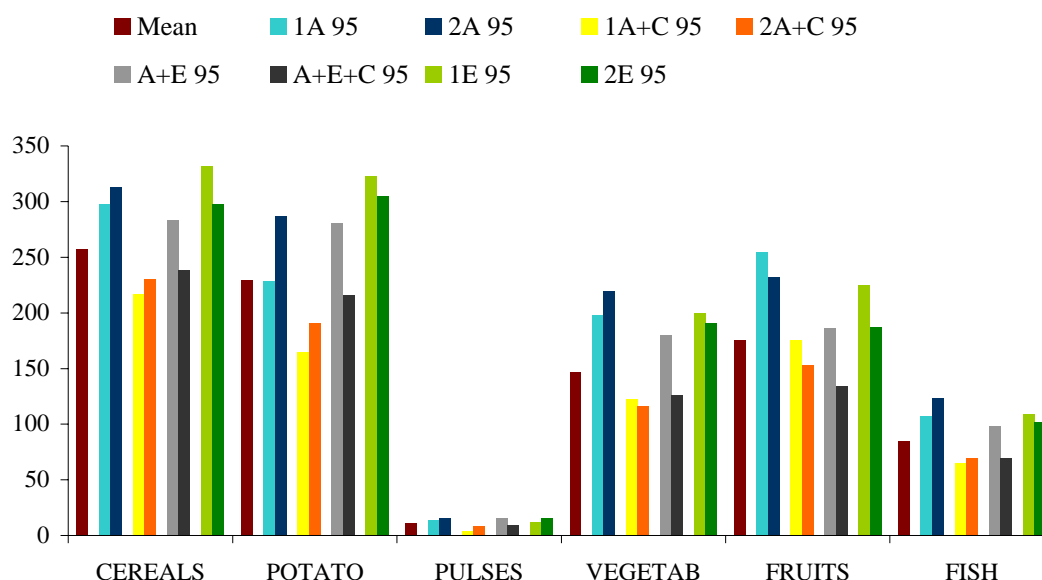
The composition of the household in relation to number and age of its members was also analysed. Two adult households have lower availability than the adults living alone for milk and milk products, **fruits**, non-alcoholic beverages, sugar products and juices. Elderly couples have higher values than one member of the same age group living alone only for meat, **pulses**, nuts and juices (Figure 4).

Figure 3 - Average food availability in 1995, by occupation of the household head (g/person/day)



Legend: M - Manual, NM - Non manual, R - Retired, SHUI – Others (students, housewives, unemployed and invalid persons).

Figure 4 - Average food availability in 1995, by Household Composition (g/person/day)



Legend: 1A - 1 adult, 2A - 2 adults, 1A+C - 1 adult and children, 2A+C - 2 adults and children, A+E - Adults and elderly, A+E+C - adults and elderly and children, 1E - 1 elderly, 2E - 2 elderly.

Discussion

A five-year period may be too short to reveal, in a convincing way, long-term trends. However, some indications may be apparent. Between 1989/90 and 1994/95, an increased availability is shown for the non-alcoholic beverages (+33%) and for the main protein supplying groups (+15% for meat and fish/seafood; +4% for milk/milk products); whereas the availability of all the other food groups has decreased. The latter finding is intriguing in view of the Portuguese Food Balance Sheets (FBS) records for the past 10 years⁴. Within the same time period, 1990 to 1995 FBS, only potatoes, pulses and alcoholic beverages have decreased⁴, although the decrease on HBS values is similar to that found in data for other European countries. The increasing habit of eating out is certainly an important factor that has to be considered. Indeed, within a five-year period, the proportion of total household food expenditures outside home increased around 5% (from 21% in 1990 to 28% in 1995) in Portugal.

It is interesting to compare data from FBS and HBS, without forgetting the limitations and methodological differences between these two types of studies. As expected the national *per capita* edible values from the 1995 Portuguese FBS⁴ were higher than HBS for all food groups, with the exception of fish/seafood (19.6% lower). Results from FBS were higher but expressed with different proportions depending on the food group, varying from only +0.7% for meat to +194.6% for nuts. Lower differences were found for milk and milk products (+16.5%), pulses (+18.8%), fruits (+23.6%) and cereals (+24.3%). Values upper than fifty percent were obtained for potatoes (+53.0%), vegetables (+54.5%), eggs (+73.9%), lipids (79.0%), alcoholic beverages (+157.3%) and sugar (+160.7%). The lack of information on outside home consumption, the food for institutional households and catering on the HBS results, the losses on transport and storage, FBS commodities that usually form ingredients for the preparation of food items purchased by the households, own production which is not considered in the FBS data, undeclared imports and exports may partially explain such differences, although, as many other factors can be involved, further research on this subject is needed.

To sum up an overview of the 1995 Portuguese data is presented. Food availability by locality shows a pattern distinguishing rural and urban areas. In rural areas, the availability is lower for those food groups that are essentially animal protein suppliers and in urban areas this happens with foods that are essentially carbohydrate suppliers. Rural households, in comparison to urban ones, have also higher availability of total added lipids, as well as of alcoholic beverages. For meat, vegetables and alcoholic beverages, the semi-urban availability values are the highest, while for the

rest of the groups the values reported by semi-urban households are similar or in-between those in urban and rural areas.

