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"European Food Availability Databank based on Household Budget Surveys – the DAFNE IV project"

Interim Report for the period
from **01-10-2002** to **01-10-2003**

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Objectives

The "European Food Availability Databank based on Household Budget Surveys – the DAFNE IV project" aims at:

➢ Collecting and harmonising, according to the DAFNE methodology, household budget survey (HBS) data from the following EU Member States: Austria, Finland, Germany, Portugal and Sweden. The finally harmonised datasets will be merged into the fully operating DAFNE database.

➢ Expanding the DAFNE database to include food data covering, in general, the last 15 years, from each of 13 European countries. These countries include 12 EU Member States (Austria, Belgium, Finland, France, Germany, Greece, Italy, Portugal, Republic of Ireland, Spain, Sweden, the United Kingdom) and Norway.

➢ Developing a methodological approach in order to estimate the daily availability of selected macro- and micro-nutrients, using food data from the national HBS. The proposed methodological approach will be pilot-tested on the Greek HBS data, already incorporated in the DAFNE database.

➢ Developing an EU-applicable protocol for collecting information, through the HBS, concerning meals consumed out of home.

Description of the work progress

(For the period of 01/10/2002 – 01/10/2003)

The tasks undertaken by the DAFNE participants during the reporting period include the following:

(1) Receiving, reading, cleaning and documenting the national raw HBS data in order to be incorporated in the Athens databank.

(2) Classifying all the recorded food items according to the *DAFNE Food Classification Scheme* (Preparation of the Food Aggregation Tables).

(3) Classifying variables referring to socio-demographic characteristics (locality of the dwelling; household composition; education and occupation of the household head) according to the *DAFNE Classification Scheme for Socio-demographic data.*

Table 1 summarises the accomplished and the remaining tasks for each of the participating countries.

Furthermore, the coordinating centre proceeded to undertaking tasks that were planned to be initiated at a later stage of the DAFNE IV project. More specifically, during the reporting period, the coordinating centre worked towards:

(4) The development of a methodological approach for estimating the availability of energy and macro-nutrients (protein, carbohydrates, total fat and separately saturated, monounsaturated and polyunsaturated fatty acids) and

(5) Setting the basis for the development of a protocol, in order to collect information on meals taken out of home through the national HBS.

Points 4 and 5 of the above list of already undertaken activities refer to tasks which were planned to begin (according to the project's timetable) in April and June 2004, respectively.

A more detailed description of the DAFNE IV activities during the reporting period follows.

Integration of new datasets in the DAFNE databank (Tasks 1-4)

Austria: The Austrian participants contacted their National Statistical Office for the provision of the three most recent HBS datasets. They were however informed that methodological changes were decided and applied for the first time in the HBS of 1999-2000. Thus, previous datasets are no longer comparable to this last one. Since this new methodology will now be applied by the Austrian Statistical Office, participants agreed to work only with the more recent dataset (HBS 1999 - 2000). The methodology developed for harmonising this last dataset could be directly applied, as soon as new data become available.

The 1999-2000 raw data were delivered to the Athens centre, they were read, cleaned and the data reading was validated. Current data processing refers to the full documentation of the variables that will be used in the analysis.

In terms of data harmonisation, the classification of the socio-demographic variables has been finalised. Some issues related to food groupings remained pending and were discussed during the second plenary meeting (Rome, September 28-30, 2003).

Lastly, preliminary results on the daily availability of the DAFNE food groups were estimated by the coordinating centre and commented upon, during the second plenary meeting (discussions are summarised in the minutes of the meeting, attached as Appendix V).

The September 2003 version of the classification tables is attached as Appendix I.

Finland: Three datasets collected in 1985, 1990 and 1998 were sent to the Athens coordinating centre. The routine procedures of data reading, cleaning and validating were succesfully applied and the data were incorporated in the Athens databank. The detailed documentation of all the variables that will be used in the analysis is currently in process.

The classification schemes for the food and socio-demographic variables have also been finalised and preliminary results were derived. These results were discussed during the

second plenary meeting. As a result of these discussions, some amendments in the classification schemes were decided to be applied (rf: minutes of the meeting attached as Appendix V).

In Appendix II the September 2003 version of the classification tables for food and socio-demographic variables is included.

