DAFNE
DAta FoodNetworking

The DAta Food NEtworking (DAFNE) project

EUROPEAN FOOD AVAILABILITY DATABANK BASED ON HOUSEHOLD BUDGET SURVEYS

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LIST OF PARTICIPANTS

BELGIUM

Dr. Remaut de Winter A.M.
Dept. of Food Technology and Nutrition, Faculty of Agricultural and Applied Biological Sciences, University of Gent.

Mr. Perez Cueto Eulert FA.
Dept of Food Technology and Nutrition, Faculty of Agricultural and Applied Biological Sciences, University of Gent.

FRANCE

Dr. Volatier J.L.
Unité Observatoire de Consommation Alimentaire, Food Safety Agency (AFFSA).

Ms. Maffre J.
Unité Observatoire de Consommation Alimentaire, Food Safety Agency (AFFSA).

GREECE (coordinating centre)

Dr. Trichopoulou A. (co-ordinator)
Department of Hygiene and Epidemiology, School of Medicine, University of Athens.

Ms. Antoniou A.
Department of Hygiene and Epidemiology, School of Medicine, University of Athens.

Mr. Chloptsios Y.
Department of Hygiene and Epidemiology, School of Medicine, University of Athens.

Dr. Naska A.
Department of Hygiene and Epidemiology, School of Medicine, University of Athens.

Ms. Oikonomou E.
Department of Hygiene and Epidemiology, School of Medicine, University of Athens.

Mr. Tsiotas K.
Department of Hygiene and Epidemiology, School of Medicine, University of Athens.

IRELAND

Ms. Friel S.
National Nutrition Surveillance Centre, Department of Health Promotion, National University of Ireland.

Mr. Dalton J.
Household Budget Survey, Central Statistics Office.

ITALY

Dr. Turrini A.
National Institute for Food and Nutrition Research (INRAN), Rome.

Dr. Barcherini S.
Italian Statistical Office.

Dr. Martines S.
National Institute for Food and Nutrition Research (INRAN), Rome.

NORWAY

Dr. Trygg K
Institute for Nutrition Research, University of Oslo.

Mr. Mork E.
Statistics Norway, Oslo.

Ms. Lund-Iversen K.
Institute for Nutrition Research, University of Oslo.

PORTUGAL

Dr. Vaz de Almeida M.D.
Faculty of Food and Nutrition Sciences, Porto University

Ms. Rodrigues S.
Faculty of Food and Nutrition Sciences, Porto University.

SPAIN

Dr. Moreiras O.
Department of Nutrition, Faculty of Pharmacy, Complutense University, Madrid

Ms. Cuadrado C.
Department of Nutrition, Faculty of Pharmacy, Complutense University, Madrid

UNITED KINGDOM

Dr. Nelson M.
Department of Nutrition and Dietetics, King's College, University of London.

Mr. Rimmer D.
Department of Environment, Food and Rural Affairs (DEFRA).

Ms. Burr S.
Department of Nutrition and Dietetics, King's College, University of London.

A.   Introduction

With the aim to improve health and related information available in the EU Member States and to develop and improve systems of data collection, a programme of Community action on health monitoring was set up in 1997. The objective of the programme was to contribute to the establishment of a Community Health Monitoring System, which makes it possible to:

> ➢ measure health status, trends and determinants throughout the Community
>
> ➢ facilitate the planning, monitoring and evaluation of Community programmes and action;
>
> ➢ provide Member States with appropriate health information to make comparisons and support their national health policies.

Monitoring dietary patterns are among the prime contributions of nutritional science in the nutritional epidemiology development, the formulation of dietary recommendations, in the planning and implementing national food, nutrition and agricultural policies. Currently, international comparisons of dietary exposures are mostly based on food rather than nutrient intake. The lack of compatibility of food composition data from various countries (1) and findings that, in several instances, food components act synergistically to exert their effects lead to an expansion of current research towards studying patterns of food intake (2, 3, 4).

The food data used for international comparisons are often derived from: a) food balance sheets (FBS), providing information on food supply at the population level b) household budget Surveys (HBS), which collect data on food availability within a nationally representative sample of households and c) specifically designed individual nutrition surveys (INS), providing information on the food-intake of free-living individuals, over a specified time period. The FBS data are useful when conducting comparisons on the adequacy of food supply and for following over time crude dietary changes. The individual surveys, when intakes of the subject are recorded as adequately as possible, are expected to provide evidence on the food quantities consumed. Nevertheless, when international comparisons are undertaken, the

differences in study design and analysis of the various surveys reduce the comparability of the results (5).

Comparable between countries information on food availability can be provided by data collected in the HBS. The HBS can be thought of occupying a position between the FBS and the INS. Like food balance sheets, the HBS allow between country comparisons at a regular basis but, moving from total population to household level, the HBS can provide a more detailed description of the dietary choices of the population, as well as of population sub-groups (6).

The DAFNE initiative

The DAFNE initiative aims at creating a cost-effective European databank, based on the food, socio-economic and demographic data from nationally representative HBS (7).

