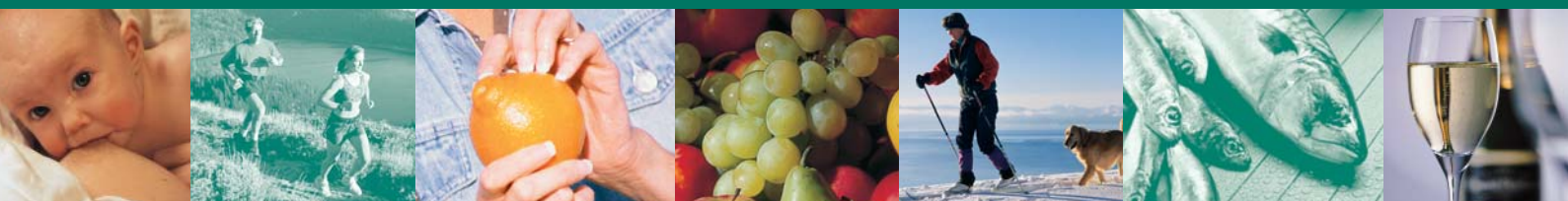


Making way for a healthier lifestyle in Europe

MONITORING
PUBLIC HEALTH NUTRITION
IN EUROPE

LIST OF INDICATORS

Summary Report — final version, October 2003



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nator, is also fully acknowledged. A great number of academic scientists and experts representing national authorities and national and international organisations and NGOs all over Europe have contributed to the discussions with their knowledge and experiences and thereby contributed to the success of the project. Their devoted contributions are warmly acknowledged.

BACKGROUND

The present project, Monitoring Public Health Nutrition in Europe, was initiated from the recognition of the importance of diet, nutrition and physical activity for health status. Public Health Nutrition (PHN) focuses on the promotion of good health through healthy food habits and a physically active lifestyle and the prevention of related illness in the population.

The project is part of the development of the European Union Programme on Health Monitoring (HMP), the purpose of which is to establish a community Health Monitoring System (HMS). Co-ordinator is the ECHI (European Core Health Indicator) project. This monitoring system will allow for the measurement of health status, trends and determinants throughout the community.

It follows from this that clear definitions of indicators of health are needed and these should be consistent across member states. The main purpose of the HMS that is being developed by the European Commission (EC), is to gather nationally available data on the health of the populations of its member states and to analyze and present these data in a way that allows maximum comparison across member states. International strategies to tackle major public health problems may thereby also be facilitated.

From these general objectives and statements, it follows that the main aim of work in the area of Public Health Nutrition, is to define clearly the indicators for nutrition and physical activity that should be monitored for nutrition-related health outcomes.

The recommended indicators, however, should ideally be those indicators that are already being collected in the majority of member states or those that can be added easily to current data collection systems in the Member States. Many projects within the HMP have been completed or are well established. The nutrition related recommendations made in reports or other documents from these projects should also be considered in this project.

The chosen indicators must also be understandable and easily accessible to a variety of audiences such as medical practitioners, researchers, educationalists and policy makers. The indicators chosen must relate to issues of health (and “health potential”) as well as the problems of disease. The scale and cost of diseases that are linked to nutrition and the burden of these diseases to the Member States, as well as in the rest of the world, is significant (WHO, World Health Report 2001, 2002, 2003). Therefore, the chosen indicators must have a relationship with the major causes of mortality and morbidity in the European Union, namely cardiovascular diseases, cancer, non-insulin dependent diabetes, obesity, and osteoporosis.

“FOR THE MAJORITY OF ADULTS IN EUROPE, WHAT THEY EAT, AND HOW PHYSICALLY ACTIVE THEY ARE, ARE THE MOST SIGNIFICANT CONTROLLABLE RISK FACTORS”

From Sjöström et al, Public Health Nutrition 2:453 (1999)



AIMS AND OBJECTIVES OF THE PROJECT

Context of HMP

The present project was formulated in the context of the development of a European Health Monitoring System. The main proposed components of this system are:

- To establish the utility of a European surveillance system on indicators and determinants of health status;
- To select a useful set of indicators and to collect available, reliable and relevant data on these indicators;
- To design a European surveillance system according to the above, with emphasis on European aspects, such as integration and comparability and national and regional handling of collected data;
- To integrate and coordinate the new system with the other systems under development in parallel in the HMP;
- To communicate the importance and efficacy of the above surveillance system towards policy makers at European, national and regional levels, as well as actors in health promotion, implementation and evaluation at national and regional levels.

AIMS

The overarching aims of the present project have been:

- To develop a theoretical framework for the selection and prioritization of indicators for monitoring PHN;
- To identify indicators relevant to the monitoring of PHN;
- To examine the nutritional aspects and proposals in other monitoring projects;
- To consider other novel proposals for monitoring PHN;
- To integrate these into a recommended list of indicators;
- To integrate the surveillance system into training and educational systems, in particular the programme for the European Masters in Public Health Nutrition.

OBJECTIVES

The approach taken to achieve these aims consisted of five main steps:

1. The development of a theoretical model for defining and prioritizing the indicators. In the development of this list, work completed by other projects was integrated into the model. The collation and integration of this work was an important aspect of the development of the final list of prioritized indicators.
2. The collection of data from the Member States on the information routinely collected within each country. Many data banks are being developed for the HMS system and use was made of these data banks to collate data on nutritional and health indicators. All member countries were also contacted for details of data routinely collected that could be relevant to health and nutritional status.

3. A comparison of the theoretical list of ideal indicators with the data routinely collected to establish a short list of indicators that could be monitored, for use in Public Health Nutrition.
4. Recommendations for standard methods of collection of data for the chosen indicators. Other studies have spent considerable time and research to determine common methods for monitoring of socio-economic indicators, nutritional status, dietary intake and biomarkers. Their work has been included in this report where relevant.
5. Recommendations for the collection of data on indicators that are at present, not routinely monitored in all Member States.

Developments within the HMS

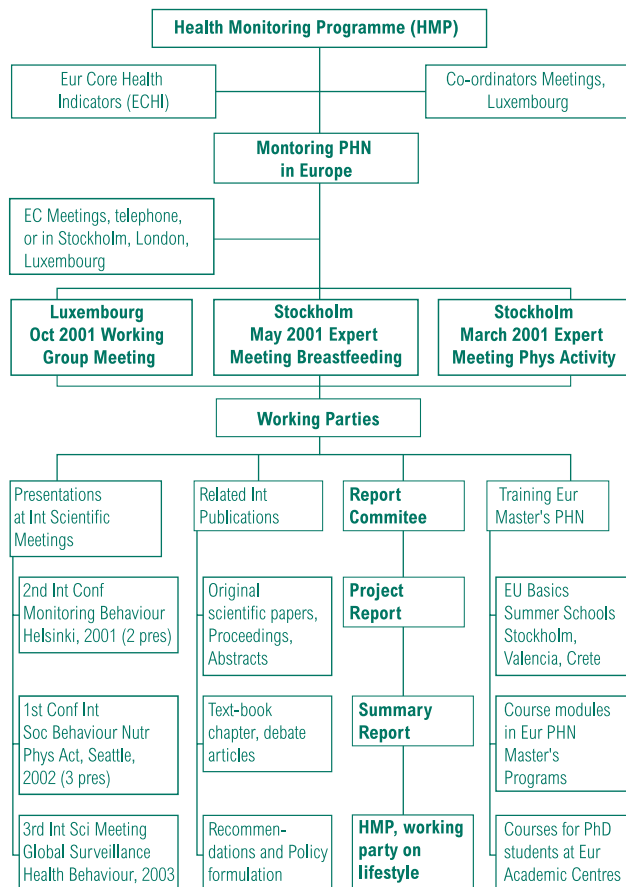
The HMS was continuously growing during the project years and had become more mature. The present project closely followed this development and modified its work accordingly, without missing the basic aims and objectives.