Germany: The German HBS data collected in 1988 were analysed in the context of the DAFNE I project and were at that time incorporated in the DAFNE databank. Nevertheless, the DAFNE harmonisation procedures have been modified since the first project and the coordinating centre thought of re-considering the 1988 dataset.

German HBS data collected in 1993 and 1998 were delivered to the Athens coordinating centre. The data reading and cleaning procedures were initiated and they were finalised during the visit of Kurt Gedrich (the German colleague actively involved in the project) in May 2003. The correct data reading was also assured.

The first versions of the food and socio-economic classifications were drafted during Dr. Gedrich's visit in Athens and were further amended in the months that followed. Some issues, however, remained unclarified and were discussed during the second plenary session. The September 2003 version of the food and socio-demographic tables is included as Appendix III. Preliminary results on the daily availability of the DAFNE food groups were also estimated and commented upon during the plenary meeting.

With respect to the German HBS data, an important issue remains pending. In the German HBS data, information on the acquired quantities is not available for some food items. For these items, the quantity data are estimated using the expenses incurred. Kurt Gedrich presented examples for estimating food quantities from expenses data to the second plenary session and further commented that this methodology was only applied in the 1998 dataset provided to the Athens centre. In order to assure comparability, it was considered as essential that the 1988 and 1993 HBS data have to be handled using the same methodology and as such to be provided to the Athens centre.

During the Athens-Germany bilateral session, discussions were also referring to nutrient estimations, as well as to data collection on meals taken out of home. The German colleague informed the Athens DAFNE team about the work undertaken in these fields in Germany. These discussions set the basis for the related presentations and the work schedule that was decided during the second plenary meeting (minutes attached as Appendix V).

Portugal: The Portuguese HBS data collected in 1990 and 1995 were analysed in the context of the DAFNE III project and results are incorporated in the DAFNE databank. The third set of HBS data collected in 2000-01 has not yet been delivered to the Athens coordinating centre. The National Statistical Office provided the Portuguese participants with some data files, but not the one including information on food quantities. The Portuguese colleagues wait for the acquisition of the complete dataset, before forwarding the 2000-01 data to the Athens coordinating centre.

In the summer of 2003, in order to speed up procedures, a bilateral session was decided and Androniki Naska, from the coordinating centre, visited the Porto University and worked together with the Portuguese colleagues on a copy of the HBS data, which will be used for a dissertation thesis. It was decided to use this copy to develop procedures that will be directly applied as soon as the dataset is delivered. Discussions during the bilateral session were thus aiming at understanding the variables in the best possible way, so that procedures will be accelerated as soon as the complete dataset is received. In this context, the food and socio-economic variables that will be used in the analysis were selected and evaluated. The first versions of the socio-demographic classifications were also drafted. The minutes of the bilateral session are attached in Appendix VII.

On September 24th, the coordinating centre received a letter stating that the food data have not yet been delivered. Because of the considerable delay in the work progress, the Portuguese colleagues and the DAFNE coordinating centre mutually decided to cancel Portugal's participation in the second plenary meeting. The DAFNE coordinator suggested saving the money allocated for Portugal's participation in this meeting, in order to be used for a bilateral session in Athens that would advance procedures, as soon as the data are received.

Sweden: The Swedish HBS data of 1989 and 1995-96 will be integrated in the DAFNE databank. The 1995-96 data were sent to the Athens centre on September 15, 2003. The coordinating centre directly initiated the procedures of data reading and cleaning. Thus, discussions during the second plenary meeting (28-30 September, 2003) were mainly referring to comments from the DAFNE data managers and to the application of the DAFNE classification schemes.

Participants decided on a list of actions to be taken in October-November 2003, in order to be able to finalize work for both the 1995/6 and the 1989 datasets before the end of the year. The description of the actions is included under the section on *Future Tasks*. Furthermore, three important issues were also raised during the plenary session and will be addressed by the Swedish participants, in collaboration with Statistics Sweden (detailed descriptions are included in the meeting's minutes in Appendix V).

Developing the methodology for estimating nutrient availability (Task 7)

According to the project's timetable, the tasks related to nutrient estimations are scheduled to be implemented in April 2004. Nevertheless, the coordinating centre undertook some preparatory work in estimating the daily intake of energy and macro-nutrients.

