



EVALUATION REPORT - Experiences from the Netherlands' part of the validation study. *Sandra Crispim, Anouk Geelen, Els Siebelink, Marijke Prins, Suzanne Olthof, Paul Hulshof, Pieter van't Veer, Jeanne de Vries.* Division of Human Nutrition, Wageningen University, Wageningen, the Netherlands. September 2007

Summary

Background: The European Food Consumption Validation (EFCOVAL) aims to validate a duplicate 24-hour dietary recall in five selected countries against biomarkers of dietary intake. First, data collection was performed in the Netherlands, coordinated by Wageningen University, and practical information about their experience is presented in this report. **The aim of the report is to improve consistency of procedures conducted within the Netherlands and the other four countries of the EFCOVAL study (Belgium, Czech Republic, France, and Norway).**

Study population: A total of 122 subjects, 60 men and 62 women, were enrolled in the study and completed all steps. Educational level was low in 22% of the subjects, intermediate in 30%, and high in 48% of them.

Methods: During nine weeks, starting from April 2007, recruitment of participants was conducted, along with the organisation of information meetings. Data collection started in the beginning of May and was finished in July 2007. After the screening questionnaire was filled out, collection of blood specimens, anthropometric measurements, 24-hour urine, and 24-hour recalls were performed. The recall was done once by phone and once face-to-face with at least 4 weeks in between. In addition, three questionnaires, including a general, a food propensity and an evaluation questionnaire, were filled out at home.

Results and conclusions: Data collection in the Netherlands has shown the overall design of the study presented to be feasible. The results of the current study suggest that logistic adaptations are needed. Required adjustments and aspects to be considered by Wageningen University and the other EFCOVAL countries are:

Wageningen University in the Netherlands	Other EFCOVAL countries
<ul style="list-style-type: none"> ■ Bigger urine collection bottles; ■ Fine-tuning of training program of dieticians; ■ Revision of food propensity questionnaire. 	<ul style="list-style-type: none"> ■ Information meetings can be an option to inform the subjects about the study and for the scheduling of appointments, but if done have small groups at once; ■ Plan all appointments in advance, if possible; ■ If there are doubts about eligibility of subjects in the study (criteria of exclusion and inclusion), it should be judged separately taking into account the influence of those in the food intake and/or level of biomarker. ■ Check of completeness of all questionnaires (preferably with participant being present); ■ Make use of reminder letters to inform participants about dates and needed preparation before specimen collections (e.g. dietary guidelines); ■ To avoid use of paracetamol, before and during urine collections, provide aspirin to the participants; ■ Reinforce the importance of complete urine specimen during the explanations of the collection. Special attention for collections at work or when travelling; ■ Keep clear communication between staff researchers; ■ Adaptations of country specific questions in the screening and general questionnaires. Provide these alterations to Wageningen.

Methodology: why 24-hr recall?

EFCOVAL is a follow-up of the European project, EFCOSUM*, which aimed to “define a method for monitoring food consumption in nationally representative samples of all age-sex categories in Europe in a comparable way”. **The EFCOVAL project is using the 2-day 24-hr recall method to gather data about the intake of food from adults and children living in several European countries.**

In order to measure what food and drink is consumed over a specific time period, there are generally 2 quantitative methods used: recording what you eat as you go along (diary methods) and recollecting what you have eaten (recall methods). The disadvantages of recall methods include people forgetting what they have eaten, not knowing how much they have eaten or modifying their eating habits in anticipation of being interviewed. The disadvantages of diary methods include the high amount of effort and motivation required of the participants to measure and record all the food they eat over several days and the high likelihood of the participants modifying their eating habits because of having to record everything.

The 24-hour recall method was selected because, although there are some disadvantages, the cost-effectiveness and reliability of the method when applied to very large numbers of participants in diverse populations compares favourably when contrasted to diary methods. Several other studies have also concluded that to estimate average intake in large groups the 24-hr recall method is valid.

Carrying out just a single 24-hr recall interview means that no estimation of an individual's ‘usual’ intake can be made – to solve this, the interview can be repeated. How many times this is done depends very much on the aim of the study (how much accuracy you need for each individual) and the resources available. For the purposes of the EFCOVAL project, 2 interviews are judged sufficient to gain a measure of daily variation in consumption and to provide estimates of usual intakes for comparisons on group level.

In any study, there will be errors that occur which means that there is always a measure of uncertainty associated with the true result. Some of these errors can be anticipated and reduced by practical methods, others may be unanticipated or unknown and can be estimated by statistical methods. The use of strictly standardized procedures is needed in order to prevent or minimize errors among countries and interviewers. EFCOSUM recommended that the software program EPIC-SOFT be used as a tool to collect 24-hr recall data. The EPIC-SOFT program was developed during the very large European Prospective Investigation into Cancer and Nutrition (EPIC) study started in 1993. EFCOVAL aims to create protocols that countries both new to and familiar with EPIC-SOFT can follow when setting up their surveys.