Since 1987, the National Nutrition Center in Athens, Greece, has organized a series of workshops, seminars, and pilot research projects aiming at the development of the most appropriate way of using food and related data from Household Budget Surveys. In 1993-94, this approach was granted financial support by the European Commission through the DAFNE I and II projects which, upon conclusion, provided a food database with comparable HBS data from 10 European counties (8,9). After the development of the DAFNE databank and in an attempt to better understand the limitations of the HBS data and on how we should deal with them, the work undertaken in the context of the DAFNE initiative was aiming at comparing data from HBS, retrieved from the DAFNE databank, with data from INS (the FAIR-97-3096 project: "Compatibility of the household and individual nutrition surveys in Europe and disparities in food habits"). Comparisons of the HBS and INS data for 4 European countries showed that household budget and specially designed nutrition surveys are, given the limitations present in both, comparable (10). Thus, the DAFNE databank can serve as a tool for the identification of disparities in food habits among European countries and their socio-demographic determinants.

The DAFNE III project

The "European Food Availability Databank based on Household Budget Surveys – DAFNE III" project was aiming at updating the DAFNE databank, by including additional datasets from six already participating European countries (Belgium, Greece, Norway, Republic of Ireland, Spain and the United Kingdom) and also by integrating several HBS datasets (collected in consequent time periods in each country) from France, Italy and Portugal.

The thus developed databank can serve as a tool for:

- The follow-up of trends in nutritional practices, based on comparable and regularly updated information
- The identification of population sub-groups whose dietary habits are not favorable according to the current scientific knowledge on the association of diet and health and
- The outlining of preventive interventions in order to support consumer choices towards a healthy nutrition.

The ultimately developed databank was designed to be integrated in the European Union Public Health Information Network (EUPHIN) of the European Commission and potentially to other information systems, providing thus a cost-effective nutrition monitoring tool.
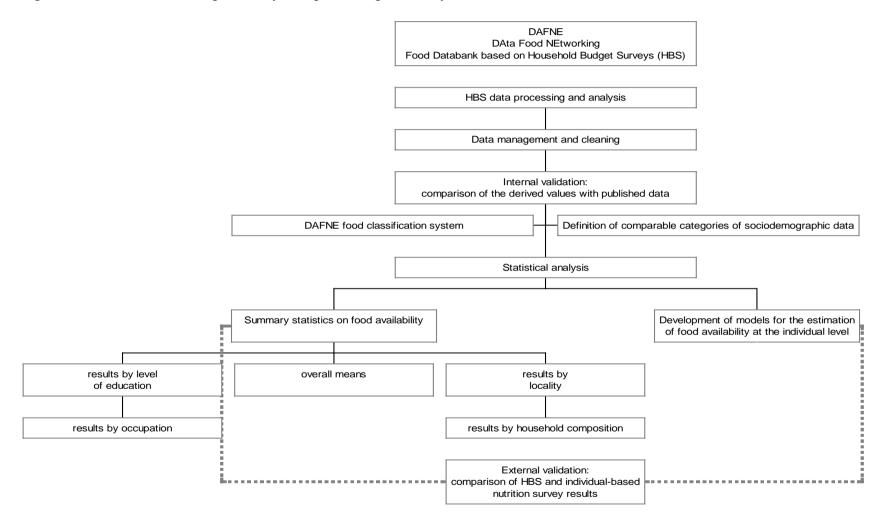
B.   Material - Methods

Material

The DAFNE databank formulated upon conclusion of the DAFNE III project includes data from 44 HBS of eight EU Member States and Norway. The year and the procedures of data collection and storage, the methodological characteristics and other general information regarding the integrated datasets are presented in tables included as Annex I. The information included in Annex I summarises the results of an inventory disseminated to all data providers, with the objective to understand the methodological attributes of each dataset and to evaluate the feasibility of comparisons between the participating countries.

Methods

The tasks undertaken in the context of the DAFNE III project can be summarized in the following (Figure 1):

- Incorporation of the raw HBS data of each participating country in the central database, operating at the coordinating centre.
- Harmonisation of the food, demographic and socio-economic information collected in the HBS of the nine participating countries.
- Estimation of the average daily food availability for the overall population and socio-demographic groups.

Figure 1: The Household Budget Survey data processing and analysis in the context of the DAFNE initiative

Incorporation of raw HBS data of each participating country in the central database

All datasets, together with their file descriptions, were received in the Athens centre. In the majority of the cases, data were stored in ASCII files, with size and structure varying due to different sample sizes and variables provided. It should however be noted that all datasets included information at least on the following variables:

1. General information
    - household identification number
    - trimester of participation

2. Nutritional information
    - food code
    - total food expenditure (food expenditures outside the household included)
    - expenditure per food item
    - amounts per food item

3. Socioeconomic information
    - degree of urbanisation of household (urban, rural, semi-urban)
    - name of geographical area where the household is situated
    - household size
    - household composition
    - age and gender of household head and members
    - relationship of household members with the household head
    - household disposable income (net income)
    - household total expenditure
    - occupation / employment status / economic activity of household head and members
    - education of household head and members
    - income of household head
    - medical expenses data

The well understanding and correct reading of the data by the DAFNE coordinating

team is evaluated through samples of random households which are sent to each country for cross-checking. Before finalising the data integration in the central DAFNE database, the Athens team proceeds to checking of the data consistency by:

- estimating the range of values

- evaluating the agreement between overlapping variables (e.g. age given in discrete years and in age groups)

- cross-tabulating categorical variables with connected content (e.g. the age of the household head and his/her employment status).