The methodology developed is based on the assumption that the only nutrition data available at national level are those from the DAFNE databank. For reasons of comparability between countries, the food composition data were mainly derived from the McCance&Widdowson Food Composition Table, Fifth Edition and Supplements.

The codes recorded in the Greek HBS of 1998-9 were corresponded to the respective food items appearing in the Food Composition Tables mentioned above. In cases where the HBS codes were referring to more than one item, split factors were applied in order to estimate the contribution of the different food items classified under this specific code. If no appropriate McCance&Widdowson code was identified (local products and recipes), data from the Greek Food Composition Tables were considered. A computer programme, written in Microsoft Visual FoxPro, was developed by the coordinating center in order to combine the DAFNE data on food availability with two files: one file relating the HBS

codes to the McCance&Widdowson ones, and the second file providing the McCance&Widdowson Food Composition Tables and Supplements in electronic format.

Results were estimated for the overall population and were presented during the second plenary meeting. Participants commented on this preparatory work and decisions were taken on how work should proceed further. The decisions are included in the section on *Future Tasks*.

Developing the methodology for recording out of home meals (Task 9)

Although task 9 is scheduled to be initiated in June 2004, the issue was raised during the second plenary session (September 2003). Participants were informed on how this type of data was collected once in Germany and on how it is routinely collected in the UK, as well as on the obtained results in both countries. Participants decided on a work schedule to be followed during the period until the next plenary meeting (May 2004). The schedule is described in the section on *Future Tasks*.

Meetings

The following two plenary sessions took place during the reporting period:

1. First plenary meeting, Vienna, Austria (November 15-16, 2002).

During the first meeting, participants were introduced to the DAFNE project. The methodology followed for post-harmonising the national HBS data was described and results derived in the context of the DAFNE initiative were presented. The DafneSoft (software application for the presentation of the DAFNE databank) was also presented.

Participants were further informed on the objectives and the work schedule of the DAFNE IV project and were asked to present the characteristics of the datasets that will be incorporated in the DAFNE databank. The sequence of tasks in order to proceed to the data provision, cleaning, management, analysis and storage was in detail described and discussed. The minutes of the Vienna meeting are included as Appendix IV.

2. Second plenary meeting, Rome, Italy (September 28 -30, 2003)

During the meeting, participants discussed on the data provision and documentation; they commented upon the classification schemes and they evaluated the first preliminary results. In view of these preliminary results and the discussions that followed, a revision of the classification schemes was agreed.

Furthermore, discussions were referring to estimating the daily nutrient availability, based on HBS data and participants decided on a second approach, which can be additionally applied. Lastly, the basis was set for initiating work in the context of collecting information on meals out of home. The minutes of the Rome meeting are included as Appendix V.

Bilateral Sessions

Two bilateral sessions took place during the reporting period:

- **Bilateral session (Germany– Coordinating Centre), held in the Dept. of Hygiene and Epidemiology, Medical School, University of Athens, May 29-31, 2003**

The 1993 and 1998 datasets were sent to the coordinating centre, prior to the bilateral session. The main objective of the session was to confirm the data reading and to draft the first food and socio-economic classifications. Discussions were also referring to the methodology for estimating nutrient availability, which is applied to the German data by the participating centre. Lastly, Dr. Gedrich presented to the Athens DAFNE team the EVA survey, undertaken in 1998 with the aim to collect information on meals taken out of the household. Given the importance of the issues raised, it was decided that two special sessions on nutrient estimations and meals taken out of the household, respectively, will be included in the agenda of the second plenary meeting.

The draft versions of the food and socio-economic classifications that were prepared during the bilateral session are included as Appendix VI.

- **Bilateral session (Portugal– Coordinating Centre), held in the University of Porto, FACULDADE DE CIÊNCIAS DA NUTRIÇÃO E ALIMENTAÇÃO (FCNAUP), July 1st-3rd, 2003**

The initial aim of the session was to acquire the 2000-01 Portuguese dataset with the translated and fully comprehensive file description and to further proceed to the harmonisation of the food and socio-economic variables. Nevertheless, the raw (household by household) data have not been delivered to the Portuguese participating centre by their National Statistical Office. Instead a copy of the 2000-01 HBS data, which will be used for a dissertation thesis, was available. Hence, work during these two days was primarily aiming at developing the DAFNE classification schemes. The minutes of the bilateral session are attached as Appendix VII.