**Rationale and methods of the EFCOSUM project, EJCN May 2002, Volume 56, Supplement 2, Pages S4-S7*

German Institute of Human Nutrition – Dife, Germany

The Department of Epidemiology aim is to investigate the relationship between diet and the incidence of cancer and other chronic diseases and has carried out the EPIC-Potsdam study since 1994. The EPIC-Potsdam study is part of the multi centre EU-funded European Prospective Investigation into Cancer and Nutrition (EPIC). The aim of the study is to investigate the effect of nutrition on the development of cancer and other chronic diseases. It is a long-term study with a follow-up period of about 20 years.

Methodology of nutritional epidemiology Project

Our scientific capability depends on innovative procedures to analyze and assess questionnaire data, biomarkers and genetic variants. Thus, development and application of new nutritional epidemiological methods are very important. The department is particularly engaged in developing innovative methods to optimize the assessment of dietary intake. Thus, we have already calibrated information on food and nutrient intake (Food Frequency Questionnaire) with the results of 24h-recalls in order to enhance the significance of data from the EPIC-Potsdam study. The department also coordinates an EU-project (IDAMES – Innovative Dietary Assessment Methods in Epidemiology and Public Health) to optimize dietary assessment methods and participates in another EU-project (EFCOVAL – European Food Consumption Validation) to improve the statistical treatment of nutritional data from 24h-recalls, which are increasingly used in representative nutritional surveys.

Web: www.dife.de/en/index.php

National Food Institute, DTU, Denmark

The National Food Institute became part of the Technical University of Denmark in 2007.

The Institute conducts research, provides education and gives advice to national

food and health authorities on nutrition, food safety, food technology, environment and health. Surveying the Danish dietary and activity habits

In 1985 and 1995 we conducted the first two nation-wide dietary surveys. Since 2000, we have conducted the Danish National Survey of Dietary Habits and Physical Activity (age: 4-75 years) with data collection every year. In our research, we investigate determinants of dietary and activity habits. We also look into associations between dietary and nutrient intakes, meal patterns and physical activity as well as associations with body weight, socio-demographic characteristics and attitudes to food, physical activity and health. Assessments of official food and nutrient recommendations are also included in the research.

In 2006-2007, we also conducted the National Dietary Survey among infants and young children and similar research activities will follow.

Developing methodologies

Methodological research is also a major part of our work. This includes the development of methodologies for assessing dietary intake and physical activity.

Web: www.dfvf.dk/Default.aspx

Fundación Vasca de Innovación e Investigación Sanitarias - BIOEF - ES

BIOEF is promoted by the Basque Government Dept. of Health as an instrument to enable the health authorities of the Basque Autonomous Community to promote innovation and research in the Basque health system as a way of fostering the development and continuous improvement of the capability of the health service to protect the health of our people.

Web: www.bioef.org

Ghent University - DPH - BE

Faculty of Medicine & Health Sciences

The Faculty of Medicine and Health Sciences joins the “Mission of Ghent University” and desires to participate in the development of education, scientific research and social service in the area of “health and wellbeing”, on both an individual and a social level.

The Faculty intends to turn its students into experts in maintaining, improving and restoring health by allowing them to develop the necessary knowledge, capacities and attitudes. The Faculty continues to support the further specialisation and ongoing education of its experts.

The Faculty of Medicine and Health Sciences currently consists of seven disciplines. These are medicine, dentistry, biomedical sciences, physical education, rehabilitation sciences and physiotherapy, medical-social sciences and logopaedics / audiology. Since the Faculty wishes to be more than a mere collection of these seven disciplines, its intention is to promote an interdisciplinary approach towards “health and wellbeing” by developing optimal co-operation between its disciplines in the fields of education, research and services. The Faculty also aims at extensive co-operation with similar disciplines that are being taught by high schools of the Association of Ghent University.

Web: www.ugent.be

Institut National de la Recherche Agronomique - INRA - FR

Mét@risk

The research unit Met@risk is working since its creation in 2004 on the development and the improvement of risk analysis methodologies. The risk analysis is a crucial issue for public and private decision makers because most of the policies to protect public health, to develop standards and implement controls or to inform consumers about food are based on this process. Moreover the impact of risk analysis on international trade is important since the signature by Members of World Trade Organisation of the Sanitary and Phyto-Sanitary agreement in 1994. From that date the barriers to international trade with a view to protect consumer health are only tolerated if they are based on scientific arguments. Our research programs relate to the modelling of human dietary exposure, the risk-benefit characterisation and the socio-economical analysis of regulatory measures. All the projects are involving multidisciplinary team including computer scientists, statisticians, social scientists and risk assessors

Web: www.inra.fr

International Agency for Research on Cancer - IARC – FR

Nutrition and Hormone Team (NTR)

A major focus for the NTR team is to develop methods for the standardised dietary data collection, data processing and statistical analyses in large multi-centre studies. This involves the development of a highly standardised computerised 24-hour dietary recall programme (EPIC-SOFT*), and more recently, the compilation of a standardised nutrient database (ENDB), containing 26 nutrients and ~10,000 foods from the 10 EPIC participating countries, as well as the development of a complex database management system programme (EnMan) to handle international nutrient databases.