Consequences of EURODIET

The EURODIET project which was initiated in October 1998, had the main aim of contributing towards a co-ordinated European Union (EU) and member state health promotion program on nutrition, diet, and healthy lifestyles, by establishing a network, strategy and action plan for the development of European dietary guidelines. The main outcomes of the EURODIET project in terms of its relevance for public health nutrition, led to a further revision of the aim and objectives or the current project.

The EURODIET-project had identified, as reported in the Journal Public Health Nutrition in special issues in April, 2001, three areas to be considered specifically in future development of promotion of health food habits, namely breast-feeding, fruit and vegetable consumption and physical activity, which the group also had to take into account. These three areas, at least breast-feeding and physical activity, had to be specifically dealt with, as no other project within the HMP had considered them fully. The EUPASS project recommended further exploration of the International Physical Activity Questionnaire (IPAQ) in their report. This was the reason for two project strands, in breast-feeding and physical activity, to start with expert meetings already during the spring of 2001 before the major strand of the project. The work within the project then developed according to the revised plan.





PROJECT WORK

A number of meetings have been held from November 2000 to April 2002. An overview of the various meetings and relationship between the HMP, the ECHI project and the Executive Committee, the Working Group, the Expert meetings, the Working Parties is presented in the figure above.

The Executive Committee had regular contacts, usually as telephone conferences, but had also meetings, according to the original project plan, in Stockholm (twice), London (twice) and Luxembourg in conjunction with a HMP co-ordinators meeting. Furthermore, the project has been represented at the HMP Co-ordinators Meetings in Luxembourg.

The Working Parties provided useful comments on the prioritizing of the indicators. These were then fed to the co-ordinators who further developed the prioritization scheme. The Report Committee took responsibility for preparing the report. Meanwhile experiences were presented and discussed at several international meetings. Information was also disseminated through publications and newsletters, and through training at Master and PhD level, also at European level.

METHODS

A theoretical framework to identify a number of priority indicators was based on an evaluation template proposed at a Working Group Meeting in Luxembourg of October 2001. The template included the generic indicator's name, its operational definition, the justification for selection.

This template was used initially to identify and evaluate the appropriateness of a number of indicators. It evolved into the following more comprehensive framework:

- Identification of a full range of indicators with impact on PHN;
- The examination of the strength of the correlation of an indicator with the diseases of major concern in Public Health Nutrition;
- Correlation of indicators with data availability in the Member States;
- Selection of indicators that have a strong established connection with major diseases of concern in Public Health and were available in the majority of Member States;
- Recommendations for the collection of indicators that should be monitored in the future.

Defining indicators

Seven Primary Categories (PC) for investigation were identified. These were:

- PC 1. Health promotion
- PC 2. Food and nutrient intake, including breastfeeding and alcohol
- PC 3. Nutritional status, anthropometry, physical activity and fitness
- PC 4. Socio-demographic factors
- PC 5. Inequality
- PC 6. Genetic factors and interactions
- PC 7. Life stages and vulnerable/critical periods

It was intended to generate a comprehensive list of possible indicators from which to build a theoretical framework of those which were likely to prove most useful for the purposes of PHN monitoring in the EU.

This extensive list of indicators was initially divided between three groups (working parties) of project participants for evaluation and prioritization. No group was established for genetic factors and interactions (PC 6), as this area is still very much in the early stages of research. Nor was a group created to specifically look at life stages and vulnerable/critical periods (PC 7), as these can be integrated into the other variables within the other groups, where possible. Issues relating to food safety and contamination are primarily to do with environmental safety rather than Public Health Nutrition, and so they are not considered in this report.

Complementary projects

In order to evaluate the usefulness of an indicator for monitoring PHN, literature research was undertaken to find evidence for sound and robust links between an indicator and health status. Intervention studies in particular have been sought and examined for outcome.

Health monitoring projects and reports have made recommendations on nutritional aspects of public health, such as The Eurodiet Project, the French Initiative, the European Council Resolution in Nutrition and Health, The EC Status Report, the WHO Action Plan in Nutrition for Europe, and the WHO CINDI food based guidelines, the European Nutrition and Health report (work in progress) as well as more recent documents from WHO and WHO/ FAO. It was an essential part of this study to consider their conclusions.

There is, however, scope for considering specifically the indicators chosen and/or provided by other projects within the HMS, such as ECHI, EFCOSUM, EUPASS, DAFNE, ECAS, and ‘Monitoring socio-economic inequalities in health in the EU: Guidelines and illustrations’ by Kunst et al, alongside those proposed in this report, and for suggesting additional or alternative indicators according to the framework produced in the present project. Research completed in the SENECA, MONICA and EPIC projects has also been relevant in this context.

Prioritization of generic indicators

Step 1

An Excel workbook consisting of ten separate spreadsheets (five for PC 1, four for PC 4, and one for PC 5) was constructed. The spreadsheets were organized by subdividing the primary categories into secondary categories as follows:

Primary category:	Environmental	Socio-economic	Inequality
Generic indicator (one/spreadsheet)	Nutrition Policy	Age	Inequality
	Nutrition Intervention	Education	
	Associated Policies	Occupation	
	Food availability	Income	
	Food Security		

In the spreadsheets, the indicators listed by the delegates in Luxembourg in 2001 were used as column headings. Rows were designated with the criteria for selection from the template.

On these spreadsheets, if a link has been established in a published research study between the evaluation criteria and an indicator, a brief note was written in the appropriate cell. Robustness of such studies and sources of data were also noted in the appropriate cells on this spread sheet. These spreadsheets illustrated the level of evidence for the major links between the indicators and health status.

Step 2

Using these spreadsheets, a shorter list of indicators was selected from an initial comprehensive list of indicators. For each primary category, one operational measure was chosen from

each generic indicator. The operational measure in each generic indicator, which showed the strongest association with diseases, which could be clearly defined and which could be readily understood was selected. For example, in the socio-economic Primary category, in the generic indicator “occupation” the rational was as follows:

‘Studies have shown that people in manual occupations have a greater risk of heart disease, diabetes, most cancers, obesity, low birth weights etc. In addition, the identification of non-manual versus manual workers is routinely determined and recorded in many National Censuses and Household Budget Surveys. Therefore, for occupation, the percentage of the adult population in manual occupations were considered appropriate for further examination as a priority indicator and selected for the shorter list.

Thus a shorter list of operational measures for PC 1, PC 4 and PC 5 was constructed from the original 10 spreadsheets.

Step 3

Using the selected operational measures for each generic indicator (Step 2) in each PC, a new spreadsheet was developed. Each operational measure was entered as a column heading on the first of the two linked spreadsheets. The rows were representative of the criteria for evaluation, as described in the table above. If, in our view, a connection had been shown between an indicator and an evaluation criteria, this was recorded by placing an “*” in the appropriate cell.

For example, many studies have established that there is an increased risk of cardiovascular diseases in the manual occupations. As this link has been firmly established in epidemiological findings, an “*” was placed in the appropriate cell on the socio-demographic spreadsheet.

Step 4

A further spreadsheet for each PC was linked to spreadsheet in Step 3. For each evaluation criterion, for each of the operational measures, we summed the number of asterisks in the table in Step 3. This score was then used to prioritize the operational measures. No formal weighting was given to different diseases when scoring the operational measures. However when reviewing the scores, if a link had been established between an operational measure and a disease, such as CVD, cancer and diabetes, this operational measure was given consideration for prioritization even if the score was not high. The influence these major diseases have on Public Health were then reflected in the prioritization process

The original list of indicators was very comprehensive. To be of practical value this list had to be pared down to a smaller list. This prioritization of a small number does not however negate the value of other indicators. The indicators not included are likely to relate to smaller numbers of people in the population or generally have less impact on nutrition related health. The process of prioritization basically consisted of identifying the level of evidence for the major links between the indicators, the rationale for inclusion, selection of priority indicators according to strict criteria and a scoring system to identify prioritized indicators.