- identifying and estimating missing data for the variables that will be considered in the analysis.

The raw DAFNE data are stored and maintained in a Microsoft SQL Server 2000 DBMS on a Windows 2000 Server Operating System. For the verification and cleaning of the data, an existing tool (visual FoxPro) is used. The data is stored per country/per year (in which the household budget surveys have been carried out). The raw DAFNE data can be queried by users who login through the Department of Hygiene and Epidemiology's VLAN. Any user, except the Administrator, has only "view" privileges.

Harmonisation of the food, demographic and socio-economic information collected in the HBS of the participating countries.

The DAFNE food classification scheme

The development of a food classification system that would allow international comparisons of dietary patterns is a central element in the development of a European food databank. In this course of action, various issues had to be considered; the most prominent among them referring to the variant level of detail in which HBS food data were recorded in the countries. A description of the problems and the actions taken to tackle them is provided in the manuscript entitled "*The DAFNE initiative: The methodology for assessing dietary patterns across Europe using household budget survey data*", published with the support of DG-SANCO in the context of the DAFNE III project (11).

The end result of this process was the DAFNE food classification scheme (Table 1), which allows the classification of food data collected in different European countries into 56 detailed subgroups. These subgroups can be further aggregated at various levels ending up at 15 main food groups. The Athens team has been closely collaborating with nutritionists from each participating country in classifying the recorded food variables under this comparable between countries scheme. All food classifications, separately for each country and survey year, are included in Annex II. In some cases, the expenses related to a small number of food codes were only recorded. In their vast majority, these food codes refer to food items not usually purchased by the population and their absence does not impair general conclusions on the national food habits

In the case of France, data collected through the 1985 and 1991 HBS refer to quantities of food available in the household, together with expenses incurred. The situation was however different in the 1995 survey, as food expenses were only recorded. The 1995 expenditure data were converted using a 'price per unit weight' vector, built from the Taylor Nelson Sécodip household panels, but because of the different methodology applied in the estimation of food quantities, French HBS data collected in 1985 and 1991 are only presented in this report.

Table 1: The DAFNE food classification system

CEREALS AND CEREAL PRODUCTS	**VEGETABLES**
Bread and rolls	FRESH VEGETABLES
Rice and other cereals	Green leafy vegetables (cabbage excluded)
Flour	Cabbage
Pasta	Tomatoes
Cereal products and bakery products (grains, flour and pasta excluded)	Carrots
MEAT AND MEAT PRODUCTS	Onions and garlic
RED MEAT	Other fresh vegetables
Pork meat (fresh and frozen)	PROCESSED VEGETABLES
Beef, veal and calf meat (fresh and frozen)	**NUTS**
Red meat, other than pork or veal (fresh and frozen)	**FRUITS**
POULTRY (fresh and frozen)	FRESH FRUITS
OFFALS (fresh and frozen)	Apples
CANNED MEAT AND MEAT PRODUCTS	Citrus
MEAT DISHES	Bananas
FISH AND SEAFOOD	Grapes
Fish (fresh, frozen and processed)	Plums
Seafood	Berries
Fish dishes	Apricots and peaches
MILK AND MILK PRODUCTS	Cherries and sour cherries
Milk	Pears
Cheese	Other fresh fruits
Milk products (milk and cheese excluded)	PROCESSED FRUITS
EGGS	**FRUIT AND VEGETABLE JUICES**
	Fruit juices
TOTAL ADDED LIPIDS	Vegetable juices
LIPIDS OF ANIMAL ORIGIN	**SUGAR AND SUGAR PRODUCTS**
Butter	Sugar
Animal fat (butter excluded)	Sugar products
LIPIDS OF VEGETABLE ORIGIN	**NON-ALCOHOLIC BEVERAGES**
Vegetable fat	STIMULANTS
Margarine	Coffee
Vegetable fat (margarine excluded)	Tea and infusions
Vegetable oils	Cocoa
Olive oil	MINERAL WATER
Seed oils	SOFT DRINKS
POTATOES AND OTHER STARCHY ROOTS	**ALCOHOLIC BEVERAGES**
	Wine
PULSES	Beer
	Spirits

The DAFNE Classification Scheme for socio-demographic data

Though several socio-demographic characteristics are recorded in the HBS and many of them are included in the final roster of variables to be studied, focus was put on the locality of the dwelling, the educational status and the occupation of the household head, and on the household's composition. Variables related to the above characteristics and recorded at national level were classified under common between countries groupings, which were formed through the establishment of operational criteria, iterative cross-coding, as well as several working group meetings and bilateral visits to address specific problems. More specifically:

➢ Locality

Using various criteria (e.g. number of inhabitants, number of electors, population density) the following three categories of locality were formed:

- o urban,
- o semi-urban and
- o rural.