Over the years, the NTR team has answered continuously increasing requests to use its dietary methodologies, particularly after an independent EU working group (EFCOSUM) recommended EPIC-SOFT as the reference method for future pan-European surveys. The NTR team has supported the implementation of the EPIC-SOFT methodology in different national and regional monitoring surveys in Germany, The Netherlands, Belgium and the Basque Country. In addition, the team has extended its international collaborations through different recently funded EU projects (EFCOVAL, IDAMES, EuroFIR) in order to further develop and adapt the EPIC-SOFT methodology for future large international nutritional studies, including pan-European monitoring surveys. A fully operational upgraded EPIC-SOFT programme is expected to be ready by the end of 2009 through the ongoing EFCOVAL project. In parallel, the feasibility of adapting EPIC-SOFT to non-European countries (e.g. India) has been initiated through an IARC project coordinated by P. Boffetta. In addition, new standardised databases on glycemic index/glycemic load, animal/plant proteins and fats have been developed to extend the reach of nutritional research activities. The development of an acrylamide database is also ongoing. Foliates will be added to ENDB during 2009.

**IARC is the owner of the EPIC-SOFT program.*

Web: www.iarc.fr

Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione - INRAN - IT

Food Safety - Exposure Analysis Research topics:

INRAN "Food safety - exposure analysis" research group has expertise in the exposure assessment of food chemicals present in the diet that may constitute a health hazard for the consumers. In order to protect the whole population high consumers (i.e. individuals who consume relatively large quantities of foods containing higher concentrations of the substances under study) are taken in special consideration. The research group has developed and used both deterministic and stochastic models to estimate the dietary exposure to a variety of food chemicals (intense sweeteners, flavouring substances, preservatives, contaminants).

The research group is currently involved in the following EU projects: CASCADE (VI FP, www.cascadenet.org), EFCOVAL (VI FP www.efcoval.eu/), HELENA (VI FP www.helenastudy.com/) and will soon be involved in the FACET project (VII FP). The research group has significantly contributed to the last Italian national food consumption survey performed by INRAN (INRAN-SCAI 2005-06) and is the Italian contact point of the European Food Safety Authority within the food consumption database manager's network.

Web: www.inran.it

Rijksinstituut voor Volksgezondheid en Milieu - RIVM - NL

Centre for Nutrition and Health

Through RIVM's research into the relationship between nutrition, lifestyle and health, a scientific basis is created for policy-making and evaluation with the ultimate aim of achieving health gains for the Dutch population. In the RIVM, the Centre for Nutrition and Health is the most prominent department with regard to expertise on nutrition for optimal public health on national and international level. The activities of the Centre for Nutrition and Health take place in four main working fields; food, nutrition and consumption; diet&chronic diseases; nutrition and health assessment and public health nutrition. The cluster Food, nutrition and consumption contributes to the public health by supporting the governmental policy with regard to assessment of dietary intake, nutritional status and composition of foods and supplements. Important activities of the research group are the performance of

Dutch dietary monitoring surveys, further development of the Dutch food composition tables and involvement in EU projects (EuroFIR, EFCOVAL, IDAMES)

Web: www.rivm.nl

Wageningen University - WU - NL

WU-Nutrition and Epidemiology – Human Nutrition

Our mission is to improve human health through better nutrition.

Nutrition and Health is one of the key subject areas of Wageningen University and Research Centre. The Division has a broad expertise and outstanding facilities for academic education and research in Human Nutrition, in particular at the following levels:

- in cell systems at the molecular level
- controlled dietary interventions at the individual level
- observational studies at the population level

These fields of expertise are in line with the research performed by the four chairs Nutrition, Metabolism and Genomics; Nutrition and Health; Nutrition and Epidemiology; Nutrition and Pharmacology.

The Division aims to achieve its goals by academic education and training to (inter)national students and by scientific research into the effects of nutrition in humans.

Web: www.wageningenuniversiteit.nl

University of Oslo - UiO – NO

The Department of Nutrition, at Institute of Basic Medical Sciences

Development and evaluation of dietary assessment methods (e.g. food frequency questionnaires, food diaries and 24-hour recall) and biological markers are our main research topics. In addition we are involved in epidemiological and clinical studies, along with Norwegian dietary surveys in all age groups. Studies on the association between dietary intake and overweight among children are also one of our research areas.