RESULTS

The information gathered from the spreadsheets on possible indicators and related operational measures is described in the following sections, by primary category (PC1 to PC5). In most cases, operational measures can be defined in detail from their generic indicators. However, in some instances

the level of detail of these corresponds to such an extent that it is difficult to make a distinction, such is the case for alcohol. In contrast, the indicators for Primary Category 1 are hard to define in terms of operational measures and the latter are therefore not given.

Health Promotion

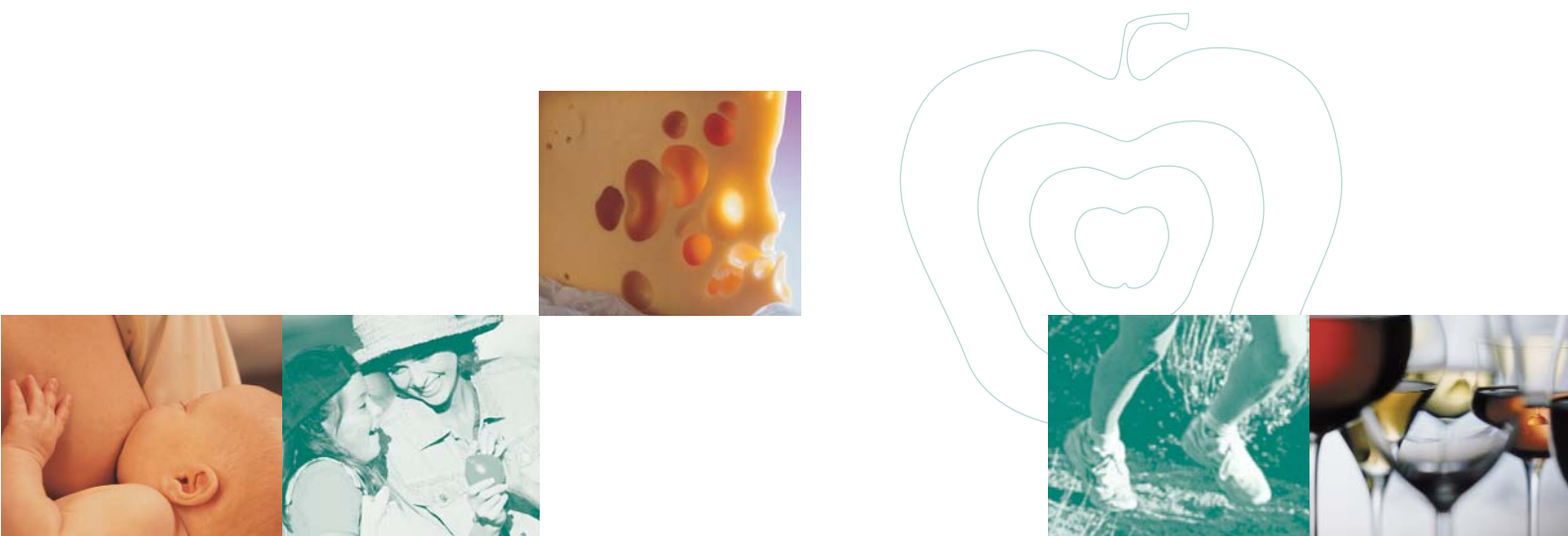
Using the method described earlier, the following operational measures had high scores and were then chosen for consideration as priority indicators for monitoring:

Indicator: NUTRITIONAL POLICY AND STATUTORY LEGISLATION

Justification: Implementation of such would reflect Article 152 of the Amsterdam treaty, which states: "A high level of human health shall be ensured in the definition and implementation of all community policies and activities." At present, few countries in the Member States have a Nutrition Policy.

Indicator: NUTRITIONAL INTERVENTION: FORTIFICATION

Justification: It has been shown that food and drink fortification (e.g. salt with iodine, breakfast cereals with iron) has helped to reduce the risk of some nutrition related diseases. The effects of fortification of flour and bread with folic acid to reduce the incidence of neural tube defects and heart disease has yet to be fully evaluated. The results of the studies undertaken are at present ambiguous. However, extending, monitoring and evaluating the fortification practices across Europe is to be recommended.



Food and nutrient intake

For food consumption and nutrient intake, there is a large body of literature relating the generic indicators to nutrition-related health outcomes.

Indicator: CONSUMPTION / AVAILABILITY OF VEGETABLES (excl. potatoes and vegetable juice)

Operational measure: Average per capita adult intake of less than 300g/day

Justification: Higher intake of vegetables is associated with reduced risk of some cancers, CVD and NIDD and lower BMI

Indicator: CONSUMPTION / AVAILABILITY OF FRUIT (excl. fruit juice)

Operational measure: Average per capita adult intake of less than 100g/day

Justification: Higher intake of fruit is associated with reduced risk of some cancers, CVD and NIDD and lower BMI.

Indicator: CONSUMPTION / AVAILABILITY OF MEAT AND MEAT PRODUCTS

Operational measure: Average per capita adult intake of more than 80g red meat/day

Justification: High intake of red meat and processed meat is associated with an increased risk of colon cancer and may increase the risk of ischaemic heart disease.

Indicator: CONSUMPTION / AVAILABILITY OF FISH

Operational measure: Diets that contain less than 200g of fatty fish a week

Justification: Oily fish contain essential fatty acids that reduce the risk of sudden cardiac death and secondary myocardial infarction.

Indicator: SATURATED FATTY ACID CONTENT OF THE TYPICAL DIET

Operational measure: Average diet with a saturated fatty acid content of more than 10% of energy intake

Justification: High intake of saturated fatty acids is associated with the development of CVD, and possibly breast cancer. The values for trans fatty acids should be included in the estimates of saturated fatty acids.

Indicator: POLYUNSATURATED FATTY ACID CONTENT OF THE TYPICAL DIET

Operational measure: Average diet with less than 7-8% of energy from PUFA

Justification: High mono- and polyunsaturated fatty acid intakes are linked with better "health potential".

Indicator: MONO-UNSATURATED FATTY ACID CONTENT OF THE TYPICAL DIET

Operational measure: Average diet with low MUFA

Justification: High mono- and polyunsaturated fatty acid intakes are linked with better "health potential".

Indicator: NON-STARCH POLYSACCHARIDES (NSP) CONTENT OF THE TYPICAL DIET

Operational measure: Average diet with less than 25g/d

Justification: Higher NSP intakes are associated with decreased risk of colorectal cancer and lower BMI.

Indicator: VITAMIN CONTENT OF THE TYPICAL DIET: vitamins C, D and E, folate and carotenoids

Operational measure: Diet with levels of Vit C, D, E, folate and carotenoids below recommended levels

Justification: Low intakes of vitamin D are associated with increased risk of osteomalacia, rickets and may contribute to risk of osteoporosis. Low intakes of vitamins C and E, folic acid and carotenoids are associated with increased risk of certain cancers, CVD, and neural tube defects.

Indicator: MINERAL CONTENT OF THE TYPICAL DIET: Fe, I, Ca and Se

Operational measure: Diet with levels of Fe, I, Ca and Se below recommended levels

Justification: Low intakes are associated with increased risks of iron deficiency and iron deficiency anaemia (Fe), iodine deficiency disorders (I), osteoporosis, osteomalacia, rickets (Ca) and cancer and cardiovascular disease (Se).

Alcohol

For alcohol, there have been two major influential reports: ECAS I and ECAS II (European Comparative Alcohol Study), carried out by the National Public Health Institute, Sweden.

ECAS I examined alcohol consumption in Europe and reported its findings in June 2001 in “A report from the Swedish Presidency June 2001”. This report was based on data collected by ECAS II and some data from the WHO. The report covered the following areas: a) Trends in drinking, b) Analysis of alcohol-related problems, and c) Trends and analyses of Alcohol Control Policy.

There is a lack of comparative data across countries and over time, so long-term trends of drinking patterns from 15 countries could not be systematically described. ECAS therefore conducted a special survey for data at an individual level, in six countries. This assessed: a) Wine drinking (Italy and France), b) Beer drinking (Germany and the UK), and c) Former spirit drinking but now beer drinking (Finland and Sweden).