Dissemination of results

- Results on socio-economic disparities in food availability in Europe, based on the DAFNE databank, were presented to the Poverty Food and Health in Welfare International Conference (July 1-4, 2003, Lisbon Portugal). The title of the abstract which was accepted as an oral presentation is:

SOCIO-ECONOMIC DETERMINANTS OF HOUSEHOLD FOOD AVAILABILITY IN EUROPE
Naska A, Ekonomou E, Tsiotas K, Antoniou A and Trichopoulou A for the DAFNE team

- Work undertaken in the DAFNE IV project was presented in the 9th European Nutrition Conference through the following abstracts:

1. MONITORING CHANGES IN FOOD AVAILABILITY IN EUROPE THROUGH THE DAFNE DATABANK
Ekonomou E, Naska A, Tsiotas K, Chloptsios Y, Foukas B, Trichopoulou A. for the DAFNE team (**Poster Presentation**)

2. EVALUATION OF METHODS ESTIMATING INDIVIDUAL FOOD CONSUMPTION FROM HOUSEHOLD BUDGET SURVEY DATA
K. Gedrich, G Karg (**Poster Presentation**)

Posters and published abstracts are included in Appendix VIII.

Future tasks

Given the timetable of the project, participants decided on a work schedule, in order to finalise Tasks 1-5, as early as possible and before the end of 2003. The schedule is summarised in Table 1. A slight deviation was agreed in the case of Germany, since data on food codes that were converted from expenses to quantities still need to be provided. The German national report will be finalized in February 2004.

For the following months until the third plenary meeting (May 16-18, 2004) the work of the DAFNE team will also focus on:

o the finalisation of the approach for estimating nutrient availability, developed by the coordinating centre. This approach will be applied in the three Greek datasets of the DAFNE databank (HBS data of 1981-2; 1987-8; 1998-9) and results for the overall population, as well as population sub-groups will be presented in the next plenary meeting.

o comparing two approaches for estimating nutrient availability: the one developed by the coordinating centre and the one applied by the German colleagues and presented during the second plenary meeting. The outcome of this comparison will be presented in the next meeting.

o evaluating the information on meals taken out of home that is currently collected in the HBS of the participating countries. The results of this evaluation will also be presented in the next plenary meeting.

Table 1: Work progress, up to September 2003 ☼

	AT	FI	DE	PT	SE
Data integration					
- Data acquisition	√	√	√*	‡	†**
- Data management and cleaning	√	√	√	‡	†**
- Internal validation	√	√	√	‡	‡
Classification of food data					
- Preliminary classification schemes	√	√	√	√	†
- Final version sent for cross-checking	**Scheduled to be completed by October 31st , 2003**				
Classification of socio-economic variables					
- Preliminary classification schemes	√	√	√	√	†
- Final version sent for cross-checking	**Scheduled to be completed by October 31st , 2003**				
Statistical analysis					
- Programmes for the statistical analysis (preliminary)	√	√	√	†	†
- Finalisation of the programmes	**Scheduled to be completed by November 30th, 2003**				
- Preparation of the tables with results (to be sent to participants)					
- Comparison with published data					
- Amending programmes for statistical analysis (when necessary)					
Preparation of national reports	**Scheduled to be completed by December 31st, 2003 (Deadline for the German report: February 2004)**				

☼: Tasks which were to begin in spring 2004 were also initiated. These include energy and nutrient estimations and the development of a protocol for collection information on meals taken out of home

√ : Completed

‡ : Procedure not initialized

† : Procedure initialised, but not completed yet

* Estimates of quantities, based on expenses, will be provided for the 1988 and 1993 data.

** The provision, reading and cleaning of the Swedish data (HBS 1989 and HBS 1995-96) will be finalised by October 2003.

Appendices I- VII are available upon

request

Appendix VIII

SOCIO-ECONOMIC DETERMINANTS OF HOUSEHOLD FOOD AVAILABILITY IN EUROPE

Naska A, Ekonomou E, Tsiotas K, Antoniou A and Trichopoulou A for the DAFNE team

Department of Hygiene and Epidemiology, Medical School, University of Athens

Aims: To monitor the effect of household's food purchasing capacity, education and occupation of the household head to the daily individual food availability.

