

EXECUTIVE SUMMARY

Introduction

The project 'European Food Consumption Survey Method (EFCOSUM)' was undertaken within the framework of the EU Programme on Health Monitoring. The purpose of this EU programme is to contribute to the establishment of a Community health monitoring system which allows for measurement of health status, trends and determinants throughout the Community, facilitating, planning, monitoring and evaluation of Community programmes and actions, and providing Member States with appropriate health information to make comparisons and support their national health policies. The aim of EFCOSUM was to define a method for monitoring food consumption in nationally representative samples of all age-sex categories in Europe in a comparable way. Additionally, the project aimed to indicate how to make existing food consumption data comparable and available to the health monitoring system (HIEMS).

A total of 23 European countries participated in this project (including all current EU members except for Luxembourg). Activities of the project included plenary sessions, desk research and working group activities, building on existing experience from projects such as DAFNE (Data Food Networking), EPIC (European Prospective Investigation into Cancer and Nutrition) and COST 99 Eurofoods Research action on food consumption and composition data (COST 99). Four working groups were established on the following topics:

1. comparability of food consumption assessment;
2. comparability of food composition tables;
3. software and statistics;
4. operationalization of a European food consumption survey.

During the course of the project it became clear that two additional expert meetings were needed: a) on food classification issues and b) on statistical modelling techniques.

The results of the working groups and the expert meetings were discussed in the plenary meetings and constitute the core papers and chapters of this report.

Harmonization of food consumption data

Currently, only food availability data from household budget surveys are comparable at the European level (DAFNE). It was the general opinion of the EFCOSUM group that there is a need for harmonizing consumption data at the individual level as well. EPIC developed methods to collect comparable individual dietary data specially focused on cancer and on adults.

Therefore, within the framework of EFCOSUM it was discussed first to what level existing data, available at the national level, could be made comparable at a European level (so-called post-harmonization). Second, it was discussed what actions are needed to arrive at food consumption data that are comparable among countries in the future ('pre-harmonization').

Post-harmonization of available food consumption data

In the EFCOSUM project careful consideration was given to available nation-wide food consumption surveys with nutrient intake data on the

individual level. There was general consensus that there is still a regrettable lack of internationally comparable data. Several pragmatic guidelines were developed which permit to select more comparable data in a transparent way. However, the consequence of using these guidelines is that about 15 countries can provide food consumption data that can be made reasonably comparable. It should be realized that these data are not yet available, that a lot of work has to be done, as explained below, and that comparability is limited.

With respect to food classification systems, it was recognized that all available classification systems and food composition databases are developed to be used for specific purposes at the national level. Therefore, EFCOSUM recommends starting to regroup available food consumption data according to the European Food Group system established in the context of COST Action 99. In this way food intake data can be made comparable at the 'raw edible' ingredient level. Furthermore, EFCOSUM recommends to start with four food groups considered to be the most important food groups for health monitoring purposes, namely 1) vegetables (potatoes excluded), 2) fruits (fruit juices excluded), 3) bread, and 4) fish (shellfish included).

Thus far, full comparability at the nutrient level is not possible. The EFCOSUM group concluded that for available food consumption data post-harmonization is only possible at the food level.

It is stressed that this action is a first step to arrive at harmonization of existing data of 15 countries. It is anticipated to be only sufficiently precise for crude estimates at the community level.

Pre-harmonization of food consumption data to be collected in the future

With respect to pre-harmonization of food consumption, i.e. data to be collected for the future, the following issues were discussed:

- Selection of relevant dietary indicators
- Selection of methods of food intake assessment
- Selection of food classification system
- Selection of food composition databases
- Biomarkers
- Statistical procedures
- Software
- Operationalization of a pan-European survey

Dietary indicators

The following dietary indicators were selected on the basis of their relevance to health, and also by their practicality for obtaining reliable and comparable data in Europe. As a consequence, the list is not intended to be complete from a scientific point of view. Therefore, this list of indicators should be regarded as a very minimum set.

- Foods: vegetables, fruits, bread, fish
- Nutrients: saturated fatty acids (% of total energy, E%), total fat (total lipids; E%), Ethanol (g/day)
- Biomarkers: folate, vitamin D, iron, iodine, sodium.

Energy intake has to be assessed in order to calculate E% for total fat and saturated fatty acids.

Methods of food intake assessment

The aim of the EFCOSUM project focuses on estimates of both acute and usual consumption levels. The method should allow a reliable comparison of large population groups' nutrition, should concentrate on general features of food consumption and nutrient intakes and should be collected at an individual level. A 24-hour recall method was selected as the best and most cost-effective method (e.g. applicable in large European populations of different ethnicity; relatively low respondent and interviewer burden; open-ended; suitable to assess average consumption in population groups). To obtain population distribution of usual intake, correction for within-subject variation is needed. To this end 24-hour recalls could be repeated.

For the estimation of infrequently consumed foods, it is recommended to add some questions on habitual consumption of these foods to get insight into the proportion of (non-)consumers.

Regarding the intake of contaminants and additives, other dietary intake measurements, such as duplicate diets, market basket studies and the use of EAN codes, are more suitable.

For those countries that wish to continue ongoing nutrition surveillance programmes using other methods for consumption measurements, the 24-hour recall should be used as calibration method.