ECAS II set out to address some of the problems highlighted in the ECAS I report. The main aims were:

- To find indicators of alcohol consumption and alcohol-related mortality;
- To examine the validity and relevance of these indicators;
- Elaboration of methods for collecting and analyzing data.

Indicator: **TOTAL ALCOHOL CONSUMPTION**

Justification: The major indicator of alcohol consumption is total alcohol consumption. Total alcohol consumption is composed of both recorded and unrecorded alcohol consumption. The major tool for describing and monitoring drinking patterns is national representative population surveys. These can also be used as a direct estimate of unrecorded alcohol consumption. As an indicator of public health, total alcohol consumption per capita per beverage category should include unrecorded alcohol consumption, but much is still to be done in this field.

Other important indicators / operational measures (no distinction is made) are:

**Indicator/
operational measure:** **THE SHARE OF ABSTAINERS IN THE TOTAL POPULATION, AMONG MALES AND FEMALES, AND AMONG ADOLESCENT BOYS AND GIRLS**

Justification: Inversely related to alcohol-related mortality in a population

**Indicators/
operational measures:** **THE SHARE OF HEAVY DRINKERS IN THE TOTAL POPULATION, AMONG MALES AND FEMALES**

THE FREQUENCY OF HEAVY DRINKING OCCASIONS (BINGE DRINKING)

THE SHARE OF TOTAL ALCOHOL CONSUMPTION CONSUMED WITH MEALS AND AMONG MALES AND FEMALES

THE CONTRIBUTION OF ALCOHOL TO ENERGY INTAKE

Justification: Related to prevalence of liver cirrhosis, accidents, homicides and total deaths in a country, with generally stronger effects and increase in suicides in Northern European countries

Breastfeeding

Improved promotion of breastfeeding at a local, national and international level is needed, but this requires reliable and valid prevalence data across countries. WHO definitions of infant feeding should be used.

The core indicators should cover:

Indicator: **INITIATION OF BREASTFEEDING**

Operational measure: Total breastfeeding and Exclusive breastfeeding rates at birth, i.e. through out the first 48 hours of life

Justification: This indicator reflects hospital policy and practice. To assess initiation of breastfeeding, data collected at 48 hours should cover the feeding pattern since birth. This early indicator is required because of the low prevalence in some European countries as well as for directions of initiatives regarding promotion of initiation of breastfeeding.

Indicator: **DURATION AND QUALITY OF BREASTFEEDING**

Operational measure: Total breastfeeding and Exclusive breastfeeding rates at 6 months of age, breastfeeding rates at 12, 18 and 24 months of age

Justification: Follows up on the recommendation. The data can be collected when mothers have a routine contact with the healthcare system as closely as is feasible and practical to six months of life, giving the range of data collection.

The DAFNE project

With regard to comparisons between countries, comparability of operational measures is crucial to the correct interpretation of the comparisons. This has been a key feature of both DAFNE and EPIC for example. It has also informed the thinking behind EFCOSUM and their suggested list of generic indicators.

The DAFNE project, a pan-European database of data from household budget surveys (HBS), has already revealed considerable variations in national food consumption, food habits and nutrient intake. In a system to monitor public health nutrition, monitoring of food availability is vital, as HBS are conducted in every EU country, so providing a ready source of data at low cost. In addition, there are important problems with bias in individual food intake studies

especially when trying to analyze data across countries based on different dietary survey methods. A database such as DAFNE is an essential tool and should be extended to embrace all project countries.

It should however be noted that the HBS data refer to foods available at household level and estimation of the individuals' intake requires the application of sophisticated statistical modelling. Furthermore, information on the type and quantity of food items and beverages consumed outside the household is frequently aggregated and limited to expenses incurred.

Information on the DAFNE project can be retrieved at www.nut.uoa.gr



Derivations of estimates of nutrient intake

A Food Consumption and Composition Data (COST99) group has worked on the quality and compatibility of data on food consumption and composition in 25 participating countries. In addition, the International Network of Food Data Systems (Infoods) set up under the United Nations University Food and Nutrition Programme, is also working to improve data on the nutrient composition, this will be valuable for estimating nutrient intake from dietary records.

The operational measures for food intake, should in the first instance, be based on Eurodiet and WHO food based guidelines as proposed in the CINDI dietary guide. The CINDI guide (focusing on changes to diet in Eastern European

countries) and the Eurodiet food based guidelines are based on foods rather than nutrients. It is intended that the guidelines should be tailored to correspond to local conditions of food consumption and prevalence of disease. However, these guides do give broad recommendations in some of the indicators that we are proposing. The World Cancer Research Fund, in association with the American Institute for Cancer Research have also made recommendations for food based guidelines. These reports' recommendations for operational measures are present in Table 1 for the chosen generic indicators.

There are no specific recommendations for the intake of iron, selenium, calcium and vitamin E and therefore alternative sources of recommendations should be sought for these nutrients.

Table 1: Operational measures of nutrient intake based on CINDI, Eurodiet and WCRF

Generic Indicator	Recommendations for operational measures		
	CINDI	Eurodiet	WCRF
Consumption of meat and meat products	Less than 80g/d (this may contribute to an increase in the prevalence of iron deficiency)		
Consumption of vegetables (excl. potatoes & vegetable juice)	Taken with fruit 400g/d or 5-6 portions	Taken with fruit 400g/d or 5-6 portions	320-520g/d
Consumption of fruit (excl. fruit juice)	Taken with vegetables 400g/d	Taken with vegetables more than 400g/d	80-280g/d
Consumption of fish	One portion/week to provide one sixth of PUFA		
Total lipid content	Less than 30% of total energy content	Less than 30% of total energy content	
Saturated fatty acid content of typical diet	Less than 10% of total energy content	Less than 10% of total energy content	
Poly-unsaturated fatty acid content of typical diet	7% of energy content	7-8% from PUFA, n-6 4-8% of energy from fat, n-3 2g/d	
Mono-unsaturated fatty acid content of typical diet			
Non-starch polysaccharides content of typical diet		More than 25g/d	More than 25g/d
Vitamin content of typical diet; Vit D and E, folate, carotenoids		More than 400 µg/d for folate, 10 µg/d for Vit D	
Mineral content of typical diet; Fe, I, Ca, Se		More than 15mg/d Fe for women. More than 800 mg/d for Ca	

Nutritional status

The following biomarkers are recommended for monitoring.

Indicator: SERUM CAROTENOID LEVELS

Operational measure: Retinol and total plasma carotenoids levels of a representative sample of the population, in the routine nutritional surveys. Age-gender specific cut-off points to be determined

Justification: Low concentrations of carotenoid in serum reflect the level of intake of fruit and vegetables. Low consumption of fruit and vegetables is associated with increased incidence of cancers, cardiovascular disease, obesity and adult onset diabetes.

Indicator: BLOOD LIPID PATTERN

Operational measure: Total plasma cholesterol and cholesterol fractions, fatty acid cholesterol esters levels of a representative sample of the population in the routine nutritional surveys. Age-gender specific cut-off points to be determined

Justification: Raised levels of cholesterol, especially LDL and triacyl glycerides, may place an individual at increased risk of cardiovascular disease.

Indicator: HAEMOGLOBIN, SERUM FERRITIN, SERUM TRANSFERRIN RECEPTOR

Operational measure: Haemoglobin, serum ferritin and serum transferrin receptor using appropriate cut off points by age and gender

Justification: Low haemoglobin levels, low serum ferritin levels, and raised serum transferrin receptor can reflect the varying aspects of dietary iron deficiency. All are associated with poor growth, poor immune status, diminished physical and mental performance, and poorer outcomes of pregnancy. In Europe, deficiency is due mainly to dietary deficiency (rather than infestation or other pathological causes).