The effect of locality on the households' food choices was not studied in the Greek HBS data since, for anonymity reasons, the Greek Statistical Office could not provide the variable information that would allow the classification under the above groups.

➢ Education of household head

Though differences in the national educational systems do exist, data on the education of household head could be classified under five comparable categories:

- o Illiterate / Elementary education not completed,
- o Elementary education completed
- o Secondary education not completed
- o Secondary education completed and
- o College/University.

Among the countries under study, data on the educational status of the household head and members was not routinely collected in the Republic of Ireland and the United Kingdom.

➢ Occupation of household head

Occupation reflects a number of characteristics including education, income and physical activity. If properly harmonized, it can provide a suitable basis for comparison of dietary practices. In the DAFNE III project, occupation was classified under the four categories below, based on the occupational status and the profession, if employed, of the household head:

o Non-manual

o Manual

o Retired

o Other (students, housewives, unemployed and invalid persons).

The last composite category obviously presents several problems, as it comprises individuals with different activity levels and varying incomes. Ways of disaggregating it are still being considered. Regarding retired persons, it has been suggested that they should be divided into retired-previously manual and retired-previously non-manual.

➢ Household composition

Though not frequently considered in dietary analyses, household composition can have a substantial influence on nutritional choices and practices. With children defined as being up to 18 years old, adults being between 19 and 65 years of age and individuals more than 65 years old considered as elderly, and with an intended distinction between single and other households, eight categories were formed:

o single adult households,

o households of two adult residents

o households of one adult resident and children (lone parent),

o households of two adult residents and children,

o households of adult and elderly residents,

o households of children, adult and elderly residents,

o single elderly households and

o households of two elderly residents.

All classification schemes for the socio-demographic variables under study and separately for each country and survey year are included in Annex III.

Estimation of the average daily food availability for the overall population and socio-demographic groups.

For each of the DAFNE countries, food availability per capita per day was calculated by dividing the household availability by the product of the referent time period and the mean household size. After indication and advice provided by the national data supplier, a weighting factor was incorporated in the formula whenever necessary to accommodate the sampling scheme. The overall average availability per day per person of the comparable food items or groups, as well as the average (per day, per person) availability for households belonging to different socio-demographic levels were calculated. It should however be noted that individual availability was estimated without making allowances for the proportion of food that was edible and under the assumption of equal distribution of food within the household and during the survey period.

C. Results

Tables presenting the mean availability of the 15 DAFNE food groups by country and year of survey are included as Annex IV. In the four Mediterranean countries (Greece, Italy, Portugal and Spain), data are additionally provided on trends in the availability of olive oil. In the same Annex, mean availability values by the four socio-demographic characteristics under study are also presented for each country and survey year. Graphical presentations of changes in the daily individual food availability in the nine participating countries are included in Annex V. Finally, trends in the availability of four food groups with public health interest (milk and milk products; meat and meat products; vegetables; fruits) are also presented in the form of bar charts in Annex V. From these four, one food group is selected in each country and is further presented in relation to the educational level of the household head. The food selection was generally made on the basis of apparent differential effect of educational level to food availability over time.

Lastly, changes of food availability over time and the effect of socio-economic characteristics on food choices are below summarised for each of the 15 main DAFNE food groups.

Eggs: In all countries, the availability of eggs decreased with time. Urban households, with heads of higher education or occupied in non-manual professions recorded lower mean availability values in all survey years. The only exception stands for the Portuguese households, among which, urban, non-manual households, or those of upper education recorded the higher mean daily availability of eggs.

Potatoes and other starchy roots: The highest potato availability was recorded in Portugal (230 g/p/d in 1995) and Ireland (197 g/p/d in 1994 and 186 g/p/d in 1999) and the lowest in Italy (76 g/p/d in 1996). Over time, the daily availability of potatoes and other starchy roots decreased in all countries. With respect to the effect of education, potato availability decreased as the educational level of the household head improved and, higher values were recorded among manual households. Given that potato is considered among the staple foods of the Irish population, it should further be noted that manual households in Ireland recorded a higher decrease in potato consumption over time, when compared to their non-manual counterparts. With the exception of Italy where potato availability increased as one moves from rural to urban areas, in all other countries the lower values were recorded in the urban households.

Pulses: Pulses, plant foods of high fibre and protein content, can generally be considered as a food preferably consumed in South Europe, since in Spain, Greece and Portugal the mean pulses availability exceeded 10g/p/d, while in Central and North Europe the availability values barely exceeded 1g/p/d, with Belgium recording in mid nineties 0.2g/p/d. In all countries however, pulses availability decreased with time. In general, even in countries where the consumption of pulses is not popular, households of low educational level recorded higher values in all survey years. Particularly in Greece and Portugal the highest pulses consumers resided in rural areas or were of low education, reflecting probably the adherence of these populations to

traditional eating patterns. Interestingly enough, the consumption of pulses was not popular in Italy, which recorded in mid nineties approximately the same availability values with France (4.1g/p/d in Italy and 4.9 g/p/d in France).