Design: In the context of the Data Food Networking (DAFNE) initiative, information collected through the nationally representative household budget surveys (HBS) of 15 European countries were analysed. Data retrieved from the DAFNE database were used to estimate daily food availability, according to the education and occupation of the household head and the household's food expenditure ratio (expressed as the household's expenditure for food divided by the total household expenses). Trends in dietary disparities among the European populations were further monitored over time.

Results: Southern European populations generally consume greater amounts of foods of vegetable origin, when compared to the rest of Europe. Households of higher education purchase larger amounts of milk and milk products, vegetables and fruits and smaller amounts of meat and meat products for household consumption. In general, manual households record higher availability of energy-dense foods, such as potatoes, meat and meat products, sugar, bread and other cereals. Households of lower socio-economic status, as expressed by their food expenditure ratio, generally record less healthy dietary choices with low consumption of fresh fruits and low-fat milk and increased consumption of animal lipids and soft drinks. In general, the effect of socio-economic indicators to household food availability did not substantially change over time.

Conclusions: There is a need for a nutrition policy across Europe, focusing on lower socio-economic groups. Databases that are comparable across Europe and are regularly updated can prove useful tools for multi-level targeting and monitoring.

MONITORING CHANGES IN FOOD AVAILABILITY IN EUROPE THROUGH THE DAFNE DATABANK

Ekonomou E, Naska A, Tsiotas K, Chloptsios Y, Foukas B, Trichopoulou A for the DAFNE team
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The Data Food Networking (DAFNE) initiative aims at creating a European databank, based on food and socio-demographic data of nationally representative household budget surveys (HBS). The HBSs are periodically undertaken with methodology that allows comparisons of food availability over time, within and between populations.

Raw data of 52 HBSs undertaken in 15 countries during the period of 1980-2000 were forwarded to the coordinating centre and were read and documented following standard procedures. To assure feasibility of comparisons, the survey methodology was studied and the recorded food data were post-harmonised and classified according to the DAFNE food groups. Socio-demographic characteristics (locality of the dwelling, household composition, education and occupation of the household head) were also post-harmonised, in order to study their effect in the food choices of Europeans.

The DAFNE data reveal disparities in food habits in Europe, shaped by geographical, cultural and social norms. Variations exist in both the type and the quantity of meat, added lipids, plant foods, milk and milk products consumed. Vegetable availability is generally rising in North and Central Europe. In South Europe however, a reduction was recorded. With respect to fruit, availability generally decreased with time. In all countries, the highest fruit consumers are of high education and non-manual professions and this pattern remained unchanged over the last 15 years. Educational attainment however, affects vegetable availability differently in North and South European countries.

The DAFNE databank allows monitoring dietary patterns and their determinants in the European region. It may thus be considered as a source of comparable, policy relevant and valid measures of food availability and can prove useful in multi-level monitoring and targeting.

EVALUATION OF METHODS ESTIMATING INDIVIDUAL FOOD CONSUMPTION FROM HOUSEHOLD BUDGET SURVEY DATA

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Problem: Household budget surveys (HBS) provide valuable information on food consumption of private households, but the shares of the individual household members are unknown and need to be estimated for further epidemiological data analysis. Many such individualization methods (IMs) have been proposed, but their validities are hardly evaluated.

Methodology: The National Food Consumption Survey of Germany was designed in such a way that it provides individual food consumption data that can be added up to corresponding household data. From this aggregated household dataset 12 subsamples of varying sizes were drawn and 9 different IMs were applied to them. All the evaluated IMs are based on models regressing household food consumption on household composition.
The covariation between estimated and actual values of the individual food consumption and derived nutrient intakes were analysed with special concern of relevant biases of the various IMs.

Results: Considering food consumption, the overall correlation between estimated and actual values varies from 0.64 to 0.92; considering energy intake, the corresponding values lie between 0.41 and 0.88. All the IMs show statistically significant age and gender related biases, which are, however, in most cases practically negligible (except for the per capita-approach). For some IMs, the deviation of the estimated from the actual values is negatively associated with the sample sizes.

Conclusion: Most of the IMs regarded are useful means to extract epidemiologically relevant dietary information from HBS data. Some IMs, however, especially the per capita-approach, provide substantially biased estimates and should therefore be avoided. Further improvements of IMs are to be expected if household food consumption is not just regarded as a function of household composition, but of factors determining the individual nutrition behaviour.