Indicator: FOLIC ACID STATUS

Operational measure: Erythrocyte folate levels of a representative sample of the population in the routine nutritional surveys. Age-gender specific cut-off points to be determined

Justification: Low levels of folate increase the risk of neural tube defects and chronic conditions such as cardiovascular disease in the population. The possible role of folate status in carcinogenesis is currently under investigation. Could be linked to homocysteine levels as a marker for cardiovascular disease.

Indicator: SELENIUM STATUS

Operational measure: Plasma selenium levels of a representative sample of the population in the routine nutritional surveys. Age-gender specific cut-off points to be determined

Justification: Low serum selenium levels are associated with increased mortality from cancer and heart disease. Some areas of Europe probably have a poor selenium status and this status is thus worth estimating.

Indicator: SERUM 25-HYDROXY VITAMIN D3

Operational measure: Circulating levels of 25-hydroxy vitamin D3 provide the most appropriate measure of vitamin D status

Justification: Serum 25-hydroxyvitamin D3 is the most useful marker of vitamin D status and low concentrations are associated with increased risks of rickets, osteomalacia, osteoporosis and bone fractures.

Anthropometry

Indicator: BODY COMPOSITION

Operational measure: Body Mass Index (BMI)

Justification: The BMI (kg/m^2) is more highly correlated with body fat than any other indicator of height and weight. Categories in adults should reflect underweight (<20), normal (20-24.9), overweight (25-29.9) and obese (≥ 30).

Operational measure: Waist Circumference

Justification: The presence of excess body fat in the abdomen, when out of proportion to total body fat, is considered an independent predictor of risk of ailments associated with obesity

Operational measure: Waist-to-hip ratio (WHR)

Justification: For most people, carrying extra weight around their waist increases health risks more than carrying extra weight around their hips or thighs. Overall obesity is still more risky than body fat storage locations or waist-to-hip ratio.

Operational measure: Sagittal Abdominal Diameter (SAD)

Justification: Recent research indicates that the abdominal sagittal diameter (height of the abdomen measured half-way between lower rib and iliac crest while the patient is in a supine position) is a better correlate of abdominal visceral adipose tissue accumulation than the commonly used waist-to-hip ratio (WHR). Sagittal diameter values over 25 cm are most likely to be associated with potentially "atherogenic" metabolic disturbances.

Physical activity

Physical activity is defined as any bodily movement produced by skeletal muscle that results in energy expenditure. It is closely related to but different from physical exercise, that is planned, structured and repetitive bodily movement done to improve or maintain fitness. The amount and character of all activities have physiological and medical consequences.

The physical activity level and pattern of a population is an important generic indicator in Public Health Nutrition. Relative physical inactivity, usually together with unhealthy food habits, is associated with the development of many of the major non-communicable diseases in society, such as CVD, some cancers, obesity, diabetes and osteoporosis. It has become increasingly clear that physical inactivity is a global health issue.

Indicator: PHYSICAL ACTIVITY LEVEL AND PATTERN

Operational measures: Total amount of activity expressed either as activity energy expenditure (kcal, Joules, MET mins, etc) or physical activity level (PAL);

Time (mins/day or week) spent at health enhancing physical activity level (i.e. activity at moderate and vigorous intensity levels);

Time (mins/day or week) spent sitting;

Justification: Physical activity is a complex behavior. Any activity can be described in terms such as intensity, frequency and duration, and these dimensions must be considered. An assessment methodology should also consider inactivity, such as time spent sitting. Physical activity can be related to work, transportation, home and leisure time. The activities at either of these domains may have specific health consequences, and advanced monitoring should also consider these

Indicator: ENVIRONMENTAL DETERMINANTS FOR PHYSICAL ACTIVITY

Justification: There is increasing interest in the contextual (environmental) barriers that prevent or limit the opportunity to walk and cycle in areas around where we live and work. Factors that are emerging as important may include land use, housing density, accessibility to public transport systems, and perceived safety from traffic and crime.

Health-related Fitness

Health-related fitness includes the characteristics of functional capacity that are affected positively by physical activity or negatively by the lack of physical activity and are, at the same time, associated with health status. Good health-related fitness is comprised of endurance, bodily control, muscular strength, joint mobility, and suitable weight. A person who is sufficiently healthy can cope with everyday activities without overtiring. Health-related fitness broadens the traditional concept of fitness as the capacity to perform sports and physical activities to include the functional capacity needed for everyday life and health. Indicators and operational measures are defined with EUROFIT.

Indicator: MAXIMAL AEROBIC POWER

Operational measure: Walk test, 2km

Justification: Population assessment of cardiovascular fitness (aerobic fitness/maximal aerobic power) using Walk test 2 km is the gold standard. A test, the UKK Walk Test, has been developed. It is well suited for the assessment of health-related fitness among the general population. It also reflects the functional capacity of the musculo-skeletal system.

Indicators: BODILY CONTROL
MUSCULAR STRENGTH
JOINT MOBILITY

Operational measures: Defined within EUROFIT.

Justification: See introduction above.

Socio-demographic factors

Indicator: AGE DISTRIBUTION

Operational measure: The percent of the population aged 71+

Justification: The over 71-age group has a high morbidity and mortality, presenting a considerable health burden. In addition, this group is often malnourished and typically requires nutrient dense food.

Indicator: EDUCATIONAL LEVEL

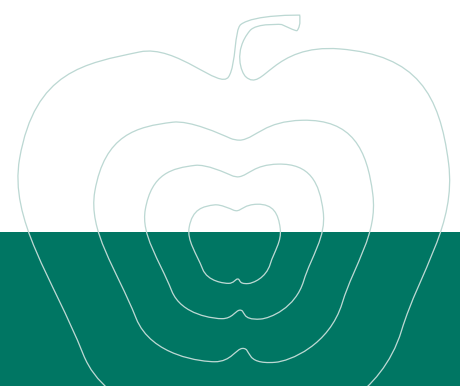
Operational measure: The percent of the population with low educational level

Justification: Numerous studies have linked lower educational levels with a poor health status and a less healthy diet.

Indicator: OCCUPATION

Operational measure: The percent of the population in manual occupations

Justification: Numerous studies have linked manual occupations with a poor health status and a less healthy diet. The number and percentage of manual workers in the adult population should be monitored to estimate the health burden and to inform measures to improve their health status.



Socio-demographic factors cont.

Indicator: HOUSEHOLD INCOME

Operational measure: The percentage of households with a total income below 50% of the median income of the country

Justification: Studies have shown that households on low income have a greater morbidity and mortality. Their level of income compared to the general population is more significant than the absolute level of income. The proportion of such households in a population should thus be monitored.

Operational measure: The number of household with income in the lowest 5%

Justification: As for the above indicator households on low incomes have a greater morbidity and mortality and their prevalence should be monitored

Operational measure: The percentage of households with income below budget standards

Justification: Budget standards represent a level of income that gives and commensurates with an acceptable standard of living for that area or state. Any household however with an income below this standard will thus have little income, is unlikely to be able to afford the goods and services that they require for a healthy life. The consequence is likely to be and this can result in a less healthy diet and a poor health status. This operational measure can only be monitored if the state sets budget standards are set by the state or an acknowledged and accepted authority.

Inequality

There are three suggested mechanisms, through which socio-economic circumstances impact on social inequality, namely behavioral, material/structural and psycho-social factors including social support. Only the basic material factors were included in the original list of indicators for prioritization. However, this report recognizes the important role that psycho-social factors play in Public Health and in the area of Public Health Nutrition. At the present time, however it was considered premature to prioritize any particular generic indicator in this area.

The ongoing work of the European Science Foundation programme Social Variations in Health Expectancy in Europe and information from the pan-European survey on food attitudes will help identify relevant indicators in this area for future monitoring purposes. As we have considered only the material aspect of inequality, the list of operational measures for inequality are almost identical to the socio-demographic/ socio-economic indicators, and only one extra needs to be added, that is long term unemployment. Thus, in relation to the three PCs Environment, Socio-demographic and Inequality, it is appropriate to link information on the selected variables with measures of nutritional exposure (diet) or status (biomarkers, anthropometry, etc) in order to monitor changes in Public Health Nutrition.