Nuts: Nuts are among the few food items whose availability either increased substantially (Belgium), moderately (Greece, Norway, the Republic of Ireland and United Kingdom) or remained stable (France, Italy and Portugal) over time. In general, nuts seem to be preferably consumed by individuals of higher education or non-manual professions, or individuals residing in urban areas, and these observations seem to persist over time. An exception should however be noted in Greece, where low educated households substantially increased their nut availability in the 20-year period under study, thus taking recently the lead from their highly educated counterparts.

Cereals and cereal products: In agreement to the majority of the food groups under study, the availability of cereals and of their products (including bread, rusks, pizza, and other bakery products) is also decreasing over time. Two exceptions stand for Belgium, where cereal availability increased between 1987/88 and 1999 by 18 g/p/d and Ireland, where no change has been noted during the same period. In terms of patterns of cereal intake, as expected, Italy leads with 335 g/p/d (1996) and the United Kingdom trails with 199g/p/d (1999). In general, individuals of elementary education or manual professions or residing in rural areas recorded the higher values of cereal availability within their households and this observation persists over the studied period.

Milk and milk products: Different patterns were observed with respect to the daily individual availability of milk and milk products. In late nineties, the highest availability values were recorded in the Republic of Ireland (480 g/p/d) and Norway (386 g/p/d) and the lowest in Belgium (255 g/p/d). In terms of time trends, the daily availability increased in Belgium, France, Greece, the Republic of Ireland and Portugal; only a marginal increase was noted in Italy and a decrease in Norway, Spain

and the United Kingdom. In general, high milk and milk product availability was recorded in households of rural areas (except from Portugal), or households of higher education (exceptions are France and Italy) or households whose heads were employed in non-manual professions (except from France, Ireland Norway and the United Kingdom). Our finding that milk and milk product availability increased with non-manual professions or as the educational level improved agrees with previous findings reporting that cheese is preferably consumed by individuals of college and university education (12). Generally, no change was observed on how socio-demographic factors affect the availability of milk and milk products over time.

Meat and meat products: Based on data collected in late nineties, the lowest meat and meat product availability was recorded in Norway (126 g/p/d) and the highest in the Republic of Ireland (166 g/p/d). With respect to time trends, meat availability decreased in the studied time period, with the exception of Norway (+5 g/p/d), Portugal (+20 g/p/d) and the Republic of Ireland (+33 g/p/d). In all countries but Norway and Portugal, residents of urban areas, or of high educational level reported purchasing smaller amounts of meat and products for household consumption. Households with heads employed in manual professions recorded higher purchases of meat and meat products; whereas in Greece and again in Norway and Portugal no difference was noted on meat availability within manual and non-manual households.

Vegetables (fresh and processed): According to HBS data collected in late nineties, Greece recorded the highest vegetable availability within the household (271 g/p/d) and Norway the lowest (109 g/p/d). For the remaining countries, vegetable availability varies between 150 g/p/d (in Ireland, the UK and Portugal) and 180 g/p/d (France and Italy). Given current recommendations for at least 3 portions of vegetables (approx. 250 g/p/d) on a daily basis, Europeans are still remote from meeting this target. If we further consider that the above values refer to vegetable purchases, which are generally higher to actual intake, the deficit is more pronounced. In recent years however, vegetable availability is generally on the rise in Northern and Central Europe. Southern European countries on the other hand, have recently recorded a

reduction in household vegetable purchases, with the sole exception of Greek households, which recorded an increase between 1987 and 1999. In general, high vegetable consumers reside in urban areas, or are of higher education, or exercise non-manual professions. It should further be added that the highest increase in vegetable availability in Northern and Southern Europe was mainly noted for the trend-leading highly educated households. The case of Greece should however be noted, with vegetable availability being higher among households of elementary education, which, in addition, increased their vegetable availability between 1987-1999 more than their highly educated counterparts.

Fish and seafood: Portugal is leading fish availability with 85g/p/d, followed by Spain (74 g/p/d), Norway (50 g/p/d) and Greece (45 g/p/d), while the lowest fish and seafood availability was recorded in the Republic of Ireland (13 g/p/d). No large variations have been observed in fish availability over time, with the sole exceptions of Portugal and Greece, where daily availability values increased by approximately 10 g during recent years. Urban areas recorded higher fish consumption, reflecting probably the recent improvement of food availability in urban markets. In general, fish availability was higher among households of non-manual professions, while it was not found to differ between different education attainment levels. The only exceptions are Norway and Greece, where fish availability decreased as the educational level of the household head improved. It should further be noted that, in recent years, the Greek low educated households had the biggest increase in fish availability, while in Norway highly educated households increased more than the low educated ones.