The average *per capita* availability by educational level of the household head shows patterns clearly reminiscent of those by locality. Thus availability of fruits, meat, fish and seafood, added lipids of animal origin, milk and dairy products tends to increase with educational level, whereas the availability of the remaining food groups is fairly stable or tends to decline with education. There is apparently some element of confounding, with respect to food availability, between locality and educational level since urban localities are characterised by higher average levels of education.

In what concerns the occupation of the household head it can be seen that the retired, in comparison with the employed groups, generally present higher availability. Manual workers tend to have higher availability than non manual for alcoholic beverages and some carbohydrates suppliers - cereals, potatoes, pulses, and sugar products, while the opposite pattern is shown for non-alcoholic beverages, juices, fruits, nuts and some protein suppliers - milk products, eggs, fish and seafood and very similar values were found for vegetables, meat and added lipids. The group of students, housewives, unemployed and invalids was difficult to interpret due to its heterogeneity.

Some difficulties were found for the analysis of the comparable categories for the composition of the household. In relation to number and age of its members, the heterogeneity of some groups limits comparisons between some specific groups. Two adult households have lower availability than the adults living alone only for milk products, fruits, non-alcoholic beverages, sugar products and juices. Elderly couples have higher values than one member of the same age group living alone only for meat, pulses, nuts, alcoholic beverages and juices.

For a better understanding of the Portuguese data, results will be discussed in comparison to those of other countries that have participated in the DAFNE project. The latest Portuguese results (1994/95) will thus be compared with those of countries that have undertaken HBS at similar periods: Luxembourg (1993), United Kingdom (1993) and Norway (1992/93/94)⁵.

From 1989/90 to 1994/95, cereal and cereal product, potato and pulses availability has decreased in Portuguese households but is still between the highest ones in the DAFNE participating countries, with the possible exception of Greece. In the relatively high availability countries, there is also a

gradient between rural-urban areas and among households of different educational level, whereas no such patterns are evident in the low availability countries. It appears that cereals and pulses that once dominated the diet of the Southern Europeans tend to decline in importance, reflecting the abandonment of the traditional Mediterranean diet at the very time when its health promoting effects are generally recognised⁶.

When compared with other DAFNE countries, which are not dissimilar to a cross-section of the European countries, Portugal has an intermediate vegetable and fruit availability, with Greece leading in availability. Availability in Portugal is higher than in Northern European countries like Norway and the United Kingdom. It is worth noting that in Portugal fruit availability is higher in the high educational level households, whereas the opposite is true for vegetable availability. The relative role of price, health education, taste and convenience in the differential consumption of fruits or vegetables by socio-demographic groups has only recently received due attention⁷.

Portugal has become one of the countries with high meat availability but, on the positive side, it continues to be a DAFNE country with high availability of fish and seafood. To the extent that meat is more preferred in urban than in rural areas but shows no gradient with education level, whereas fish and seafood are more available among the trend-leading educated households, the pattern of consumption of these particular foods is more conducive to health among the Portuguese than among Central Europeans.

In Portugal, availability of added lipids is high, following the pattern found for Spain and Greece. As also shown in other countries, highly educated show smaller values than the lower educated and rural areas have higher availability than urban ones.

Availability of milk and milk products is intermediate in Portugal in comparison to other DAFNE countries. There is no evident trend in the availability of these food groups between the two HBS, but the higher consumption of milk and dairy products in the urban populations and among the more educated in Portugal suggests that future trends may be upward.

Portugal is a wine country and the availability of alcoholic beverages is quite high. As in other wine countries, availability is higher in rural than urban areas, higher among the lower educated households and tends to decline between the two household budget surveys. Availability of non-alcoholic beverages is much lower in Portugal and other Southern European countries in

comparison to Central and Northern Europe. Indeed, availability in Portugal is less than 20% of that in Luxembourg and less than 30% than in Norway or the United Kingdom. However, availability of non-alcoholic beverages increases from rural to urban and with the educational level of the household and it is considerably higher in the most recent HBS.

Global factors, such as the economic development, the abolishment of commercial borders, the increase in the variety of commodities available and in purchasing power have clearly changed the food availability situation among European Countries. On the other hand, socio-cultural constraints and particular lifestyles keep alive some food habits and patterns, which in part can explain the still substantial differences across Europe.

Portugal is one of the southern European countries whose dietary habits are commonly referred to as belonging to the “Mediterranean diet”. Although still within the countries with higher availability of cereal/cereal products, pulses, fish/seafood and olive oil, it is clear that Portugal is moving away from the main characteristics of this traditional food pattern. The decrease on the availability of the principal carbohydrates supplier groups and of olive oil, together with the increase of the main protein supplier groups, clearly shows this changing pattern. Substantial disparities can be observed by locality and by the level of education of the household head. Those from the urban areas and those with high education level seem to be the main actors of the changes in “traditional” food habits.

In the case of Portugal, the HBS records are at the moment the nationally representative data most close to consumption. Nevertheless, they do not provide an adequate substitute for national food and nutrition surveys that should be implemented and held regularly. Using data from HBS for nutritional purposes is however very important for time evolution analysis within countries and for international comparisons. The valuable data bank that is being constructed by the DAFNE project represents an important tool for scientifically valid analysis, projections and eventually policy formulations.

Acknowledgements

The authors gratefully acknowledge the “Instituto Nacional de Estatística”, the Portuguese institution responsible for the Household Budget Surveys, for allowing us the use of its databases.

This study was conducted in the context of the DAFNE III project entitled "European food availability databank based on Household Budget Surveys", supported by DG-SANCO of the European Union.

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