Web: www.uio.no

National Institute of Public Health - NIPH - CZ

The National Institute of Public Health (NIPH) is a health care establishment for basic preventive disciplines - hygiene, epidemiology, microbiology and occupational medicine. Its main tasks are health promotion and protection, disease

prevention and follow-up of environmental impact on the health status of the population.

The main activities of NIPH comprise science and research, reference and methodological advice, providing expert opinions on the health safety of various products (e. g. cosmetics, food supplements, items of daily use etc.), systematic monitoring of the environmental impact on population health in the Czech Republic, preparation of legislation in the field of health protection, including harmonization of Czech legislation with the norms of the European Union. In the field of health promotion and disease prevention, NIPH concentrates on the most important health problems – epidemiological surveillance of severe infections (AIDS, hepatitis, newly emerging and re-emerging infections), and promotion of a healthy life style (prevention of cardiovascular diseases and tumors, healthy nutrition, drug abuse prevention).

The Institute plays an active role in pre- and postgraduate training of physicians and other health care workers and provides consultations to professionals working in the field

Web: www.szu.cz/index.php

Agence Française de Sécurité Sanitaire des Aliments - AFSSA - FR

Afssa is a public independent organisation contributing through monitoring, alert, research and research instigation to the protection and improvement of public health, animal health and welfare, vegetal and environmental health. Afssa offers solutions to increase the effectiveness of State decisions and to ensure a satisfactory level of safety in its areas of expertise. The Agency is thus responsible for fully identified operational assignments, including risk and health and nutritional benefit assessment, recommendation of health protection measures, management and instigation of national research, alert, monitoring and surveillance and lastly application of training and information initiatives.

Created in April 1999 in response to

various health crises, Afssa is placed under the supervision of the French ministries for health, agriculture and consumer affairs. It represents France within the European Food Safety Authority.

Web: www.afssa.fr

Akademija medicinskih znanosti Hrvatske - AMZH - HR

The Academy of Medical Sciences of Croatia is a society of elected scientists which is dedicated to the promotion of medical sciences and the furthering of health. It is an independent, nongovernmental, and nonprofit organization comprised of eight boards, the working bodies for the main scientific fields of medicine including that of public health. The seat of the Academy is in Zagreb, while it is active throughout Croatia.

Web: www.amzh.hr

Prima informatics Ltd – Primainfo – UK

Primainfo specialises in developing innovative web-based technologies, including online applications, electronic surveys and interactive reporting and offers a range of products and services related to web design and development.

Web: www.primainfo.com

Fundación Vasca de Innovación e Investigación Sanitarias - BIOEF - ES

The Public Health Division of Gipuzkoa (PHGI) is a part of Public Health Department of Basque Country. The Institute has different units: Food Safety Unit, Environmental Healthy Unit, Laboratory of Microbiology and Chemistry, Health Promotion Unit and Epidemiology unit.

The PHGI belongs to the Spanish Centre of Excellence Group in Epidemiology and Public Health. The Chronic Diseases area (CIBER de Epidemiología y Salud Pública) granted by the Instituto de Salud Carlos III (the Spanish Fund for Health Research).

The epidemiology unit has been involved in the EPIC Project, European Prospective

Investigation into Cancer and Nutrition since 1989. The EPIC-San Sebastian team has participated in the design, conduct and publication of results on the investigations of diet and the develop of cancer and other diseases from the EPIC study. The team has experience in the field of different epidemiology studies, such as cross-sectional studies, case-control and prospective studies. In this context has an extensive experience of recruitment and cohort follow-up during a large period with the EPIC-San Sebastian cohort. The group also is a member collaborator active in other international projects focused in elderly population such as EPIC-Elderly and EPIC-Elderly-NAH.

Recently, we have carried out a community Survey on Nutrition in the Basque Country in population from 4 to 18 years. It is a survey on a representative sample of the population to look the dietary and nutrient patterns, anthropometric measures and relations with socio-demographic characteristics, physical activity and other factors.

The unit has involved on methodological research on the development of dietary methodologies for nutritional monitoring surveys in Europe and nutritional epidemiology studies on EFCOVAL and IDAMES projects. The group is also involved in nutritional works to improve the nutrient estimation in epidemiological and nutritional studies, collaborating on the EPIC Nutrient DataBase project (ENDB).

Web: www.osanet.euskadi.net/r85-20338/es

The Efcoval project is carried out with financial support from the European Community (contract FOOD-CT-2006-022895)

**Contact for more information: Dr Evelien de Boer,
Center for Nutrition and Health,
National Institute for Public Health and the
Environment,
PO Box 1, 3720 Bilthoven, The Netherlands.**