Fruits (fresh and processed): Fruits, together with vegetables, are the two food groups most frequently mentioned for their beneficial attributes. In the case of fruits, all the Mediterranean countries clearly lead the way with daily availability exceeding the WHO recommendations of at least 2 portions (approx. 150 g) of fruit per day. The United Kingdom and the Republic of Ireland are trailing with 106g/p/d and 101 g/p/d respectively. Nevertheless, in all countries but Ireland and the united Kingdom fruit availability was decreasing with time. The highest fruit consumers were found in

urban areas, were of college or university education, or were employed in non-manual professions. This pattern remains unchanged over the last 15 years, probably indicating the success of campaigns to increase fruit consumption among these population sub-groups.

Total added lipids: The added lipid group includes all added fats (e.g. butter, margarine) and oils (olive oil and seed oils). As expected the highest lipid availability was noted in Greece (84 g/p/d), Italy (63 g/p/d) and Spain (59 g/p/d), with olive oil being the predominant added lipid. In all countries, lipid availability has either remained steady or decreased, with the most marked decrease being noted in the Republic of Ireland (-21 g/p/d). Although the type of lipid consumed is different in the various European regions, in all cases and through different survey years, lipid availability is higher in rural areas and among households of elementary education, probably indicating that high lipid availability may be related to traditional eating patterns.

Alcoholic beverages: The lack of information on meals and beverages consumed outside the household is expected to impair observations related to the alcoholic beverage intake. It should thus be considered, when interpreting HBS data, that values on alcohol intake are only related to household availability. In this context, the highest availability values were recorded in Italy (149 ml/p/d) and France (114 ml/p/d) and the lowest in Greece (48 ml/p/d) and the Republic of Ireland (40 ml/p/d). No consistent pattern can be observed on how the availability of alcoholic beverages varies with time. Hence, the availability of alcoholic drinks within the household has increased in Belgium, Greece, Norway, the Republic of Ireland and the United Kingdom, while it decreased in France, Italy, Spain and Portugal. In the last 20 years, alcoholic drinks have generally been more available in rural households, or households with heads of elementary education; while no consistent pattern can be observed on how profession (manual vs. non-manual) affects the availability of alcoholic drinks within the household.

Non-alcoholic beverages: In accordance to alcoholic beverages, due caution is required when interpreting data on the daily availability of non-alcoholic beverages (including soft drinks, mineral water, coffee and tea) at household level. In most of the countries, the availability of non-alcoholic beverages has increased over the studied time period. As coffee, tea and similar infusions are included in the grouping, United Kingdom is leading the availability (923 ml/p/d), followed by Italy (824 ml/p/d) and Norway (720 ml/p/d). With respect to locality, in Northern Europe non-alcoholic beverage availability generally increased in rural households, whereas the opposite trend was observed for Central and South Europe. Between countries and survey years, no consistent pattern of the association of education to non-alcoholic beverage availability was observed; while in most of the countries the availability of non-alcoholic beverages was higher among manual households.

Sugar and sugar products: The higher daily availability of sugar and sugar products was recorded in Norway (79 g/p/d), the Republic of Ireland (61 g/p/d) and Italy (49 g/p/d). In response to current nutritional trends, most of the countries recorded a decrease in the availability of these products over time. In all cases, sugar and sugar product availability was higher among rural households, of elementary education, or manual professions. Over time, the pattern described above remained unchanged.

Juices (fruit and vegetable): Because of the increased importance fruit and vegetable juices gain in consumers' preference, the DAFNE team decided to separately address this beverage group. In general, the availability of fruit and vegetable juices increased during the studied time period. However, the range of availability values is substantially large and ranges between 1.6 ml/p/d in Portugal and 57 ml/p/d in the Republic of Ireland. It should further be noted that countries which were recorded as higher fruit consumers reported lower juice consumption. In terms of socio-economic disparities, in all countries and survey years, juices were preferably consumed by highly educated individuals, or individuals exercising non-manual professions.

D. Organisation and activities of the project

The project was coordinated by the Unit of Public Health Nutrition of the Department of Hygiene and Epidemiology, Medical School University of Athens. Five plenary meetings took place in the course of the project and five bilateral meetings were undertaken between the coordinating center and participating countries to address country-specific problems. Summaries of the project's and bilateral meetings are given below. The minutes of the plenary meetings and the reports of the bilateral meetings are included as Annex VI.

Meetings

I.   *First Plenary Meeting. March 26th 2000, Pamplona Spain.*

The project coordinator presented an overview of the project's objectives and details on the project's tasks. Participants offered to provide, where feasible, more datasets than initially planned. Methodological issues referring to the estimation of quantities from expenses and the calculation of the mean food availability were also discussed. Participants were finally introduced to the classification schemes of food and socio-demographic data, as these were developed in the context of the previous DAFNE projects.

II.   *Second plenary meeting. November 3rd - 4th 2000, Athens, Greece.*

Issues related to data provision and unclear file descriptions were discussed. After the first attempts to apply the classification schemes, participants discussed specific issues related to the application of density and other dietary conversion factors and to the classification of ambiguous foods. Since the composition of the household and the occupation of the household head were for the first time studied and included in the analysis, discussion was focused on devising the comparable between countries classification groups for these variables. Discussions were further referring to issues related to the estimation of food availability and to the analysis on trends.