Indicator: THE PERCENT OF POPULATION LONG TERM UNEMPLOYED

Operational measure: Percentage of the population that have been unemployed for more than 12 months.

Justification: Numerous studies have shown that the long term unemployed have a higher morbidity and mortality rate and a less healthy diet the longer the period of unemployment, the more the food budget is restricted as financial reserves are eroded. Subsequently, the diet increases in saturated fat content and decreases in its content of fresh fruit and vegetables.

Availability of Prioritized Indicators

An Excel spreadsheet questionnaire was devised and sent to a representative of each participating country. Each representative then investigated which data were routinely collected in their country. This was a considerable operation and we are grateful to all those who took the trouble to complete the questionnaire. Prioritized indicators and their availability are listed in Table 2. The indicators listed below were chosen on the basis that research has shown that these factors have an association with poor health status and a poor diet. The related diseases place a considerable burden on the health services in the member states. These indicators were thus considered relevant to monitoring Public Health Nutrition.

With respect to Table 2 it should be noted that:

- At the moment of data collection, no comparable data on physical activity and fitness was available in Member States. The Euro barometer study that deals with this was carried out in 15 EU countries and is currently in the stage of data analysis.
- The results of the two ECAS studies concluded that there is very limited information on comparable alcohol consumption indicators in EU countries and it was not the intention of our project to try to collect information on the availability of these indicators.
- The information received from France was very limited

User window

It is also recommended that these indicators should be available in a data-base where the combination of different indicators is possible, for example the consumption of meat in relation to household income or educational status. The operational measure for food and nutrient intake (e.g. percent of population with intakes less than the Lower Reference Nutrient Intake (LRNI)) and alcohol consumption depend upon the method used to collect the data (e.g. individual or household data) and the precision of the measurements made. Elaboration of the operational measures will be needed to be specified in relation to precise methods of assessment (e.g. three 24h recalls).



RESULTS AVAILABILITY

Table 2: Availability of data on prioritized indicators in participating countries

		AT	BE	DE	DK	ES	FI	FR	GR	IE	IS	IT	LU	NL	NO	PT	SE	UK
Environment	Nutr policy: Statutory Legislation	0	0	X	0	X	X	0	T	T	X	X	0	0	X	U	X	T
	Nutrition intervention: Fortification	0	0	X	0	U	X	0	U	X	X	X	0	X	X	0	X	X
Socio-demographic	% of population aged 71+	W	W	W	W	W	W		W	W	W	W	W	W	W	W	W	W
	% low educational level	W	W	W	W	W	W		W	W	W	W	W	W	W	W	W	W
	% in manual occupations		W	W	W	W	W		W	W	W	W	W	W	W	W	W	W
	% <50% median income		W	W	W	W	W		W	W	W	W	W	W	W	W	W	W
	% income in the lowest 5%		W	W	W	W	W		W	W	W	W	W	W	W	W	W	W
	% below budget standard		A	A	W	W	W		0	A	0	0	A	0	A	A		A
Inequality	% long term unemployed		W	W	W			W	W	W	W	W	W	W	W		W	W
Food and Nutrient Intake/ Availability	Total energy content	W	W	W	W	W	W		W	W	W	W	A	W	W	W	W	W
	Cons. meat &-products	W	W	W	W	W	W		W	W	W	W	A	W	W	W	W	W
	Cons. vegetables*	W	W	W	W	W	W		W	W	W	W	A	W	W	W	W	W
	Cons. fruit**	W	W	W	W	W	W		W	W	W	W	A	W	W	W	W	W
	Cons. fish	W	W	W	W	W	W		W	W	W	W	A	W	W	W	W	W
	Saturated fatty acid content	W	W		W	W	W		W	W	W	W	A	W	W	W	W	0
	Mono/ polyunsaturated fatty acid content		W	W		W	W		W	W	W	W	A	W	W	W	W	0
	NSP content	W	A	W	W	0	W		0	0	W	0	A	0	0	W	W	W
	Vitamin content (A,C,D,E, folate)	W	A	W	W	W	W		W	W	W	W	A	W	W	W	W	W
	Mineral content (Fe, Ca, I, Se)	W	A	W	W	W	W		W	W	W	W	A	W	W	W	W	W
Breastfeeding	Breastfeeding at birth	W	W	W	W ¹	W	W	W	W	W	W	W ³	W	W	W	W	W	W
	% Breastfed at 6 months	W	W	W	W ²	W	W	A	W	W	W	W ³	W ²	W	W	W	W	W
	% Excl. breastfed at 6 months	W	A	W	W ²	A	W	A	W	A	W	W ³	W ²	A	W	W	W	A
	% Breastfed at 12 months	W	A	A	A	A	A	A	W	A	W	A	A	A	W	W	A	A
Nutritional Status	Carotenoid status	W	A	W	A	W	W		W	W	0	A	A	0	0	0	W	W
	Fatty acid profile	W			W													
	Total cholesterol	W	W	W	W	W	W		W	W	W	A	A	W	W	W	W	W
	Cholesterol fractions	W	W	W	W	W	W		W	W	W	A	A	W	W	W	W	W
	Triacyl glycerides	W	W	W	W	W	W		W	W	W	A	A	0	W	W	W	W
	Cholesterol esters	W	0	0	A	0	0		0		0	0	0	0	0	0		0
	Iron status (Hb, ferritin transferrin rec.)																	
	Vitamin D status																	
	Folate status	W	0	W	W	W	W		A	W	0	A	A	0	0	0	W	W
	Selenium status	W	0	W	A	W	W		A	W	0	A	A	0	0	0	W	A
Anthropometry	Height, weight, BMI, circumferences, SAD	W	W	W	W	W	W		W	W		W	0	W	W	W	W	W

X Countries that (a) have a nutrition policy or (b) implement intervention programmes

T Countries that have nutrition statements as part of policy documents

U Countries that have no nutrition policy or intervention programmes

W Countries that collect relevant data for limited samples or more

A Countries that do not collect relevant and comparable data

0 Indicates countries for which there is no information

a Indicates no current ECHI heading related directly to proposed indicator

b One or more of proposed indicator(s) not currently listed under ECHI heading

* Potatoes and vegetable juice excluded

** Fruit juice excluded

¹ Only in baby-friendly hospitals

² At 4 months

³ In some regions

RECOMMENDATIONS

Table 3: Recommendations for indicators for monitoring public health nutrition in the EU

Indicator	Operational Measure	Rational
Health promotion		
Nutrition policy	A Nutrition Policy with specific recommendations is set down in national or Government legislation.	A Nutrition Policy defined in legislation will inform other associated policies and will be influenced by this and drafted accordingly. With the evidence of the links between nutrition and health status, Nutrition Policies should now be defined clearly in all member states.
Nutritional fortification	A unified practice of food fortification and monitoring of the incidence of related diseases impact, efficacy and side effects across the European Union.	Since fortification has been shown to have positive health benefits for a large proportion of the population a unified practice of food fortification is thus to be recommended
Socio-demographic/economic		
Age	Percentage of population over the age of 71 years.	The over 71 age group has a high morbidity and mortality thus the monitoring of the prevalence of this group in the population will help inform policy and development of health services.
Education	Percentage of population with only elementary education and below.	The monitoring of the percentage of the population with only elementary education or below, will inform both the education and health policies.
Occupation	Percentage of the adult population in manual occupations.	The monitoring of the percentage of the population in manual occupations can inform policy in many areas and changes can be targeted at these groups.
Household income	Percentage of households with a total income below 50% of the median income of the country.	The percentage of the population with incomes below 50% of the median of the country's income should be monitored, as this group have a high morbidity and mortality. The majority of the EU Member states measure household income in many of the routine surveys undertaken. This would thus be easy to implement.
Unemployment	Percentage of the population that have been unemployed for more than 12 months.	The monitoring of the number of long term unemployed can indicate, the extent of a developing health problem and can therefore inform preventative policies.