Food classification system

A food classification system is needed to make food consumption data comparable at the food level. It was generally agreed that foods can only be made comparable at the 'raw edible' ingredient level. It is recommended to use the European Food Grouping system as a minimum level of comparability. Software should enable the conversion of foods as consumed (collected with a 24-hour recall) to foods at the 'raw edible' ingredient level. Looking at the food groups that are considered of primary interest, the 'raw edible' level is required at least for vegetables (excluding potatoes), fruits (excluding fruit juice), bread, and fish (including shellfish).

Food composition databases

Within the EPIC context it was already concluded that national food composition tables and databases are not sufficiently standardized to be used for comparison of intake data at the nutrient level. As a consequence, a start has been made with the compilation of a European Nutrient Database (ENDB) in which macronutrients as well as some micronutrients will be included. This work is expected to be finished in 2002.

The EFCOSUM group recommends the usage of this ENDB as a starting point for making intake data comparable among countries at the nutrient level.

Biomarkers

Of the selected dietary indicators folate, vitamin D, iron, iodine and sodium were considered hard to assess in the diet in a comparable way among countries; thus, for these micronutrients biomarkers were recommended. The actual use of biomarkers introduces a considerable extra burden in dietary surveys in terms of logistics, budget and practical consequences. Therefore, EFCOSUM recommends to include the collection of these biomarkers in other pan-European health examination surveys.

Statistical procedures

Within the framework of harmonization statistical aspects play an important role. An appropriate sample size, data analysis and data presentation are crucial to the final outcome of a survey, particularly in comparisons between countries, i.e. sample size, number of repetitions and presentation of data.

The EFCOSUM project has calculated that the sample size in each country should be at least 1,000 persons for proper data on fat (lipid) intake, whereas at least 2,000 subjects are needed for fruit and vegetable consumption figures with a desired precision of 5%. This means a starting point of at least 2,000 persons per country.

The number of repetitions needed to correctly identify an individual's intake depends on several factors. It was agreed that for health monitoring purposes at least two non-consecutive 24-hour recalls are needed assuming that enough persons are included in the survey.

To get insight into the usual intake distribution this 2-day recall method can be repeated several times during a certain period. However, it is also possible to use modelling techniques for estimating the usual intake distribution based on short-term measurement. EFCOSUM proposes to use modelling techniques, i.e. the simplified transformation procedure of Nusser et al. (1996).

For presentation of the data, parameters of interest are mean, median, quartiles, P5 and P95.

The 24-hour recall can be used for children over 10 years of age and EFCOSUM therefore recommends to concentrate data collection on the age group of 11 years and older. For comparison with recommendations, for example, the age-sex group classification used in the Scientific Committee for Food is advised: 11-14 years, 15-17 years and 18 years and older. However, there may be particular problems in individual countries with respect to recruitment, interview setting and logistical aspects of operationalization that necessitates excluding ages below 15 years.

Software

The use of strictly standardized procedures is needed in order to prevent or minimize systematic and random measurement errors among countries.

The EPIC-SOFT program has been developed to collect interactive dietary interviews comparably among countries. It is recommended to use EPIC-SOFT as the first choice to collect 24-hour recalls in all European countries. However, additional developments and improvements are needed to adapt the software for the aims of EFCOSUM and make it independent of EPIC logistics. If EPIC-SOFT is not the option, other computer software and/or 'manual methods' can be used to collect 24-hour recalls using the rules and procedures of EPIC-SOFT as far as possible.

For the quantification of portion sizes the use of a picture book is recommended. The ideal situation would be to use a picture book with the main part being equal for all countries and supplemented with country-specific pictures for national dishes and/or deviant common portion sizes.

Operationalization of a pan-European food consumption survey

With the emergence of multi-centre collaborative epidemiological research and health monitoring programmes it has become increasingly clear that the issue of standardization of methods, measurements and fieldwork is of crucial importance.

Issues such as sampling procedures, recruitment, fieldwork, use of biomarkers, interviewer qualification and training, and quality control are addressed in detail in this chapter of the report.

Overall conclusion

The findings of EFCOSUM emphasize the need for co-ordinating nutritional surveillance activities within the European Union. The project revealed again that the diversity of approaches to assess dietary intake on an individual level is huge. As a consequence, available data sets on dietary intake at the country level are not directly comparable. As a first step in harmonization, existing data of 15 countries can be made comparable at the food level. These data are not available yet, and much is still to be done.

The data from household budget surveys of 13 European countries (DAFNE project) can fulfil the needs of HIEMS at the food availability level. However, to study the relationship of diet and health and for a proper identification of risk groups, data at the individual level are recommended.

The EFCOSUM project demonstrated that there is a broad European consensus on the basic ingredients of an individually based monitoring system oriented at diet. The consortium of 23 countries has created not only the general outline regarding methods, indicators, etc., but also the proof that it is feasible to carry out a European survey. Therefore, the proposal can be implemented when the necessary funds are made available. This would be the first option in the perspective of the aims of HIEMS. In the meantime, it is recommended that any country that will carry out a (national) food consumption survey includes the minimum amount of 24-hour recalls that allows a calibration with other countries.

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