III.   Third plenary meeting. April 27-28th 2001, Premises of the Food and Agriculture Organisation (FAO), Rome Italy.

Participants finalised the food and socio-economic classification schemes for the nine participating countries and discussed issues related to the analysis of the data. The meeting was attended by FAO Officials actively involved in the exploitation of food consumption data in already existing datasets, as is the case of the food data collected in the household budget surveys. The FAO Officials provided their advice, comments and suggestion throughout the course of the meeting and further presented the FAO programme on the use of food consumption data from household income and expenditure surveys.

IV.   Fourth plenary meeting. August 31st - September 1st 2001, Institute of Nutrition, Vienna, Austria.

The work schedule for the last months of the project was set, in order to finalise the integration of the raw data in the DAFNE database, the data analysis and the compilation of the national reports. Participants further decided on the format of the national reports and on the project's publication strategy. Finally, discussion focused on how the liaison of the DAFNE project with EUROSTAT could be improved.

V.   Final plenary meeting. December 2nd - 3rd 2001, Brussels, Belgium.

The project coordinator presented and distributed the DAFNE Special Issue recently published in the journal of Public Health Nutrition and she encouraged participants to submit abstracts and papers, in accordance to the already decided publication strategy. Participants finally presented tables and graphs with findings, on their country food availability of the 15 main food groups, for the overall population and for socio-economic groups of the population. In the light of the preliminary findings, some amendments in the content of the national reports were proposed and approved.

Bilateral Meetings

The following five bilateral meetings took place in the course of the DAFNE III project:

- o Meeting between Portugal and the Athens coordinating centre (Athens, July 2000)

- o Meeting between Italy and the Athens coordinating center (Athens, January 2001)

- o Meeting between Belgium and the Athens coordinating centre (Athens, April 2001)

- o Meeting between Norway and the Athens coordinating centre (Athens, November 2001)

- o Meeting between Belgium and the Athens coordinating centre (Athens, May 2002).

Bilateral meetings were scheduled in order to deal with country-specific issues related to data reading and integrating, to the application of the classification schemes, to data analysis and, in one occasion, to the preparation of a manuscript on monitoring the dietary choices of elderly households.

Activities of the DAFNE III project

The DAFNE Special Issue – Public Health Nutrition Journal

In 2001, a Supplement to the October Issue of Public Health Nutrition was published, devoted to the DAFNE initiative. In Annex VII, the table of contents of the Special issue is included.

Suggestion on the COICOP-HBS Coding System.

The COICOP-HBS coding system is applied by EUROSTAT for the presentation of food data in the context of the national household budget surveys. All EU countries are asked to provide their national data in accordance to this scheme. In the context of revising the COICOP-HBS System undertaken by a EUROSTAT Task Force, the DAFNE team prepared a working document including comments on the current version of the COICOP-HBS coding system and a working table summarizing the DAFNE proposal for potential modifications in the COICOP System and informed EUROSTAT accordingly. The proposal is included in Annex VIII.

Assessment Study of the DAFNE database by the CAP-GEMINI Group

An assessment study on the DAFNE database took place in June 2002, as a first step towards possible integration in HIEMS. The following tasks were carried out during the assessment process:

- Analysis of the existing situation.

- Clarify and document the possible integration of the database that was developed in the context of the "European food availability databank based on household budget surveys – the DAFNE III project (SI2.195600)" in HIEMS.

- Define conclusions and recommendations concerning the possible integration of the DAFNE database into HIEMS.

The CAP – Gemini Group who was responsible for the assessment study concluded that it is technically feasible to integrate the DAFNE database in the HIEMS application. A temporary short-time solution for making the DAFNE data available to the HIEMS user could be to create a hyperlink in HIEMS to the DAFNE project

Website. This would also be a new functionality in HIEMS (http://forum.europa.eu.int/Public/irc/sanco/Home/main).

Dissemination of research results

Scientific papers

- Lagiou P, Trichopoulou A and the DAFNE contributors. "*The DAFNE initiative: the methodology for assessing dietary patterns across Europe using household budget survey data.*"
  Publ Health Nutr. 2001; 4(5B): 1135-1141

- Trichopoulou A and the DAFNE contributors. "*The DAFNE databank as a simple tool for nutrition policy*"
  Publ. Health Nutr. 2001; 4(5B): 1187-1198.

- Rodrigues SSP and MDV de Almeida "*Portuguese household food availability in 1990 and 1995*"
  Publ Health Nutr. 2001;4(5B):1167-1171.

- Antonia Trichopoulou, Androniki Naska, "*Les habitudes alimentaires dans différents pays d'Europe. Une analyse de la banque de données DAFNE*"
  Echanges Santé (accepted, in press)

- Antonia Trichopoulou, Androniki Naska and Tina Costacou, on behalf of the DAFNE III group. "*Disparities in food habits across Europe*"
  Proceedings of the Nutrition Society (accepted, in press).