Comment: Although both measures of household income are equally valid for the monitoring of Public Health Nutrition either could be monitored but there should be consistency across countries, so the one recommended is household incomes below 50% of median.

There are few countries where household budget standards have been established so this indicator is not useful, at the

present time and could be removed from this priority list. Budget standards however provide an accessible method of exploring living standards and setting the threshold for adequate incomes for health. This report would therefore strongly recommend that member states should in future set realistic budget standards for their countries according to EU guidelines.

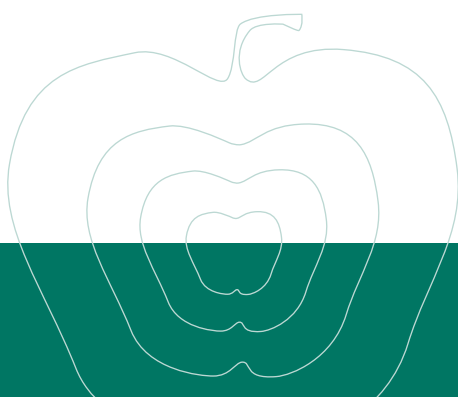
RECOMMENDATIONS

Recommendations for indicators for monitoring public health nutrition in the EU cont.

Indicator	Operational Measure	Rational
Food and nutrient intake/economic		
Consumption/Availability:		
Vegetables (excl. potatoes and vegetable juice)	Average per capita adult intake and percent of population below 300g/day	Higher intake of vegetables decreases risk of some cancers, CVD and NIDD and decreases weight gain
Fruit (excl. fruit juice)	Average per capita adult intake and percent of population below 100g/day	Higher intake of fruit decreases risk of some cancers, CVD and NIDD and decreases weight gain
Fish	Diets that contain less than 200g of fatty fish a week	Oily fish contain essential fatty acids and increase the chances of recovery from myocardial infarction
Meat and meat products	Average per capita adult intake and percent of population above 80g red meat/day	High intake of red meat and processed meat is associated with colon cancer and may increase risk of CVD
Saturated fatty acid content of the typical diet	Average diet with a saturated fatty acid content of more than 10% of energy intake	High intake of fatty acids are associated with the development of CVD, and breast cancer
Content of the typical diet:		
Poly-unsaturated fatty acids	Average diet with less than 7-8% of energy from PUFA	High intake is associated with risk of fatal CVD
Mono-unsaturated fatty acids	Average diet with low MUFA	High intake is associated with a decreased risk of fatal CVD
Non-starch poly-saccharides	Average diet with less than 25g/d	Higher intakes decrease the risk of colo-rectal cancer and decreases diet weight gain
Vitamins	Diet with levels of Vit C, D, E, folate and carotenoids below recommended levels	Increased risk of osteoporosis, osteomalacia and rickets and possible increased risk of cancer and CVD and neural tube defects
Minerals	Diet with levels of Fe, I, Ca and Se below recommended levels	Risk of iron deficiency anaemia, iodine deficiency disease, osteoporosis osteomalacia and rickets and possible increased risk of cancer and CVD
Breastfeeding		
Initiation	Total and Exclusive breastfeeding at birth, i.e. throughout the first 48 hrs of age	Determined by the hospital routines and overall support
Duration	Total breastfeeding at 6 months of age	Can be collected during routine check-up close to 6 months, giving the range of data collection
Quality	Exclusive breastfeeding at 6 months of age	Follows up on recommendation, can be collected during routine check-up close to 6 months, giving the range of data collection.

Recommendations for indicators for monitoring public health nutrition in the EU cont.

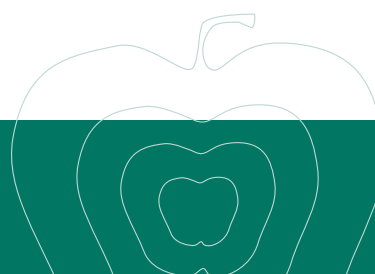
Indicator	Operational Measure	Rational
Alcohol		
Total consumption	Total alcohol consumption per capita per beverage category	The major indicator of alcohol consumption is total alcohol consumption. Total alcohol consumption is composed of both recorded and unrecorded alcohol consumption.
Abstainers	The share of abstainers in the total population	Inversely related to alcohol-related mortality in a population
Drinking Pattern	The share of heavy drinkers in the total population	Related to prevalence of liver cirrhosis, accidents, homicides and total deaths in a country
	The share of the total alcohol consumption consumed as an intoxicant	Related to prevalence of liver cirrhosis, accidents, homicides and total deaths in a country
	The frequency of heavy drinking occasions (binge drinking)	As above, with generally stronger effects and increase in suicides in Northern European countries
	The share of total alcohol consumption consumed with meals	Related to prevalence of liver cirrhosis, accidents, homicides and total deaths in a country
Nutrient status		
Carotenoid status	Retinol and total plasma carotenoids levels of a representative sample of the population, in the routine nutritional surveys. Age-gender specific cut-off points to be determined	Measurement of this indicator would indicate the intake of fruit and vegetables. The consumption of low levels of fruit and vegetables is associated with increased incidence of cancers, cardiovascular disease late onset diabetes and obesity and is therefore associated with a higher health burden
Fatty acid profile	Total plasma cholesterol and cholesterol fractions, fatty acid cholesterol esters levels of a representative sample of the population in the routine nutritional surveys. Age-gender specific cut-off points to be determined	Monitoring the lipid profiles of a sample of the population will therefore indicate the risk of coronary heart disease and also the general fatty acid content of diets. Serum cholesterol esters are suitable indices of the fatty acid pattern of individuals and populations
Folate status	Erythrocyte folate levels of a representative sample of the population in the routine nutritional surveys. Age-gender specific cut-off points to be determined	Measurement of this indicator would highlight the risk of neural tube defects and chronic conditions such as cardio vascular disease e.g. ischaemic heart disease in the population. The possible role of folate status in carcinogenesis is currently under investigation



RECOMMENDATIONS

Recommendations for indicators for monitoring public health nutrition in the EU cont.

Indicator	Operational Measure	Rational
Nutrient status		
Selenium status	Plasma selenium levels of a representative sample of the population in the routine nutritional surveys. Age-gender specific cut-off points to be determined	Some areas of Europe probably have a poor selenium status and this status is thus worth estimating. Measurement of selenium levels will highlight those geographical areas and members of the population at risk of related diseases
Iron status	Haemoglobin, serum ferritin and serum transferrin receptor using appropriate cut off points by age and gender	Iron deficiency in various aspects is likely to be the most widespread deficiency in the EU
Vitamin D status	Circulating levels of 25-hydroxy vitamin D 3 provide the most appropriate measure of vitamin D status	In toddlers and in adolescents from minority ethnic groups (especially from the Indian sub-continent) low vitamin D intake and lack of exposure to sunlight may precipitate rickets. Further, in older people with low exposure to sunlight, low vitamin D intake may lead to osteomalacia and osteoporosis and increased risk of bone fracture
Anthropometry		
Body composition (BMI)	Height and weight, Waist/hip ratio, Sagittal abdominal diameter	Measures of body size and proportions are correlated with disease risk especially vascular diseases of the heart and brain and diabetes. Changes in body size and proportion have been shown to alter risk and so lend them-selves to programmes of health promotion
Physical activity and Fitness		
Level	The total amount of activity expressed either as activity energy expenditure or physical activity level (PAL)	Physical activity is a complex behavior. Any activity can be described in terms such as intensity, frequency and duration, and these dimensions must be considered. An assessment methodology should also consider inactivity, such as time spent sitting. Physical activity can be related to work, transportation, home and leisure time. The activities at either of these domains may have specific health consequences, and advanced monitoring should also consider these
Pattern	Time (mins/day or week) spent at health enhancing physical activity level	
Inactivity	Time (mins/day or week) spent sitting	
Determinants	Environmental determinants for physical activity	
Fitness	Aerobic power, assessed using the UKK Walk Test 2 km	
		An environmental module attached to IPAQ is internationally tested and evaluated, and includes a series of environmental determinants
		The UKK Walk Test was developed especially to assess cardiovascular fitness by measuring its gold standard, maximal aerobic power (VO2 max). In later studies it was also found that the test reflects the functional capacity of the musculoskeletal system. Therefore, the UKK Walk Test is well suited for the assessment of health-related fitness among the general population.