- Antonia Trichopoulou, Androniki Naska, Anna Antoniou, Sharon Friel, Kerstin Trygg and Aida Turrini. "*Vegetable and Fruit: The Evidence in their favour and the Public Health Perspective.*"
  International Journal of Vitamin and Nutrition Research (accepted, in press)

- A summary of the DAFNE project entitled "The DAFNE initiative" was included in the June/July 2000 issue of the European Public Health Update, the journal of the European Public Health Alliance.

Conference presentations

Oral presentations

- Trichopoulou A. The DAFNE (Data Food Networking) databank. *A tool for monitoring trends in food habits in Europe*. Proceedings of the Eurodiet Conference on "Nutrition & Diet for Healthy Lifestyles in Europe: Science & Policy Implications", Heraklion, May 2000. Public Health Nutrition 2001; 4:1:106.

- Trichopoulou A, Naska A, Remaut A.M, Cuerto Eulert A.P, Leonhauser I.U, Zajkas G, Friel S, Dalton J,Schmitt A, Trygg K, Mork E, Sekula W, Moreiras O, Nelson M, Rimmer D. *The DAFNE Databank as a tool for monitoring disparities in meat availability in Europe*. Abstracts of the 17th International Congress of Nutrition. Elmadfa I, Konig J (Eds).Vienna, August 2001. Ann Nutr Metab 2001; 45 (suppl 1): 549.

- Friel S, Kelleher C, Trichopoulou A, Naska A, Vasdekis V. *Social variation in Irish dietary habits: Household and individual evidence*. Abstracts of the 17th International Congress of Nutrition. Elmadfa I, Konig J (Eds). Vienna, August 2001. Ann Nutr Metab 2001; 45 (suppl 1):549

- Perez Cueto Eulert F, Remaut-De Winter A.M, Naska A. *Preliminary results of changes in food and nutrient availability at household level in Belgium*. Abstracts of the 17th International Congress of Nutrition. Elmadfa I, Konig J (Eds). Vienna, August 2001. Ann Nutr Metab 2001; 45 (suppl 1):549.

- Trichopoulou A, Naska A. *Disparities in food habits across Europe*. Abstacts of the Meeting on " Influence of Social and Cultural Variations on Diet", summary 04. Information Technology Building, National University of Ireland Galway, June 2002

- Trichopoulou A, for the DAFNE team. *The use of household budget survey data for assessing food disparities within and between populations-case*

studies of 13 European countries. Abstracts of the 3rd session of the International Scientific Symposium on Measurement and Assessment of Food Deprivation and Under-nutrition. FAO Headquarters. Rome, June 2002 (oral presentation).

Poster presentations

- Friel S, Kelleher C, Trichopoulou A and Naska A. *Social variation in Irish Household and Individual Dietary Habits*. Abstracts Book of "Food and Nutrition for better heath". A European Conference: highlights from EC research programmes (HEALFO Conference) p. 113. Santa Maria Imbaro-Lanciano, June 2001.

- Rodrigues S.S.P and de Almeida MDV. *Portuguese Household Food Availability between 1990 and 1995*. Abstracts Book of "Food and Nutrition for better heath". A European Conference: highlights from EC research programmes (HEALFO Conference) p. 114. Santa Maria Imbaro-Lanciano, June 2001

- Remaut-De Winter A.M, Perez Cueto Eulert F, Naska A, Trichopoulou A. *Converting Food Purchases in quantities of available food at household level in Belgium*. Abstracts of the 17th International Congress of Nutrition. Elmadfa I, Konig J (Eds). Vienna, August 2001. Ann Nutr Metab 2001; 45 (suppl 1):550

- Paterakis S.E, Burr S, Nelson M. *Evaluation of the national food survey (NFS) Data for epidemiological purposes*. Abstracts of the 17th International Congress of Nutrition. Elmadfa I, Konig J (Eds). Vienna, August 2001. Ann Nutr Metab 2001; 45 (suppl 1):550

- Maffre J, Volatier J.-L. *An estimation method of quantities of food availability in a household budget survey*. Abstracts of the 17th International Congress of Nutrition. Elmadfa I, Konig J (Eds). Vienna, August 2001. Ann Nutr Metab 2001; 45 (suppl 1):549.

- Rodrigues S.P, de Almeida MDV.*Gender differences in food availability in elderly single households: the DAFNE III Porguguese data*. Abstracts of the

17th International Congress of Nutrition. Elmadfa I, Konig J (Eds). Vienna, August 2001. Ann Nutr Metab 2001; 45 (suppl 1):412

- Barcherini S, Ceccarelli C, Martines S, Turrini A. *Food consumption behaviour in Italian regions: An analysis of the 1996 HBS*. Abstracts of the 17th International Congress of Nutrition. Elmadfa I, Konig J (Eds). Vienna, August 2001. Ann Nutr Metab 2001; 45 (suppl 1):550.

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List of Annexes

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Annex VI: Minutes of the project's plenary and bilateral meetings

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Codification System.