Blood Samples

This report recommends that the protocol developed by the WHO MONICA project and EPIC should be used for taking blood samples and estimation of lipids in the blood. The details of which can be found with full references in the MONICA Manual and the EPIC protocol summary.

Briefly, venipunctures should be carried out with the subject or patient in a sitting position. Prolonged venous occlusion can cause changes in the apparent concentrations of blood constituents

Use of a tourniquet should therefore be avoided. If a good flow cannot be obtained in some subjects and the tourniquet has to be used, it must be released before the withdrawal of blood.

Standardization of the position (sitting position is recommended) is necessary since plasma volume changes occur when a standing subject assumes a recumbent position

Anthropometry

This report recommends that height and weight measurements be taken in line with the protocol developed by the WHO MONICA project and EPIC. The details of which can be found with full references in the MONICA Manual and the EPIC protocol summary

Briefly, measurements must be carried out on a hard floor surface (tile, cement, etc.) and must not be carpeted or be covered with other soft materials. If only a carpeted surface is available, a wooden platform should be laid down to serve as a floor. The participant is asked to remove his/her shoes and heavy outer garments.

To measure height, the participant should stand with his/her back to the height rule. The back of the head, back, buttocks, calves and heels should be touching the upright, feet together. The top of the external auditory meatus (ear canal) should be level with the inferior margin of the bony orbit (cheek bone). The position is aided by asking participant to hold the head in a position where he/she can look straight at a spot, head high, on the opposite wall. The triangle is placed on the on the height rule and slides down to the head so that the hair (if present) is pressed flat. Information is recorded on a survey form to the nearest centimetre.

For measuring weight, the use of balance scales is recommended. If the digital scales are used, testing with standard weights is of particular importance. The scale should be balanced with both weights at zero and the balance bar aligned. The participant should have removed his/her shoes and heavy outer garments (jacket, coat, etc.) and should stand in the centre of the platform as standing off-centre may affect measurement. The weights are moved until the beam balances (the arrows are aligned). The weight is read and recorded on the form. Weights are recorded to the nearest 200 g.

Dietary Intake

EFCOSUM have undertaken a study for the estimation of dietary intake. They concluded that the 24 hour recall method was the most suitable for comparisons between countries. The quality of the comparisons will improve if more than one 24hrs recall is obtained from each respondent, and will facilitate analyses of distribution of intakes which single 24hrs recalls will not. The present report recommends the adoption of the EFCOSUM protocol for 24h recall.

Apart from dietary intake, in a system to monitor public health nutrition, monitoring of food availability is vital. A database such as DAFNE, which is based on household budget survey data, is an essential tool and should be extended to embrace all project countries

Alcohol

No protocol was recommended for the measurement of individual alcohol intake in the Alcohol report. A protocol has therefore to be established for this indicator. This could be along the lines of the method used by ECAS, or the English survey carried out by the National Centre for Social Research, Survey of Smoking, Drinking and Drug use among School Children in England 2000 and 2001.

Physical Activity

The development of an international measure for physical activity, The International Physical Activity Questionnaire (IPAQ), was followed by extensive reliability and validity testing undertaken in 12 countries (14 sites) across six continents during 2000. IPAQ was also tested in a number of European countries by the EUPASS project 2000-2002. The final results suggest that these measures have acceptable measurement properties for use in many settings and in different languages. A scoring protocol has been written, and an optional environmental module has been developed. IPAQ is therefore recommended for use in the HMS. It has been used in EU Eurobarometer (2002) and will be used by WHO, above all in the World Health Survey. International collaboration on IPAQ is on-going.

Aerobic Fitness

The UKK Self Walk Test by the UKK Institute is based on 2 km/1,24 miles brisk walk on a hard, even surface. The test especially measures cardiorespiratory fitness. The result of the test is based on age, body mass index, walking time and your heart rate at the end of the walk. It tells how fit you are compared to others in relation to your age and gender. The resulting index corresponds to VO₂max (ml/kg/min). The test has been designed for healthy persons between the ages of 20 and 65. It does not give dependable results for people outside this age range or for those who are highly fit. The test has been designed to be performed after a supervised test in order to get a reliable result.

Monitoring Public Health Nutrition

Health surveys, Household Budget Surveys and Individual Dietary, Nutrition and Physical Activity Surveys are valuable tools for monitoring Public Health Nutrition. These surveys in many countries monitor the majority of the recommended indicators. However, no country covers all major indicators related to Public Health Nutrition.

If a consistent approach is taken in future surveys, the establishment of a permanent and coherent Community monitoring system of Public Health Nutrition indicators will be possible. The monitoring of Public Health in Europe project will be well equipped to inform policy and predict outcomes in the field of Nutritional Public Health.

In future, we recommend that all European countries, and/or the European Health Monitoring System, should add questions to their surveys, according to the list of recommended indicators presented by this project, to ensure that all the relevant areas of Public Health Nutrition are covered. This will allow for the valid measurement of nutritional health status, trends and determinants throughout the Community. This will make it possible to facilitate the planning, monitoring and evaluation of Community Programmes and Actions in the field of Public Health Nutrition, or even Public Health in a broader sense. This will also make it possible to provide Member States with appropriate information to support their national health policies.

The DAFNE project, based on Household Budget Survey data has proved that much information useful for monitoring can be extracted from current available data. A key issue is to ensure the comparability of measurements, for which DAFNE has set a useful precedent. To ensure comparability in specific areas following suggestions have to be considered:

- a) The classification of socio-demographic measures needs to be standardized across countries in future monitoring procedures along the guidelines of Kunst et al.
- b) Dietary surveys need to include a detailed analysis of nutrients in the diet, including fatty acid composition, vitamin and mineral composition and the non-starch poly-saccharide content. The lack of comparable data on alcohol across the Member countries makes it difficult to formulate uniform

recommendations and it is evident that much needs to be done in this field. In contrast, promising initiatives have already been taken in the area of breastfeeding.

- c) In the area of nutritional status, the monitoring of biomarkers needs to be extended and an accepted protocol for measuring the biomarkers should be followed by all member states. Such standard protocols have already been developed for the monitoring of physical activity and fitness level.

A significantly more challenging task will then be to change food habits towards the recommended diet, to increase the incidence and duration of exclusive breastfeeding, and to increase the level of physical activity in the population. A project for the development of breastfeeding has already been initiated by the Commission, based on experiences from the Eurodiet and the current projects. The EuroBarometer distributed in the autumn 2002 used indicators developed with the present project, and the collected data are currently under analyses. By the use of such data, and other data on nutritional status of the populations in the EU countries, using the indicators defined in the present project and the recommendations for data collection, formulation of common European strategies will hopefully be facilitated.

User Window in nutrition

The concept of a nutrition “user window” is useful. A number of the nutrition related indicators exist in other categories of the ECHI list (e.g. occupational class and income are key determinants of food purchasing and consumption; smoking has an impact on nutrient requirements and utilization). It is important to recognize that where a user window has been defined, the underlying principal should be that the indicators identified in that window should be collected concurrently from the same sample included in any study or survey so as to facilitate analyses linking the key variables. For example, it would be helpful to have information on smoking habits as well as socio-demographic data in household budget surveys in order to make a better assessment of the likely influence of nutrition on diet-related disease risks. Moreover, such data would have to be collected in compatible ways in every country to facilitate EU-wide analyses.



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UK (Wales)	Rosemary Johnson
UK (England)	Sheela Reddy, Felicity Savage King
WHO Geneva	Randa Saadeh

c) Physical Activity Meeting (IPAQ Work Shop) 2001 Stockholm, among others

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